

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION
OFFICE OF THE ADMINISTRATIVE LAW JUDGES
Washington, D.C.



In the Matter of

ECM BioFilms, Inc.,
a corporation, also d/b/a
Envioplastics International,

Respondent.

Docket No. 9358

PUBLIC

COMPLAINT COUNSEL’S REPLY FINDINGS OF FACT

INTRODUCTION

Complaint Counsel files these Reply Findings of Fact in response to Respondent’s Proposed Findings of Fact filed September 25, 2014, in accordance with the Court’s Order on Post-Trial Briefs (entered Sept. 3, 2014). Where Complaint Counsel has provided a reply to the proposed finding stating that “Complaint Counsel has no specific response,” Complaint Counsel does not concede the truthfulness, accuracy, and/or weight of Respondent’s proposed findings of fact and corresponding citations to the evidentiary record.

COMPLAINT COUNSEL’S REPLY FINDINGS OF FACT

I. SUMMARY OF COMPLAINT, ANSWER AND PROCEDURAL BACKGROUND

A. FTC’s Complaint

1. The Federal Trade Commission (“FTC”) issued its Complaint against ECM BioFilms, Inc. (“Respondent” or “ECM”) on October 18, 2013. (*See* Comp.).

Response to Finding No. 1:

Complaint Counsel has no specific response.

2. The Complaint challenges ECM’s advertising of its plastics additive, MasterBatch Pellets (“ECM Additives”), the formula for which is a trade secret. (Comp. ¶ 2).

Response to Finding No. 2:

Complaint Counsel has no specific response.

3. The FTC alleges that Respondent disseminated or caused to be disseminated printed advertisements, website advertisements, certifications and other promotional materials to distributors, customers, and end-use consumers. (Comp. ¶ 4).

Response to Finding No. 3:

Complaint Counsel has no specific response.

4. The FTC alleges that these materials make false and/or misleading representations. (Comp. ¶ 11).

Response to Finding No. 4:

Complaint Counsel has no specific response.

5. Specifically, the FTC complains of four claims: 1) ECM Plastics are biodegradable; 2) ECM Plastics are biodegradable in a landfill; 3) ECM Plastics biodegrade in a stated qualified timeframe (nine months to five years OR greater than one year); and 4) ECM Plastics have been shown to be biodegradable, biodegradable in a landfill, or biodegradable in a stated qualified timeframe under various scientific tests, including, but not limited to, ASTM D5511. (Comp. ¶ 9).

Response to Finding No. 5:

Complaint Counsel has no specific response.

6. The FTC defines the term “biodegradable” to mean “will completely break down and decompose into elements found in nature within a reasonably short period of time after customary disposal.” (Comp. ¶ 9(A)).

Response to Finding No. 6:

Complaint Counsel has no specific response.

7. The FTC defines a “reasonably short period of time” to be “one year or less.” (Comp. ¶¶ 4(A), 9(A)(i)).

Response to Finding No. 7:

Complaint Counsel has no specific response.

8. The FTC refutes the validity of all four alleged ECM claims. (Comp. ¶ 10).

Response to Finding No. 8:

Complaint Counsel has no specific response.

9. The FTC alleges that at the time ECM made the above representations, ECM did not possess and rely on a reasonable basis that substantiated the representations. (Comp. ¶ 13).

Response to Finding No. 9:

Complaint Counsel has no specific response.

10. Complaint Counsel alleges that Respondent distributed promotional materials to its customers and independent distributors, and in so doing, provided them with the means and instrumentalities for the commission of deceptive acts or practices in violation of section 5(a) of the FTCA. (Comp. ¶ 14–15).

Response to Finding No. 10:

Complaint Counsel has no specific response.

B. ECM's Answer

11. Respondent filed an answer on November 14, 2013. (*See Answer*).

Response to Finding No. 11:

Complaint Counsel has no specific response.

12. In its Answer, Respondent explains that the Complaint fails to state a claim upon which relief can be granted under Section 5 of the FTC Act, 15 U.S.C. § 45. (Answer at 11).

Response to Finding No. 12:

Complaint Counsel has no specific response.

13. Respondent states that the requested relief, if granted, would not be in the public interest. (Answer at 12).

Response to Finding No. 13:

Complaint Counsel has no specific response.

14. Respondent further states that any alleged deception of the end-use consumer is caused by third parties, i.e. downstream plastics manufacturers and suppliers who market directly to end-use consumers. (Answer at 11).

Response to Finding No. 14:

Complaint Counsel has no specific response.

15. Respondent states that it acted in good faith in all of its marketing practices and took affirmative steps to comply with apparent FTC advertising requirements after the FTC revised its Green Guides effective October 2012. (Answer at 12).

Response to Finding No. 15:

Complaint Counsel has no specific response.

16. Respondent also states that there is no danger of recurrence of any of the alleged violations and the requested relief is not reasonably related to ECM's alleged violations. (Answer at 13).

Response to Finding No. 16:

Complaint Counsel has no specific response.

17. Respondent further states that the advertising claims excerpted by the FTC in its Complaint are not material to the purchasing decisions of ECM customers. (Answer at 13).

Response to Finding No. 17:

Complaint Counsel has no specific response.

18. Respondent states that the Complaint ordering paragraphs, if adopted, violate ECM's First Amendment right to communicate truthful commercial speech, and as such, the FTC lacks authority to impose the requested relief. (Answer at 13).

Response to Finding No. 18:

Complaint Counsel has no specific response.

19. Respondent also states that the FTC's allegations are predicated on arbitrary and capricious regulatory policies, particularly the One Year Rule, that are illogical, contrary to scientific evidence, and not based on substantial evidence. (Answer at 14).

Response to Finding No. 19:

Complaint Counsel has no specific response.

20. Respondent further states that the FTC violates the APA by arbitrarily and capriciously enforcing its 2012 revisions to the Green Guides to commercial speech that predated those same guides. (Answer at 15).

Response to Finding No. 20:

Complaint Counsel has no specific response.

21. Respondent states that the Commission violates ECM's right to Due Process under the Fifth Amendment to the United States Constitution by abrogating the Separation of Functions Doctrine. (Answer at 15).

Response to Finding No. 21:

Complaint Counsel has no specific response.

22. Respondent denies any allegation to the extent that it depends on the FTC's definition of "biodegradable." (*See Answer*).

Response to Finding No. 22:

Complaint Counsel has no specific response.

23. Respondent states that it has always qualified its claims to provide its customers accurate and non-misleading information concerning the nature and characteristics of the Plastic containing the ECM additive. (Answer ¶ 9(A)).

Response to Finding No. 23:

Complaint Counsel has no specific response.

24. ECM admits that it has claimed that the Plastic containing the ECM additive causes plastics to degrade through biological means, but denies that it has made unqualified plastic elimination claims in advertising concerning the Plastic containing the ECM additive in landfills. (Answer ¶ 9(B)).

Response to Finding No. 24:

Complaint Counsel has no specific response.

25. ECM further states that its advertising plainly explains that the rate of plastic degradation is dependent on ambient environmental conditions. (Answer ¶ 9(B)).

Response to Finding No. 25:

Complaint Counsel has no specific response.

26. Respondent denies that its biodegradable claim is deceptive, false, or misleading in any respect. (Answer ¶ 9(B)).

Response to Finding No. 26:

Complaint Counsel has no specific response.

27. Respondent asserts that it has proven through competent and reliable testing that plastics manufactured with the Plastic containing the ECM additive will fully biodegrade through biological means when exposed to micro-organisms commonly present in the outdoor environment, including in landfills. (Answer ¶ 9(B)).

Response to Finding No. 27:

Complaint Counsel has no specific response.

C. Procedural Background

28. Respondent, a small corporation with only six employees, has endured an unusually costly and burdensome discovery process throughout this litigation. (Sullivan, Tr. 699; Sinclair, Tr. 860).

Response to Finding No. 28:

Complaint Counsel has no specific response.

29. Complaint Counsel's discovery requests were without limitation, seeking all files related to the "ECM additive," which included virtually every document in ECM's possession, custody or control, without time limitation. (Complaint Counsel's First Set of Requests for Product of Documents; Complaint Counsel's Second Set of Requests for Production of Documents; Complaint Counsel's Third Set of Requests for Production of Documents; Complaint Counsel's Forth Set of Requests Pursuant to Rule 3.37).

Response to Finding No. 29:

Complaint Counsel has no specific response.

30. Rather than incur the expense of costly motion practice to oppose the overbroad requests, ECM reluctantly complied and turned over more than 100,000 pages of email communications with, and data base summations concerning communications with, customers. (Sinclair, Tr. 860; *see e.g.*, RX 120 (Bates stamped as “ECM 114860,” indicating that it was the 114,860th page disclosed by ECM to Complaint Counsel).

Response to Finding No. 30:

Complaint Counsel has no specific response.

31. The parties performed 29 depositions in this case with Complaint Counsel taking 4 depositions of ECM employees and 21 depositions of non-parties. (CCX 799–CCX 805; CCX 808–813; CCX 815–822; CCX 943; CCX 1075; RX 841–RX 843; RX 851; RX 858; RX 970).

Response to Finding No. 31:

Complaint Counsel has no specific response.

32. Complaint Counsel’s extensive use of discovery forced Respondent to appear unrepresented in 8 depositions and have counsel available only telephonically in 6 depositions. (CCX 800; CCX 803; CCX 801; CCX 810; CCX 811; CCX 812; CCX 817; CCX 822; CCX 802; CCX 804; CCX 808; CCX 809; CCX 815; CCX 821).

Response to Finding No. 32:

Complaint Counsel has no specific response.

33. The final pre-hearing conference was held on July 29, 2014, with trial commencing on August 5, 2014.

Response to Finding No. 33:

Complaint Counsel has no specific response.

34. Over 2,000 exhibits were designated prior to the hearing. (JX-1-A).

Response to Finding No. 34:

Complaint Counsel has no specific response.

35. Respondents submitted into evidence thirty-three (33) scientific studies supporting its biodegradability claim.

Response to Finding No. 35:

Complaint Counsel has no specific response.

36. The testimonial portion of the trial concluded on August 29, 2014 after 15 days of trial testimony.

Response to Finding No. 36:

Complaint Counsel has no specific response.

37. The hearing record was closed on September 4, 2014, pursuant to Commission Rule 3.44(c), by Order dated August 29, 2014. (Tr. 3002–02),

Response to Finding No. 37:

Complaint Counsel has no specific response.

38. On September 25, 2014, 2014, the parties filed concurrent post-trial briefs, proposed findings of fact, and findings of law.

Response to Finding No. 38:

Complaint Counsel has no specific response.

D. Evidence Before This Court

These findings of fact are based on the exhibits properly admitted into evidence, the transcripts of testimony at trial, and the briefs submitted by the parties. References to the record are abbreviated as follows:

CCX- Complaint Counsel’s Exhibit

RX- Respondent’s Exhibit

Tr.- Transcript of Testimony before the ALJ

Dep.- Transcript of witness deposition

JX-3- Joint Stipulations of Law and Facts

JX-1-A- Joint Exhibit List dated September 4, 2014

Joint Stipulation of the Parties Concerning Scientific Definitions

II. BACKGROUND OF ECM BIOFILMS, INC.

39. ECM BioFilms, Inc. is an Ohio-based corporation started by Patrick Riley of Micro-Tech Research, Inc. in 1998. (Sinclair, Tr. 746, 756–57).

Response to Finding No. 39:

Complaint Counsel has no specific response.

40. Micro-Tech was found in 1995, and produced a biodegradable MasterBatch pellet that renders plastics resins (e.g., polystyrene, polyethylene, and polypropylene) biodegradable. (CCX 818 (Sinclair, Dep. at 19)).

Response to Finding No. 40:

Complaint Counsel has no specific response.

41. ECM’s product is the oldest product on the market, and is a successful cost-effective solution for companies looking to reduce long-term environmental impact. (CCX 818 (Sinclair, Dep. at 120); CCX 820 (Sullivan, Dep. at 56–57); CCX 445)).

Response to Finding No. 41:

Complaint Counsel has no specific response.

42. Robert Sinclair assumed leadership of ECM Biofilms in 2000. (Sinclair, Tr. 757).

Response to Finding No. 42:

Complaint Counsel has no specific response.

43. Patrick Riley invented the ECM additive among other inventions. (Sinclair, Tr. 747–48).

Response to Finding No. 43:

Complaint Counsel has no specific response.

44. Mr. Riley spent years developing the additive. (Sinclair, Tr. 748).

Response to Finding No. 44:

Complaint Counsel has no specific response.

45. Mr. Riley tested the additive in Petri dishes, and exposed it to inoculum in his own experiments. (Sinclair, Tr. 748).

Response to Finding No. 45:

Complaint Counsel has no specific response.

46. Mr. Riley tested products in experiments conducted at the University of Akron and at a company called Organic Waste Systems. (Sinclair, Tr. 748–49).

Response to Finding No. 46:

Complaint Counsel has no specific response.

47. Mr. Riley also worked with Timothy Barber, then a principal scientist for a company called ChemRisk, to test the ECM additive. (Sinclair, Tr. 749).

Response to Finding No. 47:

Complaint Counsel has no specific response.

48. During development of the additive, Mr. Riley also worked with Morton Litt, Professor of Macromolecular Biology at Case Western Reserve University. (Sinclair, Tr. 749).

Response to Finding No. 48:

Complaint Counsel has no specific response.

49. Mr. Sinclair understood from Patrick Riley that the additive had been tested numerous times, in numerous places, and would cause conventional plastics to biodegrade in nine months to five years in most circumstances. (Sinclair, Tr. 754–55).

Response to Finding No. 49:

Complaint Counsel has no specific response.

50. Mr. Sinclair was also understood that both Timothy Barber and Professor Litt believed the additive worked. (Sinclair, Tr. 753–54).

Response to Finding No. 50:

Complaint Counsel has no specific response.

51. Mr. Sinclair and Mr. Riley each performed home testing of ECM plastics. (Sinclair, Tr. 755–56).

Response to Finding No. 51:

Complaint Counsel has no specific response.

52. Those tests included aerobic testing: burying the plastic in gardens and other places, and then digging them up and observing the level of biodegradation. (Sinclair, Tr. 755).

Response to Finding No. 52:

Complaint Counsel has no specific response

53. Mr. Sinclair and Mr. Riley also performed aerobic and anaerobic testing in sealed drums. (Sinclair, Tr. 755–56).

Response to Finding No. 53:

Complaint Counsel has no specific response

54. In all of those tests, Mr. Sinclair and Mr. Riley observed visual indications of partial or complete biodegradation within nine months to five years. (Sinclair, Tr. 756).

Response to Finding No. 54:

Complaint Counsel has no specific response

55. Mr. Sinclair received test data from Micro-Tech, including studies demonstrating the efficacy of the product, and claim language that had been used with the product in commerce. (RX 551; RX 260; RX 263; RX 264; RX 265; RX 269; CCX 241; CCX 799 (Barber, Dep. 135, 138–141, 266)).

Response to Finding No. 55:

Complaint Counsel has no specific response

56. Dr. Barber did work while at McClaren/Hart for Microtech testing the ECM additive. (Barber, Tr. 2012).

Response to Finding No. 56:

Complaint Counsel has no specific response

57. Dr. Barber analyzed the findings of several tests performed on the Plastic containing the ECM additive, and drafted a report containing his findings. (Barber, Tr. 2012–14).

Response to Finding No. 57:

Complaint Counsel has no specific response

58. Those tests included biodegradation tests conducted in a laboratory setting, as well as post-degradation testing from a toxicity perspective. (Barber, Tr. 2013).

Response to Finding No. 58:

Complaint Counsel has no specific response

59. Dr. Barber’s report was based on testing performed by Organic Waste Systems. (Barber, Tr. 2014).

Response to Finding No. 59:

Complaint Counsel has no specific response

60. Dr. Barber’s report was reviewed by another, disinterested McClaren/Hart scientist and received no criticism. (Barber, Tr. 2022–23).

Response to Finding No. 60:

Complaint Counsel has no specific response

61. The McClaren/Hart report states that “the results of the aerobic degradation tests indicate that, in time, plastics produced using ECM pellets will biodegrade in aerobic conditions.” (Barber, Tr. 2024).

Response to Finding No. 61:

Complaint Counsel has no specific response

62. That conclusion was based on the Organic Waste Systems laboratory results that showed the ECM material biodegraded under the aerobic test conditions performed. (Barber, Tr. 2025).

Response to Finding No. 62:

Complaint Counsel has no specific response

63. The McClaren/Hart report further states that based on the Organic Waste Systems tests, ECM plastics should break down under anaerobic conditions as well, although at a slower rate than 100 percent ECM pellets. (Barber, Tr. 2026).

Response to Finding No. 63:

Complaint Counsel has no specific response

64. Although the McClaren/Hart report often uses the phrase “degradation,” that was merely a short hand for “biodegradation.” (Barber, Tr. 2027).

Response to Finding No. 64:

Complaint Counsel has no specific response

65. Dr. Barber understands “inherent biodegradability” to mean:

Is the material itself biodegradable and would it biodegrade completely at the -- at some point in time, given the proper conditions to support biological activity, including microbes, water, pH, nutrients, all the things necessary to support biological activity.

(Barber, Tr. 2027).

Response to Finding No. 65:

Complaint Counsel has no specific response

66. Dr. Barber conveyed the report and its content to Patrick Riley, then President of Microtech (ECM). (Barber, Tr. 2026).

Response to Finding No. 66:

Complaint Counsel has no specific response

67. On average, ECM has employed six employees. (CCX 819 (Sinclair, Dep. 327–28)).

Response to Finding No. 67:

Complaint Counsel has no specific response

68. Those employees include Robert Sinclair (President and CEO), Kenneth Sullivan (CFO), and one or two administrative employees and one or two sales people. (Sullivan, Tr. 699).

Response to Finding No. 68:

Complaint Counsel has no specific response

69. Mr. Sinclair is primarily responsible for communicating with clients concerning ECM’s technology. (Sullivan, Tr. 699).

Response to Finding No. 69:

Complaint Counsel has no specific response

III. WITNESSES

A. ECM's Fact Witnesses

1. Robert Sinclair

70. ECM called Robert Sinclair, President of ECM, Biofilms to testify as a fact witness regarding ECM's claims, marketing methods, biodegradability research, and customer characteristics (Sinclair, Tr. 745–797).

Response to Finding No. 70:

Complaint Counsel has no specific response

71. Mr. Sinclair is a minority shareholder (12%) in ECM. (Sinclair, Tr. 745).

Response to Finding No. 71:

Complaint Counsel has no specific response

72. Mr. Sinclair is also the director and CEO of ECM. (Sinclair, Tr. 745).

Response to Finding No. 72:

Complaint Counsel has no specific response

73. Mr. Sinclair manages all daily operations of the company. (Sinclair, Tr. 745).

Response to Finding No. 73:

Complaint Counsel has no specific response

74. Mr. Sinclair earned his J.D. from Case Western Reserve University Law School, and his undergraduate degree from Dartmouth College. (Sinclair, Tr. 746).

Response to Finding No. 74:

Complaint Counsel has no specific response

75. Mr. Sinclair, although not a scientist, has familiarity with scientific issues and experiments. (Sinclair, Tr. 760).

Response to Finding No. 75:

Complaint Counsel has no specific response

76. Mr. Sinclair took many biology sciences classes in college, developed resistant strains of bacteria for projects, and taught science for six years in the Cleveland and East Cleveland public school systems. (Sinclair, Tr. 760).

Response to Finding No. 76:

Complaint Counsel has no specific response

77. Mr. Sinclair practiced law until he became President of ECM. (Sinclair, Tr. 746).

Response to Finding No. 77:

Complaint Counsel has no specific response

78. Mr. Sinclair became involved with ECM in 1997 after learning about the Plastic containing the ECM additive and company from Rob DeMarco, and buying 1% of the company after speaking with Patrick Riley. (Sinclair, Tr. 746–47, 747–48).

Response to Finding No. 78:

Complaint Counsel has no specific response

79. Mr. Sinclair was deposed in this matter on February 18, 2014 and February 19, 2014. (CCX 818–CCX 819).

Response to Finding No. 80:

Complaint Counsel has no specific response

80. Mr. Sinclair is a member of the ASTM D20 committee, which is the committee on plastics. (Sinclair, Tr. 778).

Response to Finding No. 80:

Complaint Counsel has no specific response

81. Mr. Sinclair is the chairman of the ASTM D20.92 subcommittee on plastic terminology. (Sinclair, Tr. 778).

Response to Finding No. 81:

Complaint Counsel has no specific response

82. Mr. Sinclair is also on the ASTM D20.96 subcommittee on bio-based and biodegradable plastics. (Sinclair, Tr. 778).

Response to Finding No. 82:

Complaint Counsel has no specific response

83. Mr. Sinclair is on the ASTM D20.95 subcommittee on plastic recyclability. (Sinclair, Tr. 778–79).

Response to Finding No. 83:

Complaint Counsel has no specific response

84. Mr. Sinclair is also on the ASTM E60 and ASTM E50 committees on sustainability and other environmental issues. (Sinclair, Tr. 779).

Response to Finding No. 84:

Complaint Counsel has no specific response

85. As a member of numerous ASTM committees and subcommittees, Mr. Sinclair is familiar with many current ASTM standards, as well as proposed ASTM standards. (Sinclair, Tr. 779).

Response to Finding No. 86:

Complaint Counsel has no specific response

2. Kenneth Sullivan

86. ECM called Kenneth Charles Sullivan, Jr., CFO of ECM Biofilms, to testify as a fact witness. (Sullivan, Tr. 690).

Response to Finding No. 86:

Complaint Counsel has no specific response

87. Mr. Sullivan has been the CFO of ECM since May of 2009. (Sullivan, Tr. 690–91).

Response to Finding No. 87:

Complaint Counsel has no specific response

88. Mr. Sullivan is responsible for all the accounting, finance and treasury functions at ECM. (Sullivan, Tr. 691).

Response to Finding No. 88:

Complaint Counsel has no specific response

89. Mr. Sullivan also deals with ECM's 49 shareholders, the employee benefits plan, office administrative staff, and any other functions not associated with sales or technical issues. (Sullivan, Tr. 691).

Response to Finding No. 89:

Complaint Counsel has no specific response

90. Mr. Sullivan is a CPA and has worked in a financial capacity with multiple companies since 1987. (Sullivan, Tr. 691–92).

Response to Finding No. 90:

Complaint Counsel has no specific response

91. Mr. Sullivan was deposed in this matter on February 20, 2014. (CCX 820 (Sullivan, Dep. at 1)).

Response to Finding No. 91:

Complaint Counsel has no specific response

3. Timothy Barber

92. ECM called Dr. Timothy Barber as a fact witness to testify regarding ECM's early research. (Barber, Tr. 2003–04).

Response to Finding No. 92:

Complaint Counsel has no specific response

93. Dr. Barber has a B.S. in chemistry, with a focus in organic chemistry, from State University of New York at Binghamton. (Barber, Tr. 2004).

Response to Finding No. 93:

Complaint Counsel has no specific response

94. Dr. Barber obtained a Ph.D. in marine science with a specialization in chemistry from the University of South Florida. (Barber, Tr. 2005).

Response to Finding No. 94:

Complaint Counsel has no specific response

95. Dr. Barber wrote a dissertation on the biogeochemistry of low-molecular-weight hydrocarbons in wetland environments. (Barber, Tr. 2005).

Response to Finding No. 95:

Complaint Counsel has no specific response

96. Dr. Barber worked at the Florida Marine Research Institute as an analyst and then Entix as a senior chemist before taking a position with McLaren/Hart-ChemRisk in Cleveland, Ohio. (Barber, Tr. 2005–07).

Response to Finding No. 96:

Complaint Counsel has no specific response

97. At the Florida Marine Research Institute, Dr. Barber’s responsibilities included collecting data, analyzing data, developing reports, and conducting laboratory work. (Barber, Tr. 2006).

Response to Finding No. 97:

Complaint Counsel has no specific response

98. At Entix, Dr. Barber’s responsibilities included analyzing data, writing reports, and conducting fieldwork. (Barber, Tr. 2006).

Response to Finding No. 99:

Complaint Counsel has no specific response

99. McClaren/Hart, which no longer exists, was an environmental consultancy that worked primarily for private industry. (Barber, Tr. 2007).

Response to Finding No. 99:

Complaint Counsel has no specific response

100. McLaren/Hart employed approximately 350–500 people throughout the United States in about 15 different offices. (Barbet, Tr. 2006–07).

Response to Finding No. 100:

Complaint Counsel has no specific response

101. Dr. Barber was a consultant at McClaren/Hart assisting companies with pollution problems, developing work plans, collecting data, analyzing that information and writing reports. (Barber, Tr. 2007).

Response to Finding No. 101:

Complaint Counsel has no specific response

102. After leaving McClaren/Hart, Dr. Barber continued to work in the field of environmental contamination and ecological risk assessment for Geraghty & Miller (now Arcadis) and Environ International Corporation. (Barber, Tr. 20–09).

Response to Finding No. 102:

Complaint Counsel has no specific response

103. At Geraghty & Miller Dr. Barber was a principal scientist. (Barber, Tr. 2008).

Response to Finding No. 103:

Complaint Counsel has no specific response

104. Dr. Barber is presently employed at Environ International Corporation as a principal scientist and office manager. (Barber, Tr. 2008–09).

Response to Finding No. 104:

Complaint Counsel has no specific response

105. Dr. Barber collaborates with other Environ scientists in the conduct of his research work. (Barbet, Tr. 2010).

Response to Finding No. 105:

Complaint Counsel has no specific response

106. Dr. Barber was the instructor for the chemical oceanography laboratory at the University of South Florida and an ecological risk assessment course at that same university. (Barber, Tr. 2010–11).

Response to Finding No. 106:

Complaint Counsel has no specific response

107. Dr. Barber taught a one-day seminar to the Ohio EPA on forensic chemistry. (Barber, Tr. 2011).

Response to Finding No. 107:

Complaint Counsel has no specific response

108. Dr. Barber has written approximately thirty (30) peer-reviewed articles on various topics related to anthropogenic or manmade chemicals in the environment, potential toxicity associated with those, as well as fate and transport, persistence, bioaccumulation and ecological risks of those chemicals. (Barber, Tr. 2011).

Response to Finding No. 108:

Complaint Counsel has no specific response

109. Dr. Barber is a member of the American Chemical Society, the Environmental Toxicology and Chemistry Organization, the International Society of Ecological Economics, and the International Society of Environmental Forensics. (Barber, Tr. 2012).

Response to Finding No. 109:

Complaint Counsel has no specific response

110. Dr. Barber was deposed in this matter on March 7, 2014. (RX 870 (Barber, Dep. at 1)).

Response to Finding No. 110:

Complaint Counsel has no specific response

4. Thomas Poth

111. ECM called Thomas Poth to testify as a fact witness regarding the testing done on the ECM additive and ECM plastics by Eden Laboratories. (Poth, Tr. 1434, 1442).

Response to Finding No. 111:

Complaint Counsel has no specific response

112. Mr. Poth was deposed in this matter on May 19, 2014. (RX 876 (Poth, Dep. at 1)).

Response to Finding No. 112:

Complaint Counsel has no specific response

113. Mr. Poth completed the course requirements for an undergraduate degree from New Mexico Institute of Mining and Technology in chemistry and environmental engineering. (Poth, Tr. 1435–36).

Response to Finding No. 113:

Complaint Counsel has no specific response

114. Mr. Poth also took numerous courses on hazardous waste management and radioactive waste management at the graduate level, but did not receive a degree. (Poth, Tr. 1435).

Response to Finding No. 114:

Complaint Counsel has no specific response

115. Mr. Poth owns Eden Research Laboratories (Eden Labs), formerly Zia Environmental Laboratories. (Poth, Tr. 1437).

Response to Finding No. 115:

Complaint Counsel has no specific response

116. Mr. Poth is also the laboratory director at Eden. (Poth, Tr. 1437).

Response to Finding No. 116:

Complaint Counsel has no specific response

117. Before starting Eden Labs, Mr. Poth managed a laboratory called Assaigai Laboratory in Albuquerque, New Mexico. (Poth, Tr. 1438).

Response to Finding No. 117:

Complaint Counsel has no specific response

118. Mr. Poth was then transferred to West Texas to manage another laboratory in the Midland area. (Poth, Tr. 1438).

Response to Finding No. 118:

Complaint Counsel has no specific response

119. As laboratory manager for both the Assaigai and Texas labs, Mr. Poth oversaw sales, marketing, and laboratory testing. (Poth, Tr. 1438).

Response to Finding No. 119:

Complaint Counsel has no specific response

120. Mr. Poth then ran the science and engineering design department for RW Technologies, a company that developed water treatment systems using cutting-edge technology. (Poth, Tr. 1439).

Response to Finding No. 120:

Complaint Counsel has no specific response

121. This position required familiarity with environmental testing, among other skills. (Poth, Tr. 1440).

Response to Finding No. 121:

Complaint Counsel has no specific response

122. Mr. Poth and Eden Laboratories employ two full-time employees, and two part-time employees. (Poth, Tr. 1440).

Response to Finding No. 122:

Complaint Counsel has no specific response

123. Other than Mr. Poth, Eden's other full-time employee is Brian Esau, who assists in project design and implementation. (Poth, Tr. 1440–41).

Response to Finding No. 123:

Complaint Counsel has no specific response

124. Mr. Esau has an undergraduate degree and a Ph.D. in biochemistry. (Poth, Tr. 144–41).

Response to Finding No. 124:

Complaint Counsel has no specific response

125. Mr. Esau worked for Oak Ridge National Laboratory doing cancer research prior to his employment at Eden Laboratories. (Poth, Tr. 1443).

Response to Finding No. 125:

Complaint Counsel has no specific response

126. Eden Laboratories works with businesses such as Adidas Group, Reebok, Pactiv, Saucony, and Georgia Pacific, and also works with smaller companies as well. (Poth, Tr. 1443).

Response to Finding No. 126:

Complaint Counsel has no specific response

127. Eden Laboratories has performed biodegradability testing of plastic products such as plastic bags and drink bottles since 2010. (Poth, Tr. 1444–45).

Response to Finding No. 127:

Complaint Counsel has no specific response

128. Eden Laboratories offers other environmental services, such as digester design for treatment of waste streams, solid waste management design, and water treatment system design. (Poth, Tr. 1445).

Response to Finding No. 128:

Complaint Counsel has no specific response

129. Approximately 50% of Eden Laboratories' current business is biodegradability testing. (Poth, Tr. 1445).

Response to Finding No. 129:

Complaint Counsel has no specific response

130. In the past, nearly 75% of Eden Laboratories' business was biodegradability testing. (Poth, Tr. 1445).

Response to Finding No. 130:

Complaint Counsel has no specific response

5. Alan Johnson

131. ECM called Alan Charles Johnson to testify as a fact witness regarding testing that was done by Northeast Laboratories. (Johnson, Tr. 1553).

Response to Finding No. 131:

Complaint Counsel has no specific response

132. Mr. Johnson has been working at Northeast Laboratories since 1977. (Johnson, Tr. 1554).

Response to Finding No. 132:

Complaint Counsel has no specific response

133. Mr. Johnson is the laboratory director, and he is responsible for overseeing all laboratory operations. (Johnson, Tr. 1554).

Response to Finding No. 133:

Complaint Counsel has no specific response

134. Before starting Northeast Laboratories, Mr. Johnson earned a bachelor's degree with a major in biology and a minor in chemistry from the University of Connecticut. (Johnson, Tr. 1554–55).

Response to Finding No. 134:

Complaint Counsel has no specific response

135. Mr. Johnson also took graduate level coursework for a master's degree in microbiology but did not complete the program. (Johnson, Tr. 1555).

Response to Finding No. 135:

Complaint Counsel has no specific response

136. Mr. Johnson first worked as an analytical technician for Dairy Control Service Laboratory. (Johnson, Tr. 1555).

Response to Finding No. 136:

Complaint Counsel has no specific response

137. Mr. Johnson then went to work at Northeast Laboratories, eventually purchasing it. (Johnson, Tr. 1555–56).

Response to Finding No. 137:

Complaint Counsel has no specific response

138. Mr. Johnson and Northeast Laboratories have fourteen (14) employees, working in different disciplines, including biodegradation, wastewater, and microbiology. (Johnson, Tr. 1556–57).

Response to Finding No. 138:

Complaint Counsel has no specific response

139. Northeast Laboratories has two major branches: chemistry and microbiology. (Johnson, Tr. 1557).

Response to Finding No. 139:

Complaint Counsel has no specific response

140. Northeast Laboratories is EPA, FDA, USDA, CDC and State of Connecticut certified. (Johnson, Tr. 1558).

Response to Finding No. 140:

Complaint Counsel has no specific response

141. Those certifications authorize the lab to test pharmaceutical chemistry, wastewater, and pharmaceutical, food and environmental microbiology. (Johnson, Tr. 1558–59).

Response to Finding No. 141:

Complaint Counsel has no specific response

142. Generally, all of Northeast Laboratories' certifications are subject to inspections and proficiency testing. (Johnson, Tr. 1559).

Response to Finding No. 142:

Complaint Counsel has no specific response

143. Northeast Laboratories has received good reports after being audited by the State of Connecticut and the USDA this past year. (Johnson, Tr. 1559–60).

Response to Finding No. 143:

Complaint Counsel has no specific response

144. Northeast Laboratories conducts biodegradation testing, and began doing so in 2005. (Johnson, Tr. 1560).

Response to Finding No. 144:

Complaint Counsel has no specific response

145. The chemistry division of the lab assists biodegradability testing by performing titrations, instrumental work, and report writing. (Johnson, Tr. 1560–61).

Response to Finding No. 145:

Complaint Counsel has no specific response

146. Mr. Johnson oversees all biodegradability testing, and often does some of the work himself. (Johnson, Tr. 1561).

Response to Finding No. 146:

Complaint Counsel has no specific response

147. Northeast Laboratories performs ASTM D5511 and ASTM D5538 biodegradability testing. (Johnson, Tr. 1561).

Response to Finding No. 147:

Complaint Counsel has no specific response

148. Dr. William Ullman had a Ph.D. in microbiology and ran the biodegradability at Northeast Laboratories program from its inception in 2005, until his death in 2011. (Johnson, Tr. 1562–63).

Response to Finding No. 148:

Complaint Counsel has no specific response

149. Prior to purchasing Northeast Laboratories, Dr. Ullman was the director of the State of Connecticut Public Health Laboratory.

Response to Finding No. 149:

Complaint Counsel has no specific response

150. Dr. William Ullman trained Alyssa Ullman, a chemist for Northeast Laboratories, in the discipline. (Johnson, Tr. 1562–63).

Response to Finding No. 150:

Complaint Counsel has no specific response

B. ECM's Expert Witnesses

1. Dr. Ranajit Sahu

151. ECM called Dr. Ranajit Sahu, an expert in environmental and applied sciences. (Sahu, Tr. 1733–34; RX 855 (Sahu, Rep. at 5–6)).

Response to Finding No. 151:

Complaint Counsel has no specific response

152. Dr. Sahu earned his undergraduate degree in mechanical engineering from the Indian Institute of Technology. (Sahu, Tr. 1730–31).

Response to Finding No. 153:

Complaint Counsel has no specific response

153. The foundational coursework in this degree program involved chemistry, physical chemistry, and organic chemistry. (Sahu, Tr. 1732).

Response to Finding No. 153:

Complaint Counsel has no specific response

154. The advanced coursework in this degree program involved the study of metals and nonmetals, including plastics and polymers, and the manufacturing processes associated with these materials. (Sahu, Tr. 1732).

Response to Finding No. 154:

Complaint Counsel has no specific response

155. Dr. Sahu earned a master's and a Ph.D. in combustion from the California Institute of Technology. (Sahu, Tr. 1732).

Response to Finding No. 155:

Complaint Counsel has no specific response

156. Within the coursework of these post-graduate programs, Dr. Sahu studied polymer science, specifically the applicability of organic chemistry and chemical engineering, and the manufacturing of polymers into useful articles. (Sahu, Tr. 1733–34).

Response to Finding No. 156:

Complaint Counsel has no specific response

157. Dr. Sahu is a Qualified Environmental Professional (QEP) certified by the Air and Waste Management Association. (Sahu, Tr. 1748).

Response to Finding No. 157:

Complaint Counsel has no specific response

158. Dr. Sahu is a Certified Environmental Manager (CEM) certified by the State of Nevada. (Sahu, Tr. 1758).

Response to Finding No. 158:

Complaint Counsel has no specific response

159. Dr. Sahu first worked as a research development engineer at the Heat Transfer Research Institute and shortly thereafter at Kinetics Technology International. (Sahu, Tr. 1734).

Response to Finding No. 159:

Complaint Counsel has no specific response

160. In those capacities, Dr. Sahu designed equipment for use in the petrochemical industry. (Sahu, Tr. 1734).

Response to Finding No. 160:

Complaint Counsel has no specific response

161. Dr. Sahu then worked for Parsons Corp., a large engineering and architectural firm, where he performed environmental consulting often in the area of solid waste disposal in landfills, incinerators, and other disposal methods. (Sahu, Tr. 1735–36).

Response to Finding No. 161:

Complaint Counsel has no specific response

162. At Parsons Corp., Dr. Sahu managed a testing group, which conducted field-testing, laboratory testing, third party laboratory analysis, and data evaluation. (Sahu, Tr. 1736–37).

Response to Finding No. 162:

Complaint Counsel has no specific response

163. Since leaving Parsons Corp. in December 1999, Dr. Sahu has been an independent consultant, providing a variety of consulting services in a wide range of fields. (Sahu, Tr. 1737).

Response to Finding No. 163:

Complaint Counsel has no specific response

164. Dr. Sahu has over twenty years of experience in the field of chemical engineering, spanning from undergraduate studies through post-graduate employment at Parsons Corp. and as an independent consultant. (Sahu, Tr. 1738).

Response to Finding No. 164:

Complaint Counsel has no specific response

165. More specifically, Dr. Sahu has extensive experience in the field of polymer science. (Sahu, Tr. 1738–39).

Response to Finding No. 165:

Complaint Counsel has no specific response

166. Dr. Sahu spent three or four years as an independent consultant working with various bathroom fixture manufacturers to assess the degradation and manufacturing waste of their polystyrene and styrene-based products. (Sahu, Tr. 1739–40).

Response to Finding No. 166:

Complaint Counsel has no specific response

167. Dr. Sahu has also worked extensively in the field of polymer material properties, structure, composition and manufacture as an independent consultant with fuel industry consortia. (Sahu, Tr. 1740–41).

Response to Finding No. 167:

Complaint Counsel has no specific response

168. Dr. Sahu has conducted multiple projects dealing with waste containment in landfills, including MSW landfills. (Sahu, Tr. 1741–42).

Response to Finding No. 168:

Complaint Counsel has no specific response

169. Dr. Sahu has worked on multiple projects involving MSW landfill gas extraction, treatment, and measurement. (Sahu, Tr. 1742–44).

Response to Finding No. 169:

Complaint Counsel has no specific response

170. Dr. Sahu’s work with MSW landfills has also included leachate collection. (Sahu, Tr. 1744).

Response to Finding No. 170:

Complaint Counsel has no specific response

171. Dr. Sahu currently works with a small development company managing a major project involving the siting, construction and closure of a four million cubic yard landfill. (Sahu, Tr. 1744–45).

Response to Finding No. 171:

Complaint Counsel has no specific response

172. As project manager and the principal in charge, Dr. Sahu designed every aspect of the landfill construction plan, supervised construction, and oversaw storm water management and leachate disposal. (Sahu, Tr. 1745).

Response to Finding No. 172:

Complaint Counsel has no specific response

173. Dr. Sahu has worked with municipalities, states, and the U.S. EPA. (Sahu, Tr. 1746).

Response to Finding No. 173:

Complaint Counsel has no specific response

174. Dr. Sahu has held various adjunct teaching positions with a number of universities in Southern California. (Sahu, Tr. 1746–47).

Response to Finding No. 174:

Complaint Counsel has no specific response

175. Dr. Sahu has been retained and qualified as an expert witness in environmental matters in multiple administrative proceedings and several state and federal judicial proceedings. (Sahu, Tr. 1747).

Response to Finding No. 176:

Complaint Counsel has no specific response

176. Dr. Sahu has been a member of the ASTM for three or four years, and currently serves on numerous committees. (Sahu, Tr. 1750).

Response to Finding No. 176:

Complaint Counsel has no specific response

177. Dr. Sahu was heavily involved with the ASTM on a project regarding the introduction of ethanol into the fuel mix. (Sahu, Tr. 1750).

Response to Finding No. 177:

Complaint Counsel has no specific response

178. In that capacity, Dr. Sahu advised the ASTM on the interaction of the fuel mix with plastics and polymers in fuel systems. (Sahu, Tr. 1750).

Response to Finding No. 178:

Complaint Counsel has no specific response

179. Due to this involvement and his work as an independent consultant, Dr. Sahu is very familiar with a wide range of ASTM standards and protocols. (Sahu, Tr. 1750–51).

Response to Finding No. 179:

Complaint Counsel has no specific response

180. Dr. Sahu authored and submitted an expert report in this matter on June 18, 2014. (Sahu, Tr. 1737; RX 855 (Sahu, Rep. at 1)).

Response to Finding No. 180:

Complaint Counsel has no specific response

181. Dr. Sahu was deposed in this matter on June 30, 2014. (RX 842 (Sahu, Dep. at 1)).

Response to Finding No. 181:

Complaint Counsel has no specific response

2. Dr. Morton Barlaz

182. ECM called Dr. Morton Barlaz, as an expert witness in biodegradation in MSW landfills. (Barlaz, Tr. 2166; RX 853 (Barlaz, Rep. at 27)).

Response to Finding No. 182:

Complaint Counsel has no specific response

183. Dr. Barlaz authored an expert report in this matter on June 15, 2014. (Barlaz, Tr. 2170); RX 853 (Barlaz, Rep. at 3)).

Response to Finding No. 183:

Complaint Counsel has no specific response

184. Dr. Barlaz was deposed in this matter on July 14, 2014. (RX 864 (Barlaz, Dep. at 1)).

Response to Finding No. 184:

Complaint Counsel has no specific response

185. Dr. Barlaz is professor and head of the Department of Civil Construction and Environmental Engineering at North Carolina State University. (Barlaz, Tr. 2167).

Response to Finding No. 185:

Complaint Counsel has no specific response

186. He runs a research program for the University in the area of solid waste management, and more specifically, biodegradation, decomposition, chemical and biological reactions in landfills, and the application of life cycle analysis to solid waste management systems. (Barlaz, Tr. 2168).

Response to Finding No. 186:

Complaint Counsel has no specific response

187. Dr. Barlaz has an undergraduate degree in chemical engineering from the University of Michigan and a master's and Ph.D. in civil and environmental engineering from the University of Wisconsin. (Barlaz, Tr. 2168).

Response to Finding No. 187:

Complaint Counsel has no specific response

188. Dr. Barlaz's Ph.D. focused on the microbiology of solid waste decomposition in landfills. (Barlaz, Tr. 2168).

Response to Finding No. 188:

Complaint Counsel has no specific response

189. Dr. Barlaz has published approximately 115 peer-reviewed publications and one-half to two-thirds of those are associated with some aspect of biodegradation. (Barlaz, Tr. 2169–70).

Response to Finding No. 189:

Complaint Counsel has no specific response

190. In his research program at North Carolina State University, Dr. Barlaz has conducted numerous tests on the biodegradation of various components of municipal solid waste. (Barlaz, Tr. 2071).

Response to Finding No. 190:

Complaint Counsel has no specific response

191. Dr. Barlaz has performed anaerobic biodegradability tests at reactor scale, vessels from one-half to two and a half gallons, measuring methane generation from municipal solid waste or specific components of municipal solid waste. (Barlaz, Tr. 2171).

Response to Finding No. 191:

Complaint Counsel has no specific response

192. Dr. Barlaz has also performed biochemical methane potential tests, which are tests of anaerobic biodegradability. (Barlaz, Tr. 2171–72).

Response to Finding No. 192:

Complaint Counsel has no specific response

193. Dr. Barlaz has performed qualitative testing of anaerobic biodegradability in fifty-five (55) gallon drums. (Barlaz, Tr. 2172).

Response to Finding No. 193:

Complaint Counsel has no specific response

194. Dr. Barlaz is not only familiar with the ASTM and their protocols, but has drafted a protocol for radiolabel testing of biodegradability that was ultimately adopted by the ASTM. (Barlaz, Tr. 2172).

Response to Finding No. 194:

Complaint Counsel has no specific response

195. Dr. Barlaz recently completed a project funded by the Plastics Environmental Council to evaluate the effect of different inocula on biodegradation rates for the purpose of developing a protocol for biodegradability testing that is more flexible than the ASTM 5511 protocol. (Barlaz, Tr. 2172–73).

Response to Finding No. 195:

Complaint Counsel has no specific response

196. Complaint Counsel’s expert, Dr. Tolaymat, recognizes Dr. Barlaz as an authority in the field of biodegradability of municipal solid waste and landfill gas. (Tolaymat, Tr. 156, 184, 233).

Response to Finding No. 196:

Complaint Counsel has no specific response

197. Dr. Tolaymat has consulted Dr. Barlaz on a number of questions concerning landfill biodegradation. (Tolaymat, Tr. 233).

Response to Finding No. 197:

Complaint Counsel has no specific response

198. When asked if he has ever asked Dr. Barlaz to comment on his work, Dr. Tolaymat responded “of course.” (Tolaymat, Tr. 234).

Response to Finding No. 198:

Complaint Counsel has no specific response

199. Dr. Barlaz has reviewed Dr. Tolaymat’s work product and Dr. Tolaymat has accepted a number of his recommendations for his work. (Tolaymat, Tr. 234).

Response to Finding No. 199:

Complaint Counsel has no specific response

200. Dr. Tolaymat co-authored an article that defined “bioreactor landfill” the same way as Dr. Barlaz does. (Tolaymat, Tr. 337–38; RX 899; RX 900; RX 901).

Response to Finding No. 200:

Complaint Counsel has no specific response

3. Dr. Ryan Burnette

201. ECM called Dr. Ryan Nelson Burnette as an expert in microbiology, biochemistry and anaerobic microorganisms. (Burnette, Tr. 2364–65; RX 854 (Burnette, Rep.)).

Response to Finding No. 201:

Complaint Counsel has no specific response

202. Dr. Burnette earned his undergraduate degree in biochemistry and two minors in chemistry and environmental sciences from Virginia Polytechnic Institute and State University. (Burnette, Tr. 2360).

Response to Finding No. 202:

Complaint Counsel has no specific response

203. Dr. Burnette’s undergraduate coursework included organic chemistry, general biochemistry, microbiology, molecular biology, genetics, enzymology, and enzyme kinetics. (Burnette, Tr. 2361).

Response to Finding No. 203:

Complaint Counsel has no specific response

204. Dr. Burnette also earned a Ph.D. in biochemistry and molecular biology from Virginia Polytechnic Institute and State University. (Burnette, Tr. 2361).

Response to Finding No. 204:

Complaint Counsel has no specific response

205. Dr. Burnette’s doctoral dissertation focused on signal transduction via enzymatic pathways with response to environmental stimulus, how organisms respond to their environment, the signaling cascades, the small molecules, the enzymes involved in that signal transduction pathway, applied across a variety of organisms. (Burnette, Tr. 2361).

Response to Finding No. 205:

Complaint Counsel has no specific response

206. Dr. Burnette studied within the Department of Biochemistry which studies anaerobic microbiology and general biochemistry. (Burnette, Tr. 2363).

Response to Finding No. 206:

Complaint Counsel has no specific response

207. Dr. Burnette was also a National Institute of Health Fellow at Vanderbilt University School of Medicine where he studied signal transduction and enzyme pathways. (Burnette, Tr. 2364).

Response to Finding No. 207:

Complaint Counsel has no specific response

208. Dr. Burnette has taught biochemistry, molecular biology, microbiology and genetics at the undergraduate, masters and doctoral levels, as well as to medical students. (Burnette, Tr. 2364–65).

Response to Finding No. 208:

Complaint Counsel has no specific response

209. Dr. Burnette has worked with numerous pre-eminent microbiologists in the field of anaerobic microbiology. (Burnette, Tr. 2365).

Response to Finding No. 209:

Complaint Counsel has no specific response

210. Much of Dr. Burnette's own research involves anaerobic microorganisms. (Burnette, Tr. 2365–66).

Response to Finding No. 210:

Complaint Counsel has no specific response

211. Dr. Burnette worked for Hatcher-Sayre, Inc., an environmental consulting firm, as an environmental scientist testing soil samples, landfills, groundwater, and water. (Burnette, Tr. 2366).

Response to Finding No. 211:

Complaint Counsel has no specific response

212. Dr. Burnette is currently the Vice President of the Biological Safety Division at WIRB-Copernicus Group (WCG), a clinical services organization that provides support to a variety of biopharmaceutical and academic research programs. (Burnette, Tr. 2367).

Response to Finding No. 212:

Complaint Counsel has no specific response

213. Dr. Burnette and the WCG assist customers with the design of laboratories, containment, disinfection, decontamination, and infection prevention. (Burnette, Tr. 2367–68).

Response to Finding No. 213:

Complaint Counsel has no specific response

214. WCG's clients include major biopharmaceutical firms, academic research institutions, and government entities such as the CDC. (Burnette, Tr. 2368).

Response to Finding No. 214:

Complaint Counsel has no specific response

215. Dr. Burnette authored and submitted an expert report in this matter. (Burnette, Tr. 2370; RX 854 (Burnette, Rep.)).

Response to Finding No. 215:

Complaint Counsel has no specific response

216. Dr. Burnette was deposed in this matter on July 2, 2014. (CCX 1075 (Burnette, Dep. at 1)).

Response to Finding No. 216:

Complaint Counsel has no specific response

4. Dr. David Stewart

217. ECM called Dr. David Wayne Stewart, as a survey expert, to present the method and findings of his own study and opine on the validity of Complaint Counsel's surveys and conclusions. (Stewart, Tr. 2491).

Response to Finding No. 217:

Complaint Counsel has no specific response

218. Dr. Stewart is currently the President's Professor of Marketing and Business Law at Loyola Marymount University. (Stewart, Tr. 2492).

Response to Finding No. 218:

Complaint Counsel has no specific response

219. Dr. Stewart received an undergraduate degree in psychology from the University of Louisiana at Monroe, then Northeast Louisiana University. (Stewart, Tr. 2494).

Response to Finding No. 219:

Complaint Counsel has no specific response

220. Dr. Stewart also earned a master's degree in general psychology from Baylor University and a Ph.D. in personality and social psychology from Baylor University. (Stewart, Tr. 2495).

Response to Finding No. 220:

Complaint Counsel has no specific response

221. Dr. Stewart currently teaches advertising and promotion management, marketing strategy, and the introductory MBA marketing course at Loyola Marymount. (Stewart, Tr. 2496).

Response to Finding No. 221:

Complaint Counsel has no specific response

222. Prior to holding his current position, from July 2007 through July 2011, Dr. Stewart was Dean of the School of Business at the University of California at Riverside. (Stewart, Tr. 2496).

Response to Finding No. 222:

Complaint Counsel has no specific response

223. Dr. Stewart has also served as the Robert E. Brooker Professor of Marketing and Chairman of the Department of Marketing in the Marshall School of Business at the University of Southern California. (Burnette, Tr. 2497).

Response to Finding No. 223:

Complaint Counsel has no specific response

224. Prior to these positions, Dr. Stewart served as the Senior Associate Dean of the Owen Graduate School of Management at Vanderbilt, and was a member of the faculty in the psychology department and business school at Jacksonville State University in Jacksonville, Alabama. (Stewart, Tr. 2498).

Response to Finding No. 224:

Complaint Counsel has no specific response

225. Dr. Stewart has taught extensively in the field of conduct and methodology of surveys, teaching marketing research at the undergraduate, graduate, and doctoral levels. (Stewart, Tr. 2498).

Response to Finding No. 225:

Complaint Counsel has no specific response

226. He has also taught courses on research methodology, psychometrics, and experimental design. (Stewart, Tr. 2499).

Response to Finding No. 226:

Complaint Counsel has no specific response

227. Prior to his work in education, Dr. Stewart was a research manager for Needham, Harper & Steers Advertising in Chicago (now DDB). (Stewart, Tr. 2499).

Response to Finding No. 227:

Complaint Counsel has no specific response

228. In that capacity, Dr. Stewart provided internal consultation services on research design, conducted an annual omnibus lifestyle survey of consumers in the United States, and tested creative content prior to its presentation to clients. (Stewart, Tr. 2499–2500).

Response to Finding No. 228:

Complaint Counsel has no specific response

229. Dr. Stewart has served as the Editor of both the Journal of Marketing and the Journal of the Academy of Marketing Science. (Stewart, Tr. 2500).

Response to Finding No. 229:

Complaint Counsel has no specific response

230. He is currently serving as the Editor of the Journal of Public Policy and Marketing. (Stewart, Tr. 2500).

Response to Finding No. 230:

Complaint Counsel has no specific response

231. Approximately half of the papers submitted to those three journals use survey methodology as a basis for empirical presentation. (Stewart, Tr. 2500).

Response to Finding No. 231:

Complaint Counsel has no specific response

232. As Editor, Dr. Stewart has reviewed those papers and the survey methodology used in their preparation. (Stewart, Tr. 2500–01).

Response to Finding No. 232:

Complaint Counsel has no specific response

233. Dr. Stewart has published in excess of 200 peer reviewed journals, proceedings volumes, and book chapters, over half of which contained survey research. (Stewart, Tr. 2501).

Response to Finding No. 233:

Complaint Counsel has no specific response

234. Dr. Stewart has been awarded numerous awards, including the American Academy of Advertising's Outstanding Contribution to Advertising Research Award, the Academy of Marketing Science's Cutco/Vector Distinguished Marketing Educator Award, and the Society for Marketing Advances's Elsevier Distinguished Marketing Contribution Award. (Stewart, Tr. 2501).

Response to Finding No. 234:

Complaint Counsel has no specific response

235. Dr. Stewart is a member of the following academic and trade associations:

- The American Marketing Association
- The American Statistical Association
- INFORMS (management science professional organization)
- The Association for Consumer Research
- The Society for Consumer Psychology
- The Classification Society
- The Society for Personality and Social Psychology
- The Academy of Management

(Stewart, Tr. 2501–02).

Response to Finding No. 235:

Complaint Counsel has no specific response

236. Dr. Stewart is a past president of the Society for Consumer Psychology. (Stewart, Tr. 2502).

Response to Finding No. 236:

Complaint Counsel has no specific response

237. Dr. Stewart is a past president of the Academic Council for the American Marketing Association. (Stewart, Tr. 2502)

Response to Finding No. 237:

Complaint Counsel has no specific response

238. He has also served on the American Marketing Association’s board of directors and as its vice president of finance. (Stewart, Tr. 2502–03).

Response to Finding No. 238:

Complaint Counsel has no specific response

239. Dr. Stewart has chaired the research committee of the American Academy of Advertising. (Stewart, Tr. 2503).

Response to Finding No. 239:

Complaint Counsel has no specific response

240. Dr. Stewart has also served as representative to the council of the American Psychological Association on behalf of the Society for Consumer Research. (Stewart, Tr. 2503).

Response to Finding No. 240:

Complaint Counsel has no specific response

241. In the 1990's, Dr. Stewart served two, three year terms as a member of the joint professional advisory committee to the United States Census, and in that role advised the Census Bureau in the design of its various data collection activities, including the census. (Stewart, Tr. 2503–04).

Response to Finding No. 241:

Complaint Counsel has no specific response

242. In 2009, Dr. Stewart served as part of a panel of academics that evaluated the marketing plan for the 2010 decennial census, and submitted their report to Congress. (Stewart, Tr. 2504).

Response to Finding No. 242:

Complaint Counsel has no specific response

243. He is a past appointee of the Secretary of Commerce to the Southern California Direct Export Council which facilitates the export of American goods and services to international markets. (Stewart, Tr. 2504).

Response to Finding No. 243:

Complaint Counsel has no specific response

244. The FTC Complaint Counsel emailed Dr. Stewart and expressed interest in him serving as Complaint Counsel's expert witness in this matter; however, he had already been retained by ECM. (Stewart, Tr. 2504–05).

Response to Finding No. 244:

Complaint Counsel has no specific response

245. Dr. Stewart has served as an expert witness for the FTC multiple times. (Stewart, Tr. 2505).

Response to Finding No. 245:

Complaint Counsel has no specific response

246. In the late 1980's, Dr. Stewart designed and implemented a survey for the FTC in connection with a deceptive advertising case against Kraft. (Stewart, Tr. 2505).

Response to Finding No. 246:

Complaint Counsel has no specific response

247. In the Kraft decision, Dr. Stewart's survey was credited by the ALJ and cited by the full commission as supportive of its decision. (Stewart, Tr. 2506).

Response to Finding No. 247:

Complaint Counsel has no specific response

248. Dr. Stewart was retained as an expert by the FTC in a matter involving Novartis. (Stewart, Tr. 2507).

Response to Finding No. 248:

Complaint Counsel has no specific response

249. Dr. Stewart was also an FTC expert in the POM Wonderful matter. (Stewart, Tr. 2507).

Response to Finding No. 249:

Complaint Counsel has no specific response

250. Dr. Stewart was retained as an expert by the FTC in matters against QVC, Neurologic Labs, and John Beck. (Stewart, Tr. 2507–08).

Response to Finding No. 250:

Complaint Counsel has no specific response

251. Dr. Stewart has also been retained by various Respondents in cases brought by the FTC, including Pantron, Schering, and Guaranty Life. (Stewart, Tr. 2507–08).

Response to Finding No. 251:

Complaint Counsel has no specific response

252. In most of the cases Dr. Stewart opined on surveys; in approximately half of those cases Dr. Stewart designed a survey, and in many of those cases Dr. Stewart gave rebuttal testimony concerning the opposing party's surveys. (Stewart, Tr. 2508:18-2509:3).

Response to Finding No. 252:

Complaint Counsel has no specific response

253. Dr. Stewart is unaware of a single instance in which his testimony or survey was not credited by either the ALJ or the Commission. (Stewart, Tr. 2509).

Response to Finding No. 253:

Complaint Counsel has no specific response

254. Dr. Stewart has served as a survey expert in federal court "a couple of dozen times" and in none of those cases has his survey been deemed to be unreliable or not credited by the court. (Stewart, Tr. 2520–21).

Response to Finding No. 254:

Complaint Counsel has no specific response

255. Dr. Stewart prepared and submitted an expert report in this matter on June 17, 2013. (Stewart, Tr. 2492; RX 856 (Stewart, Rep. at 1)).

Response to Finding No. 255:

Complaint Counsel has no specific response

C. Complaint Counsel's Fact Witnesses

256. Between February 18, 2014 and May 30, 2014, Complaint Counsel performed sixteen (16) fact depositions of testing laboratories and ECM customers all over the country, including Hawaii, California, New York, Ohio, and the District of Columbia. (CCX 799–CCX 805; CCX 809–812; CCX 815; CCX 817; CCX 821–CCX 823).

Response to Finding No. 256:

Complaint Counsel has no specific response

257. Complaint Counsel called no (0) fact witnesses at trial. (Tr. 259).

Response to Finding No. 257:

Complaint Counsel has no specific response

258. Respondent was unrepresented, or had counsel appear telephonically, at 14 fact witness depositions. (CCX 800; CCX 803; CCX 801; CCX 810; CCX 811; CCX 812; CCX 817; CCX 822; CCX 802; CCX 804; CCX 808; CCX 809; CCX 815; CCX 821).

Response to Finding No. 258:

Complaint Counsel has no specific response

D. Complaint Counsel's Expert Witnesses

1. Thabet Tolaymat

259. Complaint Counsel called Dr. Thabet Tolaymat as their landfill expert. (Tolaymat, Tr. 112–358).

Response to Finding No. 259:

Complaint Counsel has no specific response

260. Dr. Tolaymat authored an expert report dated June 4, 2014. (CCX 893 (Tolaymat, Rep. at 1)).

Response to Finding No. 260:

Complaint Counsel has no specific response

261. In his report, Dr. Tolaymat opined on the scientific reliability and the applicability of ECM's biodegradability testing. (CCX 893 (Tolaymat, Rep.)).

Response to Finding No. 261:

Complaint Counsel has no specific response

262. In his report, Dr. Tolaymat criticized tests relied upon by ECM for failing to simulate actual conditions in an MSW landfill, and discounts the testing results in their entirety on that basis. (CCX 893 (Tolaymat, Rep. 1)).

Response to Finding No. 262:

Complaint Counsel has no specific response

263. Dr. Tolaymat drew his conclusions without any knowledge of the bacterial communities present in MSW landfills or the testing environment. (Tolaymat, Tr. 265–267).

Response to Finding No. 263:

This finding mischaracterizes Dr. Tolaymat’s testimony and the record in this case. In the portion of Dr. Tolaymat’s examination cited by Respondent, Respondent merely asked Dr. Tolaymat if he could name any bacteria or fungi found in landfills or present in the D5511 test, not whether he had any knowledge of such communities. Furthermore, Dr. Tolaymat testified in his expert report (in evidence at CCX-893) about the role of bacterial communities in landfills and testing conditions. *See* CCX-893, ¶¶ 51, 54, 79.

264. Dr. Tolaymat was deposed on June 24, 2014. (CCX 851 (Tolaymat, Dep. at 1)).

Response to Finding No. 264:

Complaint Counsel has no specific response

2. Stephen McCarthy

265. Complaint Counsel called Dr. Stephen McCarthy as their primary expert witness in the areas of general biodegradation, biodegradability of plastics and biodegradability testing methodologies. (McCarthy, Tr. 359-480).

Response to Finding No. 265:

Complaint Counsel has no specific response

266. Dr. McCarthy authored an expert report on June 4, 2014. (CCX 891 (McCarthy, Rep. at 1)).

Response to Finding No. 266:

Complaint Counsel has no specific response

267. In his report, Dr. McCarthy opined that all thirty-three of ECM’s positive biodegradation tests were flawed, that the flaws invalidate any findings of biodegradation, and to the extent that many of the tests indicate the occurrence of biodegradation, that data is the result of a so-called “priming effect.” (CCX 891 (McCarthy, Rep. at 7–8)).

Response to Finding No. 267:

Complaint Counsel has no specific response

268. Dr. McCarthy stands to profit personally from FTC rejection of the biodegradability of ECM plastics and the entire biodegradable plastic additive industry. (McCarthy, Tr. 523–524).

Response to Finding No. 268:

This finding mischaracterizes Dr. McCarthy’s testimony. In the portion of Dr. McCarthy’s testimony cited by Respondent, Respondent merely asked Dr. McCarthy about his connection to Metabolix, not whether he would profit from the FTC’s rejection of ECM plastics and the entire biodegradable plastic additive industry. Moreover, Dr. McCarthy specifically testified at trial that his connection with Metabolix did not affect his opinions in the case. (McCarthy, Tr. 688).

269. Complaint Counsel wrote the definition of the term “biodegradable” contained in footnote 1 of Dr. McCarthy’s expert report. (RX 841 (McCarthy, Dep. at 20)).

Response to Finding No. 269:

Complaint Counsel has no specific response

270. That definition reads:

[B]iodegradable means that the entire treated plastic will completely break down and return to nature (*i.e.* decompose into elements found in nature) within one year after customary disposal (*i.e.* incinerator, landfill, or recycling).

(CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 270:

Complaint Counsel has no specific response

271. Dr. McCarthy tailored his definition of “biodegradable” to comport with Complaint Counsel’s definition despite Dr. McCarthy’s use of conflicting definitions in prior research and publication. (McCarthy, Tr. 485–88, 494).

Response to Finding No. 271:

Complaint Counsel has no specific response

272. Dr. McCarthy wrote the following sentence contained in footnote 1 of his expert report: “I use this definition and the scientific definition of biodegradable

interchangeably in this Expert Report, because there is no substantive difference between the two that affects my analysis or my opinions.” (McCarthy, Tr. 487; CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 272:

Complaint Counsel has no specific response

273. Dr. McCarthy was unable to identify a single instance in the peer-reviewed literature in which the definition of “biodegradable” contained in his Expert Report at footnote 1 is recited. (McCarthy, Tr. 493–94).

Response to Finding No. 273:

Complaint Counsel has no specific response

274. During cross-examination concerning his reliance on the term “biodegradable” contained in footnote 1 of his expert report, Dr. McCarthy stated that he “would like to change that.” (McCarthy, Tr. 496).

Response to Finding No. 274:

Complaint Counsel has no specific response

3. Shane Frederick

275. Complaint Counsel called Dr. Shane Frederick as their survey expert. (Frederick, Tr. 1025–1181).

Response to Finding No. 275:

Complaint Counsel has no specific response

276. Dr. Frederick produced an expert report on June 4, 2014. (CCX 890 (Frederick, Rep. at 1)).

Response to Finding No. 276:

Complaint Counsel has no specific response

277. In this report, Dr. Frederick opined that:
- i. Roughly half of all consumers believe that products with an unqualified “biodegradable” claim will biodegrade in one year or less.

- ii. A substantial minority (20-30%) of consumers believe that a plastic product bearing an unqualified “biodegradable” claim will biodegrade within a year.
- iii. If a plastic package bears the claim that it biodegrades in “some period greater than a year,” 29% of consumers assume it will biodegrade in two years or less, and 54% assume it will biodegrade in five years or less.
- iv. Consumers infer similar periods of biodegradation whether the qualified claim states “in some period greater than a year” or “nine months to five years.”

(CCX 890 (Frederick, Rep. at 1)).

Dr. Frederick based those conclusions in part on studies he regards as flawed and invalid, referred to as the APCO study and the Synovate study. (Stewart, Tr. 2618; Frederick, Tr. 1042–43, 1045, 1047; CCX 890 (Frederick, Rep. at 7–16, 20)).

Response to Finding No. 277:

This finding mischaracterizes Dr. Frederick’s testimony and the record in this case. In the portions of Dr. Frederick’s testimony cited by Respondent, Respondent asked Dr. Frederick if he could determine whether the APCO study was valid, “standing alone.” However, Dr. Frederick repeatedly testified as to the convergent validity of the APCO and Synovate studies. *See, e.g.*, (Frederick, Tr. 1155, 1173). Moreover, Dr. Frederick also expressly testified about the convergent validity of the APCO and Synovate studies in his expert report in evidence. CCX-890, ¶¶ 19, 24.

- 278. Dr. Frederick further based his conclusions on his own Google survey. (Stewart, Tr. 2614–18; Frederick, Tr. 1060).

Response to Finding No. 278:

Complaint Counsel has no specific response

- 279. Moreover, Dr. Frederick conducted his Google survey with the intention of correcting the flaws he admits pervade the APCO study, while maintaining the flawed conclusion in the APCO study. (Stewart, Tr. 2616, 2618–19).

Response to Finding No. 279:

The Court should disregard this finding because it merely offers an opinion of Respondent’s expert and does not state any fact.

280. Dr. Frederick was deposed in this matter on June 23, 2014. (RX 858 (Frederick, Dep. at 1)).

Response to Finding No. 280:

Complaint Counsel has no specific response

4. Frederick Michel

281. Dr. Frederick C. Michel, Jr. was called to rebut the testimony of two ECM expert witnesses, Dr. Sahu and Dr. Burnette. (Michel, Tr. 2839).

Response to Finding No. 281:

Complaint Counsel has no specific response

282. Dr. Michel was deposed in this matter on July 31, 2014. (RX 970 (Michel, Dep. at 1)).

Response to Finding No. 282:

Complaint Counsel has no specific response

283. Dr. Michel prepared a rebuttal report purportedly based on Dr. Burnette's and Dr. Sahu's expert reports. (Michel, Tr. 2839; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 283:

Complaint Counsel has no specific response

284. Dr. Michel also provided his Curriculum Vitae. (Michel, Tr. 2840; CCX 896).

Response to Finding No. 284:

Complaint Counsel has no specific response

285. Dr. Michel serves as editor of the Compost Science & Utilization Journal, and attends U.S. Composting Council meetings. (Michel, Tr. 2834, 2837).

Response to Finding No. 285:

Complaint Counsel has no specific response

286. Dr. Michel is the head of the compost research group for Ohio Agricultural Research and Development Center-Food, Agricultural, and Biological Engineering ("OARDC-FABE"). (Michel, Tr. 2918).

Response to Finding No. 286:

Complaint Counsel has no specific response

287. Dr. Michel was the coeditor for proceedings at the 2002 Symposium on Composting and Compost Utilization. (Michel, Tr. 2918).

Response to Finding No. 287:

Complaint Counsel has no specific response

288. Dr. Michel was also the section editor for Test Methods for the Examination of Composting and Compost (TMECC). (Michel, Tr. 2918–19).

Response to Finding No. 288:

Complaint Counsel has no specific response

289. Dr. Michel is a paid consultant for AllTreat Organic Composting. (Michel, Tr. 2919).

Response to Finding No. 289:

Complaint Counsel has no specific response

290. Dr. Michel is a consultant for DuPont, a member of the Biodegradable Products Institute (BPI). (Michel, Tr. 2919–20; RX 169).

Response to Finding No. 290:

Complaint Counsel has no specific response

291. DuPont also provided Dr. Michel with grant money. (Michel, Tr. 2920).

Response to Finding No. 291:

Complaint Counsel has no specific response

292. Dr. Michel is a paid consultant for Indian Summer Composting. (Michel, Tr. 2920).

Response to Finding No. 292:

Complaint Counsel has no specific response

293. Dr. Michel has consulted for the U.S. Composting Council for “six or seven years.” (Michel, Tr. 2920–21).

Response to Finding No. 293:

Complaint Counsel has no specific response

294. Dr. Michel also consulted for Amylex and International Paper, companies that sell compostable products, and receives grant money for Ohio State University in return. (Michel, Tr. 2921–22).

Response to Finding No. 294:

Complaint Counsel has no specific response

295. The composting industry generally, and compostable plastics specifically, directly compete with ECM and other companies within the biodegradable plastics industry. (Sullivan, Tr. 696–697; Sinclair, Tr. 775–777).

Response to Finding No. 295:

Complaint Counsel has no specific response

IV. ECM'S CUSTOMERS

A. ECM's Customers Are All Sophisticated Plastic Manufacturers That Do Not Base Their Purchasing Decisions Of The ECM Additive On Any Rate Claim—Whether Implied Or Explicit—Made By ECM

296. ECM's promotional and marketing information is exchanged through detailed business transactions with sophisticated corporations, to wit, plastics manufacturers. (Sinclair, Tr. 761–67).

Response to Finding No. 296:

Complaint Counsel has no specific response

297. ECM does not sell the Plastic containing the ECM additive to end use consumers, only to plastics manufacturers. (Sinclair, Tr. 758–59, 764–67; Sullivan, Tr. 703–04, 707).

Response to Finding No. 297:

Complaint Counsel has no specific response

298. The Plastic containing the ECM additive is not usable by a consumer, only by plastics manufacturers who manufacture plastics with the Plastic containing the ECM additive included as an additive. (Sinclair, Tr. 759).

Response to Finding No. 298:

Complaint Counsel has no specific response

299. To be effectual, the additive must be manufactured in strict accordance with ECM manufacturing specifications. (Sinclair, Tr. 787–790).

Response to Finding No. 299:

Complaint Counsel has no specific response

300. ECM’s advertising budget is less than \$12,000 per year, which is mainly devoted to website maintenance. (Sullivan, Tr. 700).

Response to Finding No. 300:

Complaint Counsel has no specific response

301. ECM does not have a nationwide advertising plan. (Sullivan, Tr. 700–01).

Response to Finding No. 301:

Complaint Counsel has no specific response

302. ECM does not purchase ads in trade magazines. (Sullivan, Tr. 701).

Response to Finding No. 302:

Complaint Counsel has no specific response

303. ECM does not purchase any consumer-type advertising. (Sullivan, Tr. 701).

Response to Finding No. 303:

Complaint Counsel has no specific response

304. ECM markets its technology through sales meetings, published material (e.g., brochures), and networking functions. (Sullivan, Tr. 735).

Response to Finding No. 304:

Complaint Counsel has no specific response

305. ECM may acquire customer leads from a personal contact by Tom Nealis at a trade show, but that is rare. (Sullivan, Tr. 701).

Response to Finding No. 305:

Complaint Counsel has no specific response

306. A common way that ECM acquires customer leads is through website inquiries by plastics manufacturers or distributors. (Sullivan, Tr. 701–02).

Response to Finding No. 306:

Complaint Counsel has no specific response

307. ECM’s sales are complex business transactions that take months or years to complete, in contrast with retail sales to end-consumers. (Sullivan, Tr. 703–04).

Response to Finding No. 307:

Complaint Counsel has no specific response

308. In the first instance, ECM offered its “9 month to 5 year” degradable claim not as a performance claim, but as a means to distinguish its technology from competing technologies claiming to satisfy short-term compostability standards. (Sinclair, Tr. 768; Sullivan, Tr. 711).

Response to Finding No. 308:

Complaint Counsel has no specific response

309. ECM’s customers were aware of the FTC’s requirements in the Green Guides, and they tailored their advertising content according to those policies. (RX 35–RX 77; RX 871 (Blood, Dep. 193:10–21)).

Response to Finding No. 309:

Complaint Counsel has no specific response

310. ECM always explained the actual rate of biodegradation for each specific plastic to customers as being an approximation that was, of course, subject to numerous disposal conditions. (Sinclair, Tr. 769).

Response to Finding No. 310:

Complaint Counsel has no specific response

311. ECM explained to customers that it had seen products biodegrade in less than nine months in some conditions, however, conditions in an extremely dry or cold climate might result in biodegradation in far more than five years. (Sinclair, Tr. 769–70).

Response to Finding No. 311:

Complaint Counsel has no specific response

312. The time frame was always expressed as a general time frame based on anecdotal experience and on the testing that ECM had performed by third party laboratories. (Sinclair, Tr. 770).

Response to Finding No. 312:

Complaint Counsel has no specific response

313. The FTC revised its Green Guides to prohibit unqualified biodegradable claims without suitable qualifications in 2012. (RX 347).

Response to Finding No. 313:

Complaint Counsel has no specific response

314. ECM stopped using the nine months to five year time frame approximately three years ago after the revision of the Green Guides was released. (Sinclair, Tr. 769–70).

Response to Finding No. 314:

This finding is contrary to the evidentiary record. ECM continued making the nine-months-to-five-year and landfill claims on its website, in marketing materials it distributed to customers, and in emails to customers for another 14 months after the Green Guide revisions were released. CCX-25 at 104, 117, 203, 208; RX-138 at 9; CCX-259 (attaching flyer with 9 months to 5 years and landfill claims); CCX-281 (April 2013 email describing “time frame of nine months to five years” in a landfill); CCX-282 (October 2013 email describing biodegradation “in a period of 9 months to 5 years” in landfills); CCX-286 (May 2013 email stating, “we say nine months to five years for biodegradation to take place”); CCX-321 (July 2013 email explaining “time period of nine months to five years”); CCX-423 (October 2013 email describing 9 months to 5 years as the “typical” range); CCX-813 (Nealis Dep.) 244:15-241:1 (Nealis acknowledging that he continued to send customers marketing flyer with 9 months to 5 years claim). Moreover, Mr. Sinclair admitted during his deposition that ECM had only removed the claim at the end of 2013. CCX-819 at 53.

315. Mr. Sinclair felt that the literal interpretation of ECM's timeframe claims was more of an obstacle than a benefit, and ECM discontinued making such claims. (Sinclair, Tr. 770).

Response to Finding No. 315:

Complaint Counsel has no specific response

316. Once the most recent revision of the Green Guides required a product to fully biodegrade within one year to make an unqualified "biodegradable" claim, ECM determined that it had to qualify its claim to satisfy the FTC regulation. (Sinclair, Tr. 771)

Response to Finding No. 316:

Complaint Counsel has no specific response

317. From that point on, ECM has stated that its plastics infused with the ECM additive would biodegrade in some timeframe greater than one year. (Sinclair, Tr. 771).

Response to Finding No. 317:

This finding is contrary to the evidentiary record. ECM continued making the nine-months-to-five-year and landfill claims on its website, in marketing materials it distributed to customers, and in emails to customers for another 14 months after the Green Guide revisions were released. CCX-25 at 104, 117, 203, 208; RX-138 at 9; CCX-259 (attaching flyer with 9 months to 5 years and landfill claims); CCX-281 (April 2013 email describing "time frame of nine months to five years" in a landfill); CCX-282 (October 2013 email describing biodegradation "in a period of 9 months to 5 years" in landfills); CCX-286 (May 2013 email stating, "we say nine months to five years for biodegradation to take place"); CCX-321 (July 2013 email explaining "time period of nine months to five years"); CCX-423 (October 2013 email describing 9 months to 5 years as the "typical" range); CCX-813 (Nealis Dep.) 244:15-241:1 (Nealis acknowledging that he continued to send customers marketing flyer with 9 months to 5 years claim). Moreover, Mr. Sinclair admitted during his deposition that ECM had only removed the claim at the end of 2013. CCX-819 at 53. Additionally, ECM's disclaimer continued to claim biodegradation in "most landfills" and its marketing materials still touted that ECM plastic was "fully" biodegradable. CCX-15; CCX-17; CCX-25.

318. ECM has no intention of ever making the nine month to five year claim again. (Sinclair, Tr. 771).

Response to Finding No. 318:

Complaint Counsel has no specific response

319. Almost invariably, the end-customer is provided with a naked “biodegradable” claim, which is the only claim ECM has in its certificate of biodegradability. (RX 00; RX 02; RX 03; RX 14; RX 15; RX 16; RX 17; RX 22; RX 26; RX 28; RX 29; RX 30; RX 315; CCX-30 ; CCX-31; CCX 32; CCX 36; CCX 39; CCX 43; CCX 46; CCX 47; CCX 49; CCX 50; CCX 52; CCX 59; CCX 60; CCX 63’ CCX 64; CCX 65; CCX 66; CCX 79; CCX 97; CCX 98; CCX 99; CCX 100; CCX 101; CCX 103;CCX 104; CCX 107; CCX 109–CCX 133; CCX 135; CCX 136; CCX 138; CCX 139; CCX 140; CCX 142–CCX 151).

Response to Finding No. 319:

ECM was integrally involved in developing and approving a marketing claim for “biodegradable” grocery bags used by Hawaiian grocery store chain Down to Earth All Natural and Organic that contained express claims of complete biodegradation in a landfill in nine months to five years. CCX-44-45. *See also* CCX-803 (DTE, Dep. at 19) (indicating that from mid-2008 through early 2014, Down to Earth purchased “biodegradable” grocery bags from a distributor who bought bags from an ECM customer, Island Plastic Bags)).

320. In its Certificate of Biodegradability, which is given to every customer that confirms that it will make its plastic in accordance with ECM’s manufacturing specifications, the following definition is given by ECM to its customers of “biodegradation:”

A degradable plastic is defined (ASTM D883-12) as a plastic that is designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification. A Biodegradable Plastic is defined as a degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi, and algae.

(CCX 14; Sinclair, Tr. 784).

Response to Finding No. 320:

Complaint Counsel has no specific response

321. ECM customers are not concerned with the rate of biodegradability. (Sinclair, Tr. 770).

Response to Finding No. 321:

This finding is contrary to the evidentiary records. Robert Sinclair admitted many ECM customers inquired about how long it would take ECM Plastics to biodegrade. *See, e.g.*, CCX-423 at 9; CCX-282 at 2 (asking various questions about “degradable timing,” including whether “adding more [additive]” would accelerate the “degradable effect”); CCX-281 at 2 (requesting test results demonstrating the “progress of decomposition during a certain time span (a couple years)”); CCX-279 at 3 (expressing concern about “the ability to claim without exception the speeded up breakdown”); CCX-280 at 3 (“We do have some nagging concerns that we need to resolve. The first question is ‘how long does it take to degrade.’”); CCX-300 at 1 (“Does ECM test, or recommend testing, the end-users’ products to ensure that they biodegrade in less than 5 years?”); CCX-269 at 1 (“What determines 9 months vs 5 years as it is such a variance?”); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use “to meet your stated degradation timeframe of 9 months to 5 years”). Furthermore, ECM customers demonstrated the importance the biodegradability timeframe had to them by reiterating it to their prospective customers. *See, e.g.*, CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”); CCX-33 (Earthware Films; repeating “nine months to five years” in marketing literature); CCX-34 (Earthware Films; repeating “nine months to five years” in memorandum to its distributors); CCX-37 (BioPVC, repeating “nine months to five years” on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product “will break down in approximately 9 months to 5 years”) (emphasis in original); CCX-182 (BioMugs: “This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years.”); CCX-105 (Plascon Films; repeating “nine months to five years” in advertisement); CCX-38 at 1 (ECM customer’s marketing materials exclaiming: “We think you’ll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!”) (ellipses in original).

322. The ECM additive is sold in a highly competitive market. (Sinclair, Tr. 775).

Response to Finding No. 322:

Complaint Counsel has no specific response

323. ECM's competitors include other additive companies, replacement resin companies, and oxo-degradable companies. (Sinclair, Tr. 775–77).

Response to Finding No. 323:

Complaint Counsel has no specific response

324. ECM has direct competitors who produce similar additives, invented after ECM's, such as Biotech and Ecoplast. (Sinclair, Tr. 776–77).

Response to Finding No. 324:

Complaint Counsel has no specific response

325. There are competing technologies available, such as “bioplastics” which are biodegradable plastic polymers or resins derived from biological substances instead of petroleum. (Sahu, Tr. 1758; RX 748; RX 678).

Response to Finding No. 325:

Complaint Counsel has no specific response

326. Bioplastic can be either non-biodegradable, such as bio-based polyethylene, or they can be biodegradable, such as polyhydroxyaldehyde. (RX 748)

Response to Finding No. 326:

Complaint Counsel has no specific response

327. Many of the bioplastic technologies will produce an end-product that biodegrades more rapidly or readily than plastics made with the ECM additive in an industrial composting operation. (RX 725; RX 178).

Response to Finding No. 327:

Complaint Counsel has no specific response

328. However, bioplastic technologies come at a substantial cost, (Sullivan, Tr. 697; Sinclair, Tr. 768; RX 335), and bioplastics are ordinarily not suitable for strong plastics that are meant for applications that require endurance and lack of malleability. (Sahu, Tr. 1821–24).

Response to Finding No. 328:

Complaint Counsel has no specific response

329. ECM customers purchase the ECM additive in part because it provides them with a biodegradable product without many of the drawbacks that come with using ECM's competitors' technologies. (Sinclair, Tr. 774–75).

Response to Finding No. 329:

Complaint Counsel has no specific response

330. ECM offers a cost-effective means to achieve biodegradable plastics. (Sullivan, Tr. 697; RX 335).

Response to Finding No. 330:

Complaint Counsel has no specific response

331. ECM Customers are interested in a “biodegradable” product that can work with their manufacturing systems, because the plastic has to serve a function foremost. (Sullivan, Tr. 709; RX 111).

Response to Finding No. 331:

Complaint Counsel has no specific response

332. Replacement resin companies, such as Metabolix, provide a biodegradable or compostable plastics solution, but it requires a complete replacement of the resin. (Sinclair, Tr. 776).

Response to Finding No. 332:

Complaint Counsel has no specific response

333. Companies choosing to invest in most bioplastics must change their entire manufacturing process to accommodate the use of the new natural resins. (Sullivan, Tr. 696; RX 520).

Response to Finding No. 333:

Complaint Counsel has no specific response

334. ECM customers have complained to Mr. Sinclair that oxo-degradable or oxo-biodegradable products have disintegrated in the warehouse on a hot summer day. (Sinclair, Tr. 775).

Response to Finding No. 334:

Complaint Counsel has no specific response

335. Additional additives are needed to stabilize the Bioplastics during the manufacturing process for the intended use of the end product. (RX 520).

Response to Finding No. 335:

Complaint Counsel has no specific response

336. Complaint Counsel's expert Frederick Michel admits that the bio-based polymers are almost always significantly more expensive than ECM's additive. (Michel, Tr. 2977–78; RX 520).

Response to Finding No. 336:

Complaint Counsel has no specific response

337. Because the ECM additive can render a plastic biodegradable with load rates of just over 1% by weight, plastics manufacturers are not required to make substantial changes to their manufacturing processes to accommodate the additive, which, when properly manufactured, is included in the plastic in much the same way a colorant or plasticizer is diffused throughout plastic, thus ensuring uniform distribution in every part of the plastic. (Sullivan, Tr. 697; RX 326; RX 520).

Response to Finding No. 337:

Dr. McCarthy testified that the ECM Additive may not be uniformly diffused throughout the plastic. If the ECM Additive is immiscible with the plastic in which it is being blended, the Additive would sit on the surface of the plastic like a plastic coating. (McCarthy, Tr. 676.)

338. ECM's additive technology has a much smaller impact on manufacturers' cost basis than bioplastic alternatives. (Sullivan, Tr. 697:6-22; RX 520).

Response to Finding No. 338:

Complaint Counsel has no specific response

339. With ECM's technology, the biodegradable component is an option manufacturers can implement, thus helping the environment, where they would otherwise not have the resources or financial incentive to invest in different, more expensive competing technologies. (RX 520; CCX 809 (Sandry, Dep. at 14–15)).

Response to Finding No. 339:

There is no testimony in the record supporting the fact that ECM's technology helps the environment. Dr. Barlaz specifically testified that in order to know whether it is better to convert an otherwise inert plastic into a biodegradable plastic would require a full life cycle analysis:

I would just further caution -- and this is in my statement -- that we be careful.

If, for example, it took ten times more energy to manufacture the material [biodegradable plastic] represented by my X as it took to manufacture polyethylene, then when I looked at production plus use plus disposal, my polyethylene might be better.

I'm only looking at disposal in this picture. And for society, if we really want to do an environmental analysis, we need to look at production plus use plus disposal. My expertise is disposal, and my contribution here is to help people understand how to analyze in the context of disposal.

(Barlaz, Tr. 2289).

340. ECM's customers are primarily concerned with the balance between biodegradable effectiveness and product performance (i.e., tensile strength, shelf-life, etc.) after the ECM additive is included. (CCX 811 (Hong, Dep. at 44); RX 13; RX 33).

Response to Finding No. 340:

Complaint Counsel has no specific response

341. ECM tells its customers that adding the ECM additive to their plastics will render their products biodegradable without negatively affecting product performance. (Sinclair, Tr. 767).

Response to Finding No. 341:

Complaint Counsel has no specific response

342. ECM plastics do not lose physical properties as a result of the additive infusion like oxo-degradable or oxo-biodegradable plastics. (Sinclair, Tr. 775).

Response to Finding No. 342:

Complaint Counsel has no specific response

343. ECM explains that shelf-life and usable-life will not be negatively affected by infusion of the ECM additive. (Sinclair, Tr. 767; RX 13).

Response to Finding No. 343:

Complaint Counsel has no specific response

344. The fact that the addition of the ECM additive does not impact shelf-life and usable-life of the plastic products distinguishes ECM from many of its competitors. (Sinclair, Tr. 767; RX 13).

Response to Finding No. 344:

Complaint Counsel has no specific response

345. The ECM additive is a cost-effective biodegradability solution for plastic manufacturers that will not reduce shelf life, product durability, or recyclability. (Sinclair, Tr. 767–68; RX 33).

Response to Finding No. 345:

Complaint Counsel has no specific response

346. Bioplastics are often suitable only for certain limited uses in the market. (RX 335).

Response to Finding No. 346:

Complaint Counsel has no specific response

347. Oxo-degradable plastic additives have not been shown to biodegrade under realistic conditions, but they have been shown to fall apart on the shelf. (Sinclair, Tr. 776:12-23).

Response to Finding No. 347:

Complaint Counsel has no specific response

348. ECM plastics are recyclable to the extent the plastic would be recyclable without the addition of the ECM additive. (Sinclair, Tr. 767).

Response to Finding No. 348:

Complaint Counsel has no specific response

349. In most cases, ECM’s potential customer contacts ECM directly. (Sinclair, Tr. 761).

Response to Finding No. 349:

Complaint Counsel has no specific response

350. ECM employs a sales manager, Tom Nealis. (Sullivan, Tr. 698–700).

Response to Finding No. 350:

Complaint Counsel has no specific response

351. However, ECM employs no active sales force. (Sullivan, Tr. 699).

Response to Finding No. 351:

Complaint Counsel has no specific response

352. A potential customer will be put in contact with Tom Nealis, director of sales, and he will provide the potential customer with pricing, sales literature and any other initial information that customer requires. (Sinclair, Tr. 761).

Response to Finding No. 352:

Complaint Counsel has no specific response

353. Mr. Sinclair will often work with the marketing and sales people to educate them on the new product. (Sinclair, Tr. 763–64).

Response to Finding No. 353:

Complaint Counsel has no specific response

354. Mr. Nealis will often correspond with potential customers to answer any questions that they may have about the product and provide them with test reports. (CCX 813 (Nealis, Dep. at 49; RX 13)).

Response to Finding No. 354:

Complaint Counsel has no specific response

355. ECM customers ordinarily test ECM's product in manufacture, often perform biodegradability testing on plastics made with the ECM additive, and evaluate testing performed on ECM's product before deciding to incorporate the product into plastics that are sold to downstream purchasers and ultimately made available to consumers. (Sinclair, Tr. 761–63; Sullivan, Tr. 704–05).

Response to Finding No. 355:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

356. Most ECM customers put their marketing department to the task of developing claims. (Sinclair, Tr. 763).

Response to Finding No. 356:

Complaint Counsel has no specific response

357. No customer has ever asked Mr. Nealis to provide a narrower timeframe than some period greater than a year. (CCX 813 (Nealis, Dep. at 111)).

Response to Finding No. 357:

Complaint Counsel has no specific response

358. No customer has ever asked ECM what some period greater than a year means. (CCX 813 (Nealis, Dep. at 112)).

Response to Finding No. 358:

Complaint Counsel has no specific response

359. ECM customers are not concerned with the rate of biodegradation; rather, their concern is that plastics made with the ECM additive will biodegrade when discarded into the environment. (Sinclair, Tr. 774).

Response to Finding No. 359:

This finding is contrary to the evidentiary records. Robert Sinclair admitted many ECM customers inquired about how long it would take ECM Plastics to biodegrade. *See, e.g.,* CCX-423 at 9; CCX-282 at 2 (asking various questions about “degradable timing,” including whether “adding more [additive]” would accelerate the “degradable effect”); CCX-281 at 2 (requesting test results demonstrating the “progress of decomposition during a certain time span (a couple years)”); CCX-279 at 3 (expressing concern about “the ability to claim without exception the speeded up

breakdown”); CCX-280 at 3 (“We do have some nagging concerns that we need to resolve. The first question is ‘how long does it take to degrade.’”); CCX-300 at 1 (“Does ECM test, or recommend testing, the end-users’ products to ensure that they biodegrade in less than 5 years?”); CCX-269 at 1 (“What determines 9 months vs 5 years as it is such a variance?”); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use “to meet your stated degradation timeframe of 9 months to 5 years”). Furthermore, ECM customers demonstrated the importance the biodegradability timeframe had to them by reiterating it to their prospective customers. *See, e.g.*, CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”); CCX-33 (Earthware Films; repeating “nine months to five years” in marketing literature); CCX-34 (Earthware Films; repeating “nine months to five years” in memorandum to its distributors); CCX-37 (BioPVC, repeating “nine months to five years” on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product “will break down in approximately 9 months to 5 years”) (emphasis in original); CCX-182 (BioMugs: “This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years.”); CCX-105 (Plascon Films; repeating “nine months to five years” in advertisement); CCX-38 at 1 (ECM customer’s marketing materials exclaiming: “We think you’ll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!”) (ellipses in original).

360. ECM has no storefront or brick and mortar office. (Sinclair, Tr. 765–66).

Response to Finding No. 360:

Complaint Counsel has no specific response

361. Customers place orders directly with the ECM customer service team, and the product is shipped directly from the ECM manufacturing site in Carpentersville, Illinois. (Sinclair, Tr. 765).

Response to Finding No. 361:

Complaint Counsel has no specific response

362. Prior to processing an order, ECM double-checks that the company understands the proper loading rate is one percent (1%) by weight. (Sinclair, Tr. 765).

Response to Finding No. 362:

Complaint Counsel has no specific response

363. ECM provides its customers with precise and tailored manufacturing instructions to ensure that the product made with the additive is distributed throughout the plastic and that the additive is not scorched. (Sinclair, Tr. 762, 783, 787–90).

Response to Finding No. 363:

Complaint Counsel has no specific response

364. ECM sells only the MasterBatch Pellet and no other products. (Sinclair, Tr. 766).

Response to Finding No. 364:

Complaint Counsel has no specific response

365. Most sales of the ECM additive are completed over the phone and followed-up with a confirmation fax or e-mail. (Sinclair, Tr. 766; RX 23).

Response to Finding No. 365:

Complaint Counsel has no specific response

366. When Judge Chappell asked Mr. Sinclair “can the product be purchased over the internet?” Mr. Sinclair responded, “no.” (Sinclair, Tr. 766).

Response to Finding No. 366:

Complaint Counsel has no specific response

367. The ECM website merely provides a standard web inquiry form that is automatically emailed to the ECM sales team and Mr. Sinclair. (RX 139).

Response to Finding No. 367:

Complaint Counsel has no specific response

368. ECM customers are plastics manufacturers who sell to multiple other, second-layer manufacturers. (Sinclair, Tr. 707–08; RX 471).

Response to Finding No. 368:

Complaint Counsel has no specific response

369. ECM targets its marketing message to plastic product manufacturers. (Sinclair, Tr. 787).

Response to Finding No. 369:

ECM makes its claims to exploit consumers' environmental consciousness. CCX-19 at 2; CCX-20 at 3 ("Who's winning the war on plastics?"); RX-138; CCX-7 (sustainability brochure); CCX-21 (presentation).

370. ECM-infused plastics often pass through at least two levels in the supply chain before ever reaching a so-called "end-user." (Sinclair, Tr. 785–86; CCX 811 (Hong, Dep. at 10–11, 112)).

Response to Finding No. 370:

Complaint Counsel has no specific response

371. It can be very difficult to determine who the "end-use consumer" is. (Sinclair, Tr. 786).

Response to Finding No. 371:

Complaint Counsel has no specific response

372. ECM doesn't know and cannot control how its customers label or advertise their products. (Sinclair, Tr. 786–87).

Response to Finding No. 372:

ECM was integrally involved in developing and approving a marketing claim for "biodegradable" grocery bags used by Hawaiian grocery store chain Down to Earth All Natural and Organic that contained express claims of complete biodegradation in a landfill in nine months to five years. CCX-44-45. *See also* CCX-803 (DTE, Dep. at 19) (indicating that from mid-2008 through early 2014, Down to Earth purchased "biodegradable" grocery bags from a distributor who bought bags from an ECM customer, Island Plastic Bags)).

373. Rarely, an ECM customer will ask Mr. Sinclair what he thinks about their anticipated labeling language, and Mr. Sinclair will provide his opinion or feedback. (Sinclair, Tr. 787; RX 90; RX 117).

Response to Finding No. 373:

Complaint Counsel has no specific response

374. Mr. Sinclair does not know of any ECM customer who believes that ECM plastics completely decompose into elements found in nature within one year of customary disposal. (Sinclair, Tr. 785).

Response to Finding No. 374:

Complaint Counsel has no specific response

375. ECM used to say that its additive would cause plastics to biodegrade in nine months to five years. (Sinclair, Tr. 768).

Response to Finding No. 375:

Complaint Counsel has no specific response

376. ECM stopped saying that the time frame for biodegradation of plastic containing the ECM additive is nine months to five year claim about three years ago. (Sinclair, Tr. 770, 975-76).

Response to Finding No. 376:

This finding is contrary to the evidentiary record. ECM continued making the nine-months-to-five-year and landfill claims on its website, in marketing materials it distributed to customers, and in emails to customers for another 14 months after the Green Guide revisions were released. CCX-25 at 104, 117, 203, 208; RX-138 at 9; CCX-259 (attaching flyer with 9 months to 5 years and landfill claims); CCX-281 (April 2013 email describing “time frame of nine months to five years” in a landfill); CCX-282 (October 2013 email describing biodegradation “in a period of 9 months to 5 years” in landfills); CCX-286 (May 2013 email stating, “we say nine months to five years for biodegradation to take place”); CCX-321 (July 2013 email explaining “time period of nine months to five years”); CCX-423 (October 2013 email describing 9 months to 5 years as the “typical” range); CCX-813 (Nealis Dep.) 244:15-241:1 (Nealis acknowledging that he continued to send customers marketing flyer with 9 months to 5 years claim). Moreover, Mr. Sinclair admitted during his deposition that ECM had only removed the claim at the end of 2013. CCX-819 at 53. Additionally, ECM’s disclaimer continued to claim biodegradation in “most landfills” and its marketing materials still touted that ECM plastic was “fully” biodegradable. CCX-15; CCX-17; CCX-25.

377. ECM updated its website to include the following explanation:

The basic concept is that biodegradation is a natural process that occurs around the world but at various speeds due to various conditions. Plastics with our additives behave like sticks, branches

or trunks of trees. Due to this fact, we do not guarantee any particular time because the time depends on the same factors that the biodegradation of woods and most other organic materials on earth depend – ambient biota and other environmental conditions. Under specific composting conditions with additional accelerants sprayed on them, some customers have reported biodegradation in as little as a couple of months. Under the more usual, commercial composting conditions using high heat processes, a time frame of around some period greater than a year is a reasonable expectation.

(RX 681, at 61)

Response to Finding No. 377:

Complaint Counsel has no specific response

378. ECM’s website further explains: “It is not a ‘poof, it’s gone’ system but simply makes the plastic product biodegrade as if it were a stick or a branch off a tree rather than ‘sticking around’ for hundreds of years.” (RX 681, at 61).

Response to Finding No. 378:

Complaint Counsel has no specific response

379. ECM distributors have explained to downstream manufacturers that the time it takes for an ECM plastic to fully biodegrade will depend on various factors. (RX 08).

Response to Finding No. 379:

Complaint Counsel has no specific response

380. Following the revisions to the Green Guides, ECM dispatched a truthful and non-misleading email to all of its customers explaining the FTC’s requirements concerning biodegradable claims. (RX 35–RX 77).

Response to Finding No. 380:

Complaint Counsel has no specific response

381. This email to ECM’s customers stated:

If you have evidence that your products with our additives will fully biodegrade in one year or less in the environment where it will be customarily disposed you may still make an unqualified claim of “biodegradable” for those products. But for most of our customers’ plastic products with our additives whose customary

disposal is in a landfill, they will not be able to use that unqualified claim.

(RX 35–RX 77).

Response to Finding No. 381:

Complaint Counsel has no specific response

382. This email continued by discussing the benefits of ECM’s product: “Municipal Solid Waste that biodegrades **slowly but surely over periods from a few years to tens of years** provides the (sic) [landfill gases] that is captured, processed and sold to the public renewable energy or even new chemical source. This is the end-of-life scenario that has made plastic products **with our additives** so ever-increasingly popular.” (RX 35–RX 77).

Response to Finding No. 382:

Complaint Counsel has no specific response

383. ECM’s customers are sophisticated. (Sinclair, Tr. 904).

Response to Finding No. 383:

Typically, ECM’s customers did not have the resources or know-how to evaluate ECM’s biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM’s additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

384. Mr. Sinclair often provides potential customers with information and answers their questions as well. (RX 93; RX 110; RX 122).

Response to Finding No. 384:

Complaint Counsel has no specific response

385. ECM’s customers are primarily companies that manufacture plastic or companies that have plastic manufactured for them, and some distributors who sell the additive to plastic manufacturers. (Sullivan, Tr. 695–96, Sinclair, Tr. 758–59).

Response to Finding No. 385:

Complaint Counsel has no specific response

386. ECM sells an industrial product that is not sold to consumers. (Sullivan, Tr. 696; Sinclair, Tr. 759).

Response to Finding No. 386:

Complaint Counsel has no specific response

387. The ECM customer is primarily interested in the ECM Additive because it provides a cost-effective method to produce a biodegradable product in the modern, environmentally friendly market. (Sullivan, Tr. 696).

Response to Finding No. 387:

Complaint Counsel has no specific response

388. Most ECM customers are long term, repeat purchasers. (Sullivan, Tr. 705–06).

Response to Finding No. 388:

Complaint Counsel has no specific response

389. ECM does not sell to consumers. (Sullivan, Tr. 707).

Response to Finding No. 389:

Complaint Counsel has no specific response

390. ECM does not target end-use consumers in advertising, of which it has none, or marketing. (Sullivan, Tr. 707).

Response to Finding No. 390:

Complaint Counsel has no specific response

391. ECM customers are sophisticated industrial consumers with years of plastics manufacturing or distributing experience. (Sullivan, Tr. 709; Barber, Tr. 2029).

Response to Finding No. 391:

Complaint Counsel has no specific response

392. ECM customers will often ask sophisticated questions about product performance. (RX 13; RX 126–RX 135).

Response to Finding No. 392:

Complaint Counsel has no specific response

393. ECM customers have already designed a product that contains additives for color, ultraviolet light, flame retardant, etc., and they conduct significant investigation and research before making a change in this process. (Sullivan, Tr. 710).

Response to Finding No. 393:

Complaint Counsel has no specific response

394. ECM customers are often much larger companies than ECM. (Sullivan, Tr. 709).

Response to Finding No. 394:

Complaint Counsel has no specific response

395. ECM customers are primarily concerned with how their product will perform (i.e. maintain its other attributes) after the addition of the ECM additive. (Sullivan, Tr. 709).

Response to Finding No. 395:

Complaint Counsel has no specific response

396. Plastics companies purchase ECM additive in either sixty-five kilogram (65kg) drums or five hundred kilogram (500kg) pallet boxes. (Sinclair, Tr. 764–65).

Response to Finding No. 396:

Complaint Counsel has no specific response

397. ECM's customers are sophisticated and knowledgeable. (Sinclair, Tr. 773–74; RX 132).

Response to Finding No. 397:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.*, CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14;

38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

398. Plastics manufacturers must make complex, informed choices about which resins or plastics to choose to create the appropriate combination of characteristics for the product's purpose. (Sinclair, Tr. 773–74).

Response to Finding No. 398:

Complaint Counsel has no specific response

399. Plastic's manufacturers must also make decisions about machinery, additives, coloring and molds. (Sinclair, Tr. 774).

Response to Finding No. 399:

Complaint Counsel has no specific response

400. Plastic manufacturing is a very sophisticated and complex process, and ECM's customers are well versed in the investigative steps necessary to make the right decisions. (Sinclair, Tr. 774; RX 131; RX 132).

Response to Finding No. 400:

Complaint Counsel has no specific response

401. Most ECM customers perform product performance testing on their finished ECM-infused plastic before ordering product. (Sullivan, Tr. 704; RX 413; RX 412; RX 108; RX 109; RX 130; RX 132).

Response to Finding No. 401:

Complaint Counsel has no specific response

402. ECM also encourages biodegradability testing by its customers if they have concerns about their ability to support their intended claims. (Sullivan, Tr. 706).

Response to Finding No. 402:

ECM often provided its own testing to customers to convince them to purchase its Additive without the customers doing their own testing. CCX-4; CCX-5; CCX-6; CCX-10; CCX-11; CCX-21 (presentation); CCX-266; CCX-270 at 2; CCX-277 at 4; CCX-281; CCX-296 at 2; CCX-298; CCX-300; CCX-302; CCX-303; CCX-322; CCX-332; CCX-333; CCX-334; CCX-335; CCX-336; CCX-337; CCX-338; CCX-339; CCX-340; CCX-404 at 2; CCX-732 ("Ecological Assessment of ECM Plastic,"

Prepared by ChemRisk, A Service of McLaren/Hart Inc., Feb. 16, 1999); CCX-818 (Sinclair Dep.) 125:8-11 (“Q. And do you provide copies of this test to your customers? A. I think so. Yes, I believe we have many, many times.”); (Sinclair, Tr. 1010 (Sinclair “absolutely” sent the McLaren/Hart report to customers)); (Sinclair, Tr. 1702); (Sinclair, Tr. 1000-1001). Moreover, ECM certified the performance of its Additive to customers to convince them to purchase it without doing any testing. CCX-298; CCX-300 (thanks to the ECM certificate, no “need to incur the expense of duplicating our test results”); CCX-301 (“Due to the high cost and time needed we don’t send samples out for testing. These tests can cost up to \$25,000 and take over a year. We have done testing to prove the biodegradation and I have attached those for your use and review.”); CCX-302 (“We do have concerns regarding how to test to confirm the biodegradability . . . To address your concerns about testing, because we have third party independent testing of our additive in plastic ECM BioFilms certifies that when used at a minimum [sic] of 1% the product is biodegradable.”); CCX-303; CCX-304 (“First remember that none of this [testing] needs to be done as we certify your products . . .”); CCX-305 (“Concerning testing, yes it is very expensive which is why most all customers rely on our certification from our hundreds of thousands of dollars of testing over the years rather than going through the expense themselves”); CCX-304 (Sinclair to Shields: “First remember that none of this [testing] needs to be done as we certify your products with our additives”); CCX-306; CCX-390 (“Testing is very expensive, which is why most customers rely on our certification”); CCX-394 (“Asked about testing – not necessary”). *See also* CCX-818 (Sinclair Dep.) 185:15-17 (“Q. Does ECM encourage its customers to rely on its certificate in lieu of testing? A. Again, we want as fast and quick a sale as we can possibly get.”).

403. ECM invites independent testing of its product and usually provides two kilograms of MasterBatch Pellets for free to a prospective customer for testing, and beyond that will sell quantities for further testing. (Sullivan, Tr. 705).

Response to Finding No. 403:

ECM often provided its own testing to customers to convince them to purchase its Additive without the customers doing their own testing. CCX-4; CCX-5; CCX-6; CCX-10; CCX-11; CCX-21 (presentation); CCX-266; CCX-270 at 2; CCX-277 at 4; CCX-281; CCX-296 at 2; CCX-298; CCX-300; CCX-302; CCX-303; CCX-322; CCX-332; CCX-333; CCX-334; CCX-335; CCX-336; CCX-337; CCX-338; CCX-339; CCX-340; CCX-404 at 2; CCX-732 (“Ecological Assessment of ECM Plastic,” Prepared by ChemRisk, A Service of McLaren/Hart Inc., Feb. 16, 1999); CCX-818 (Sinclair Dep.) 125:8-11 (“Q. And do you provide copies of this test to your customers? A. I think so. Yes, I believe we have many, many times.”); (Sinclair, Tr. 1010 (Sinclair “absolutely” sent the McLaren/Hart report to customers)); (Sinclair,

- Tr. 1702); (Sinclair, Tr. 1000-1001). Moreover, ECM certified the performance of its Additive to customers to convince them to purchase it without doing any testing. CCX-298; CCX-300 (thanks to the ECM certificate, no “need to incur the expense of duplicating our test results”); CCX-301 (“Due to the high cost and time needed we don’t send samples out for testing. These tests can cost up to \$25,000 and take over a year. We have done testing to prove the biodegradation and I have attached those for your use and review.”); CCX-302 (“We do have concerns regarding how to test to confirm the biodegradability . . . To address your concerns about testing, because we have third party independent testing of our additive in plastic ECM BioFilms certifies that when used at a minimum [sic] of 1% the product is biodegradable.”); CCX-303; CCX-304 (“First remember that none of this [testing] needs to be done as we certify your products...”); CCX-305 (“Concerning testing, yes it is very expensive which is why most all customers rely on our certification from our hundreds of thousands of dollars of testing over the years rather than going through the expense themselves”); CCX-304 (Sinclair to Shields: “First remember that none of this [testing] needs to be done as we certify your products with our additives”); CCX-306; CCX-390 (“Testing is very expensive, which is why most customers rely on our certification”); CCX-394 (“Asked about testing – not necessary”). *See also* CCX-818 (Sinclair Dep.) 185:15-17 (“Q. Does ECM encourage its customers to rely on its certificate in lieu of testing? A. Again, we want as fast and quick a sale as we can possibly get.”).
404. A prospective customer often performs product testing (including performance testing) before deciding whether the Plastic containing the ECM additive is a fit. (Sullivan, Tr. 704; RX 130; RX 132).

Response to Finding No. 404:

Typically, ECM’s customers did not have the resources or know-how to evaluate ECM’s biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM’s additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

405. FP International, an ECM customer, tested its ECM plastic product for biodegradability. (Barber, Tr. 2029).

Response to Finding No. 405:

Complaint Counsel has no specific response

406. Eden Laboratories has performed biodegradability testing for ECM customers. (Poth, Tr. 1481).

Response to Finding No. 406:

Complaint Counsel has no specific response

407. Northeast Laboratories has conducted testing on plastics infused with the ECM additive for ECM customers. (Johnson, Tr. 1577).

Response to Finding No. 407:

Complaint Counsel has no specific response

408. ECM customers will always perform functionality and qualitative testing comparing the ECM plastic with their original product. (Sinclair, Tr. 762–63; RX 31).

Response to Finding No. 408:

Complaint Counsel has no specific response

409. Functionality and qualitative tests will determine whether the Plastic containing the ECM additive is functioning up to the necessary specifications and there has been no specification deterioration. (Sinclair, Tr. 763).

Response to Finding No. 409:

Complaint Counsel has no specific response

410. Many ECM customers will also perform biodegradability testing, either by a third party laboratory or using in-house methods. (Sinclair, Tr. 763).

Response to Finding No. 410:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

411. Many ECM customers do their own biodegradability testing on the ECM additive. (Sinclair, Tr. 772).

Response to Finding No. 411:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

412. Some ECM customers actively review ECM's competition, and even test competing products to determine if ECM is the best fit from a performance and biodegradation perspective. (RX 159).

Response to Finding No. 412:

Complaint Counsel has no specific response

413. The sales process to purchase the ECM additive is long and involved. (Sinclair, Tr. 764).

Response to Finding No. 413:

Complaint Counsel has no specific response

414. On average, a first-time sale, from initial contact to product purchase of the Plastic containing the ECM additive, takes six months to a year, and may sometimes take several years. (Sinclair, Tr. 767).

Response to Finding No. 414:

Complaint Counsel has no specific response

415. Most of ECM's customers have in-house counsel and often hire outside counsel. (Sinclair, Tr. 771).

Response to Finding No. 415:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about

resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

416. Most of ECM's customers have scientists of varying disciplines working for them. (Sinclair, Tr. 772).

Response to Finding No. 416:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

417. Most of ECM's customers either employ plastics engineers or are owned by a plastic engineer. (Sinclair, Tr. 772).

Response to Finding No. 417:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See, e.g.,* CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

418. Many ECM customers employ scientists or engineers in charge of product development. (Barber, Tr. 2028-29; RX 136).

Response to Finding No. 418:

Typically, ECM's customers did not have the resources or know-how to evaluate ECM's biodegradability claims or conduct their own biodegradability testing. *See,*

e.g., CCX-809 (Flexible Dep.) 34:21-38:10 (answering series of questions about resources and ability to evaluate ECM's additive with uniform answers: insufficient resources and ability to independently evaluate); CCX-800 (BER Dep.) 21:6-24:12 (same); CCX-822 (ANS Dep.) 14:5-15:15; 16:5-7; 16:15-20 (same); CCX-803 (DTE Dep.) 13:9-19:9 (same); CCX-811 (IPB Dep.) 34:7-38:14 (same); 33:25-38:14; 38:15-40:6; CCX-812 (Kappus Dep.) 18:19-21:18 (same); CCX-804 (Eagle Dep.) 31:4-32:19 (same); CCX-817 (Quest Dep.) 34:2-12 (same).

419. Even ECM distributors explained to downstream manufacturers that the time it takes for an ECM plastic to fully biodegrade will depend on various factors. (RX 08).

Response to Finding No. 419:

Complaint Counsel has no specific response

420. ECM regularly corresponds with customers by email or phone to provide them with any information they require. (RX 113, RX 115; RX 117-118; RX 126-129; RX 132-135).

Response to Finding No. 420:

Complaint Counsel has no specific response

421. Both direct customers and down-stream customers regularly inquire about the effect that various environmental conditions have on the biodegradability of ECM plastics. (RX 127-128; RX 132).

Response to Finding No. 421:

Complaint Counsel has no specific response

422. ECM has kept customers informed of research developments within the field of biodegradable plastic additives in the landfill environment. (RX 89; RX 118).

Response to Finding No. 422:

Complaint Counsel has no specific response

423. ECM customers will often ask sophisticated questions about product performance. (RX 13).

Response to Finding No. 423:

Complaint Counsel has no specific response

424. Some ECM customers are large enough to have entire regulatory departments. (RX 97).

Response to Finding No. 424:

Complaint Counsel has no specific response

425. ECM customers keep abreast of changes in regulatory requirements and certifications. (RX 98; RX 116; RX 119).

Response to Finding No. 425:

Complaint Counsel has no specific response

426. ECM customers often inquire into ECM's choices regarding testing methodology, results of tests, and extrapolation of results. (RX 122; RX 132).

Response to Finding No. 426:

Complaint Counsel has no specific response

427. BioPVC, an ECM customer, also had biodegradability and ecotoxicology testing done on its product. (RX 120; RX 121).

Response to Finding No. 427:

Complaint Counsel has no specific response

428. For many ECM customers, deciding whether to test a product for biodegradability is just another operational decision. (RX 24).

Response to Finding No. 428:

Complaint Counsel has no specific response

429. This often includes providing customers with scientific information and test data. (RX 88; RX 101; RX 122; RX 136).

Response to Finding No. 429:

Complaint Counsel has no specific response

430. Even down-stream customers that do not interact directly with ECM have scientists on staff. (RX 102).

Response to Finding No. 430:

Complaint Counsel has no specific response

431. The evidence suggests that ECM customers are, in fact, only concerned with marketing a "biodegradable" claim and, so, they considered ECM's statements

concerning the “rate” of biodegradation only to the extent those claims were apparently mandated by regulatory bodies such as the FTC. (Sinclair, Tr. 770–771, 775; RX 105; RX 107; RX 112–113; RX 117; RX 140; RX 871 (Blood, Dep. at 193)).

Response to Finding No. 431:

This finding is contrary to the evidentiary records. Robert Sinclair admitted many ECM customers inquired about how long it would take ECM Plastics to biodegrade. *See, e.g.*, CCX-423 at 9; CCX-282 at 2 (asking various questions about “degradable timing,” including whether “adding more [additive]” would accelerate the “degradable effect”); CCX-281 at 2 (requesting test results demonstrating the “progress of decomposition during a certain time span (a couple years)”); CCX-279 at 3 (expressing concern about “the ability to claim without exception the speeded up breakdown”); CCX-280 at 3 (“We do have some nagging concerns that we need to resolve. The first question is ‘how long does it take to degrade.’”); CCX-300 at 1 (“Does ECM test, or recommend testing, the end-users’ products to ensure that they biodegrade in less than 5 years?”); CCX-269 at 1 (“What determines 9 months vs 5 years as it is such a variance?”); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use “to meet your stated degradation timeframe of 9 months to 5 years”). Furthermore, ECM customers demonstrated the importance the biodegradability timeframe had to them by reiterating it to their prospective customers. *See, e.g.*, CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”); CCX-33 (Earthware Films; repeating “nine months to five years” in marketing literature); CCX-34 (Earthware Films; repeating “nine months to five years” in memorandum to its distributors); CCX-37 (BioPVC, repeating “nine months to five years” on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product “will break down in approximately 9 months to 5 years”) (emphasis in original); CCX-182 (BioMugs: “This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years.”); CCX-105 (Plascon Films; repeating “nine months to five years” in advertisement); CCX-38 at 1 (ECM customer’s marketing materials exclaiming: “We think you’ll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!”) (ellipses in original).

432. Mr. Sinclair often provides potential customers with information and answers their questions as well. (RX 93; RX 110; RX 122).

Response to Finding No. 432:

Complaint Counsel has no specific response

B. Deposition Testimony Confirms that ECM's Customers are Sophisticated Plastic Manufacturers

433. Robert Ringley is the vice president of BER Plastics, Inc. (CCX 800 (Ringley, Dep. at 1)).

Response to Finding No. 433:

Complaint Counsel has no specific response

434. BER Plastics purchased the ECM additive between 2009 and 2014. (CCX 800 (Ringley, Dep. at 12)).

Response to Finding No. 434:

Complaint Counsel has no specific response

435. In years 2009 through 2014, BER Plastics had approximately 10 million dollars in revenue each year. (CCX 800 (Ringley, Dep. at 12–13)).

Response to Finding No. 435:

Complaint Counsel has no specific response

436. BER Plastics first heard of ECM through an article in Plastics Technology, a respected trade magazine. (CCX 800 (Ringley, Dep. at 15, 20)).

Response to Finding No. 436:

Complaint Counsel has no specific response

437. After seeing the article in Plastics Technology, and after a couple of their customers asked them about the Plastic containing the ECM additive, BER Plastics called ECM and “had a long conversation with Mr. Sinclair [who] gave [BER Plastics] the information [they] were looking for.” (CCX 800 (Ringley, Dep. at 20)).

Response to Finding No. 437:

Complaint Counsel has no specific response

438. BER Plastics only purchased the ECM additive after speaking to ECM and getting the answers to the questions with which they were most concerned. (CCX 800 (Ringley, Dep. at 20)).

Response to Finding No. 438:

Complaint Counsel has no specific response

439. BER Plastic read the testing information that ECM supplied to them about the ECM additive. (CCX 800 (Ringley, Dep. at 23–24)).

Response to Finding No. 439:

Complaint Counsel has no specific response

440. BER Plastic does not sell to any end user. (CCX 800 (Ringley, Dep. at 11)).

Response to Finding No. 440:

Complaint Counsel has no specific response

441. All of BER Plastic’s film is sold to converters where it is printed and converted into a plastic. (CCX 800 (Ringley, Dep. at 11)).

Response to Finding No. 441:

Complaint Counsel has no specific response

442. Converters are the people who place orders for BER Plastic’s film. (CCX 800, (Ringley, Dep. at 11)).

Response to Finding No. 442:

Complaint Counsel has no specific response

443. BER plastics sold low density polyethylene film to 10 customers. (CCX 800 (Ringley, Dep. at 10)).

Response to Finding No. 443:

Complaint Counsel has no specific response

444. The only information BER Plastics received from ECM that BER Plastics passed on to its customers was the certificate of biodegradability given by ECM to BER Plastics. (CCX 800 (Ringley, Dep. at 30–32)).

Response to Finding No. 444:

Complaint Counsel has no specific response

445. ECM never misled BER Plastics. (CCX 800 (Ringley, Dep. at 35)).

Response to Finding No. 445:

Complaint Counsel has no specific response

446. BER Plastics never heard any negative comments about the ECM amended film they sold to their customers. (CCX 800 (Ringley, Dep. at 35)).

Response to Finding No. 446:

Complaint Counsel has no specific response

447. Donald Kizer is a supply chain manager for D & W Fine Pack. (CCX 801 (Kizer, Dep. at 11–13)).

Response to Finding No. 447:

Complaint Counsel has no specific response

448. D & W Fine Pack is a manufacturer of disposable products for the food service industry. (CCX 801 (Kizer, Dep. at 12)).

Response to Finding No. 448:

Complaint Counsel has no specific response

449. D & W Fine Pack has been in business since 2009. (CCX 801 (Kizer, Dep. at 2)).

Response to Finding No. 449:

Complaint Counsel has no specific response

450. Before 2009, D & W Fine Pack was known as Dispoz-o Products. (CCX 801 (Kizer, Dep. at 11–12)).

Response to Finding No. 450:

Complaint Counsel has no specific response

451. D & W Fine Pack has a 580,000 square foot manufacturing plant. (CCX 801(Kizer, Dep. at 14)).

Response to Finding No. 451:

Complaint Counsel has no specific response

452. In 2008 Dispoz-o had approximately 83 million dollars in revenue. (CCX 801(Kizer, Dep. at 15)).

Response to Finding No. 452:

Complaint Counsel has no specific response

453. In 2009 D & W Fine Pack had approximately 120 million dollars in revenue. (CCX 801 (Kizer, Dep. at 16)).

Response to Finding No. 453:

Complaint Counsel has no specific response

454. In 2013 D & W Fine Pack had approximately 424 million dollars in revenue. (CCX 801 (Kizer, Dep. at 16)).

Response to Finding No. 454:

Complaint Counsel has no specific response

455. In 2008, Dispoz-o had 740 employees. (CCX 801 (Kizer, Dep. at 16)).

Response to Finding No. 455:

Complaint Counsel has no specific response

456. In 2009, D & W Fine Pack had 1,540 employees. (CCX 801 (Kizer, Dep. at 17)).

Response to Finding No. 456:

Complaint Counsel has no specific response

457. D & W Fine Pack hired outside contractors with scientific knowledge. (CCX 801 (Kizer, Dep. at 18)).

Response to Finding No. 457:

Complaint Counsel has no specific response

458. Dispoz-o waited about three or four months from their initial contact with ECM to actually make their first purchase of the ECM additive. (CCX 801 (Kizer, Dep. at 22–23)).

Response to Finding No. 458:

Complaint Counsel has no specific response

459. Dispoz-o's CEO and operations manager were the individuals who decided to purchase the ECM additive. (CCX 801 (Kizer, Dep. at 24)).

Response to Finding No. 459:

Complaint Counsel has no specific response

460. ECM provided answers to Dispoz-o's and D & W Fine Pack's questions concerning the properties of the ECM additive. (CCX 801 (Kizer, Dep. at 25)).

Response to Finding No. 460:

Complaint Counsel has no specific response

461. Dispoz-o and D & W Fine Pack communicated directly with Bob Sinclair. (CCX 801 (Kizer, Dep. at 26)).

Response to Finding No. 461:

Complaint Counsel has no specific response

462. D & W Fine Pack at one time purchased an additional additive similar to the ECM additive, but stopped purchasing the other additive because D & W Fine Pack had issues with processing the other additive into their materials. (CCX 801 (Kizer, Dep. at 34)).

Response to Finding No. 462:

Complaint Counsel has no specific response

463. For D & W Fine Pack and Dispoz-o, adding the ECM additive into the manufacturing process was just like adding a colorant in the manufacturing process. (CCX 801 (Kizer, Dep. at 35–36)).

Response to Finding No. 463:

Complaint Counsel has no specific response

464. Ashley Leiti has been employed by Dispoz-o and D & W Fine Pack since 2008 in the fields of marketing, product development, and sales. (CCX 802 (Leiti, Dep. at 14)).

Response to Finding No. 464:

Complaint Counsel has no specific response

465. ECM provided to Dispoz-o and D & W Fine Pack testing results, research about the ECM additive, and information about the additive. (CCX 802 (Leiti, Dep. at 21)).

Response to Finding No. 465:

Complaint Counsel has no specific response

466. ECM provided their certificate of biodegradability to Dispoz-o in 2008. (CCX 802 (Leiti, Dep. at 22)).

Response to Finding No. 466:

Complaint Counsel has no specific response

467. Dispoz-o understood that ECM's claims meant that products amended with the ECM additive were degradable as defined by the ASTM standards. (CCX 802 (Leiti, Dep. at 23)).

Response to Finding No. 467:

Complaint Counsel has no specific response

468. Dispoz-o and D & W Fine Pack renewed their certificate of biodegradability with ECM on annual basis. (CCX 802 (Leiti, Dep. at 24)).

Response to Finding No. 468:

Complaint Counsel has no specific response

469. Dispoz-o and D & W Fine Pack believed that ECM's former nine months to five years claim was true because of the totality of information ECM provided to Dispoz-o and D & W Fine Pack. (CCX 802 (Leiti, Dep. at 33)).

Response to Finding No. 469:

Complaint Counsel has no specific response

470. In August, 2009, D & W Fine Pack stopped making the claim "biodegradable" regarding its enviroware line of products containing the ECM additive. (CCX 802 (Leiti, Dep. at 62; 67-68)).

Response to Finding No. 470:

Complaint Counsel has no specific response

471. Dispoz-o and D & W Fine Pack looked to additional sources besides ECM in determining whether to rely on the claims made by ECM regarding the ECM additive. (CCX 802 (Leiti, Dep. at 66)).

Response to Finding No. 471:

Complaint Counsel has no specific response

472. Dispoz-o and D & W Fine Pack asked Robert Sinclair directly questions about biodegradability, which Mr. Sinclair answered. (CCX 802 (Leiti, Dep. at 66-67)).

Response to Finding No. 472:

Complaint Counsel has no specific response

473. In August 2008, Dispoz-o had a meeting with Robert Sinclair. (CCX 802 (Leiti, Dep. at 68)).

Response to Finding No. 473:

Complaint Counsel has no specific response

474. ECM, through Robert Sinclair, qualified the nine months to five years biodegradation claim to Dispoz-o and D & W Fine Pack. (CCX 802 (Leiti, Dep. at 72–73)).

Response to Finding No. 474:

Complaint Counsel has no specific response

475. In August, 2009, D & W Fine Pack stopped making the claim “biodegradable” regarding its enviroware line of products containing the ECM additive. (CCX 802 (Leiti, Dep. at 73)).

Response to Finding No. 475:

Complaint Counsel has no specific response

476. ECM gave Dispoz-o and D & W Fine Pack test reports. (CCX 802 (Leiti, Dep. at 91–92)).

Response to Finding No. 476:

Complaint Counsel has no specific response

477. Dispoz-o and D & W Fine Pack conducted their own testing on ECM amended plastics to determine the biodegradability of those plastics. (CCX 802 (Leiti, Dep. at 95–96)).

Response to Finding No. 477:

Complaint Counsel has no specific response

478. Dispoz-o and D & W Fine Pack chose to make their own claims regarding the products they sold amended with the ECM additive, regardless of what claims ECM made about plastic containing the ECM additive. (CCX 802 (Leiti, Dep. at 135–37)).

Response to Finding No. 478:

Complaint Counsel has no specific response

479. Dispoz-o and D & W Fine Pack did not inform ECM that they had received an inquiry from the NAD. (CCX 802 (Leiti, Dep. at 148)).

Response to Finding No. 479:

Complaint Counsel has no specific response

480. Dispoz-o and D & W Fine Pack has a product development group. (CCX 802 (Leiti, Dep. at 155)).

Response to Finding No. 480:

Complaint Counsel has no specific response

481. Dispoz-o and D & W Fine Pack takes multiple steps before actually producing a new product to sell. (CCX 802 (Leiti, Dep. at 155)).

Response to Finding No. 481:

Complaint Counsel has no specific response

482. Dispoz-o and D & W Fine Pack makes samples of a product before selling that product. (CCX 802 (Leiti, Dep. at 157)).

Response to Finding No. 482:

Complaint Counsel has no specific response

483. Dispoz-o and D & W Fine Pack have three channels of customers: the distribution channel, the grocery processor, and the national accounts. (CCX 802 (Leiti, Dep. at 160)).

Response to Finding No. 483:

Complaint Counsel has no specific response

484. All products sold by Dispoz-o and D & W Fine Pack are sold to distributors. (CCX 802 (Leiti, Dep. at 161)).

Response to Finding No. 484:

Complaint Counsel has no specific response

485. All distributors that Dispoz-o and D & W Fine Pack sell products to then sell to businesses, such as restaurants. (CCX 802 (Leiti, Dep. at 161)).

Response to Finding No. 485:

Complaint Counsel has no specific response

486. An end use consumer of products initially produced by D & W Fine Pack or Dispoz- does not know that the product came from Dispoz-o or D & W Fine Pack. (CCX 802 (Leiti, Dep. at 161–62)).

Response to Finding No. 486:

Complaint Counsel has no specific response

487. Frank Santana is the marketing director for Down to Earth Organic and Natural. (CCX 803 (Santana, Dep. at 6, 8)).

Response to Finding No. 487:

Complaint Counsel has no specific response

488. Down to Earth Organic and Natural has had five stores since at least 2008. (CCX 803 (Santana, Dep. at 10)).

Response to Finding No. 488:

Complaint Counsel has no specific response

489. Down to Earth Organic and Natural had approximate annual revenue of 30 million dollars between 2008 and 2013. (CCX 803 (Santana, Dep. at 10)).

Response to Finding No. 489:

Complaint Counsel has no specific response

490. Down to Earth Organic and Natural has employed approximately 200 employees at all times since 2008. (CCX 803 (Santana, Dep. at 12–13)).

Response to Finding No. 490:

Complaint Counsel has no specific response

491. Down to Earth Organic and Natural first became aware of ECM through word of mouth in 2008. (CCX 803 (Santana, Dep. at 19)).

Response to Finding No. 491:

Complaint Counsel has no specific response

492. Down to Earth Organic and Natural reviewed material on the ECM website. (CCX 803 (Santana, Dep. at 23)).

Response to Finding No. 492:

Complaint Counsel has no specific response

493. Down to Earth Organic and Natural was aware that ECM's certificate of biodegradability did not state that ECM amended plastics were biodegradable within nine months to five years. (CCX 803 (Santana, Dep. at 32)).

Response to Finding No. 493:

Complaint Counsel has no specific response

494. Down to Earth Organic and Natural completed its own evaluation of lab reports to determine whether ECM amended plastic was fully biodegradable. (CCX 803 (Santana, Dep. at 33)).

Response to Finding No. 494:

Complaint Counsel has no specific response

495. Down to Earth Organic and Natural reviewed laboratory reports regarding ECM amended plastic before purchasing ECM amended plastic. (CCX 803 (Santana, Dep. at 34)).

Response to Finding No. 495:

Complaint Counsel has no specific response

496. Down to Earth Organic and Natural investigated the ECM technology for the better part of a year before deciding to purchase plastic bags amended with the ECM additive. (CCX 803 (Santana, Dep. at 38)).

Response to Finding No. 496:

Complaint Counsel has no specific response

497. ECM made recommendations to Down to Earth Organic and Natural about how to market the ECM amended plastic they provided to customers, but Down to Earth Organic and Natural used their judgment and ignored ECM's recommendations. (CCX 803 (Santana, Dep. at 54–55)).

Response to Finding No. 497:

Complaint Counsel has no specific response

498. As part of their Earth Day 2009 promotions, Down to Earth Organic and Natural offered 30% off on over 50 of their best-selling items. (CCX 803 (Santana, Dep. at 59)).

Response to Finding No. 498:

Complaint Counsel has no specific response

499. Down to Earth Organic and Natural believed that lab reports assessing the biodegradability of ECM amended plastics were independent lab reports because of the “test in the lab report[s].” (CCX 803 (Santana, Dep. at 66–67)).

Response to Finding No. 499:

Complaint Counsel has no specific response

500. On Earth Day 2009, Down to Earth Organic and Natural had more sales than a normal day because they had a storewide sale on that day. (CCX 803 (Santana, Dep. at 83, 85)).

Response to Finding No. 500:

Complaint Counsel has no specific response.

501. Down to Earth Organic and Natural purchased ECM amended plastic bags from Triple F, who purchased the ECM amended plastic bags from Island Plastic Bags. (CCX 803 (Santana, Dep. at 46–47)).

Response to Finding No. 501:

Complaint Counsel has no specific response.

502. Down to Earth Organic and Natural received criticism from Dr. Ramani Narayan regarding the ECM additive, and received a response to Dr. Narayan’s criticism from ECM, and Down to Earth Organic and Natural was “satisfied that ECM had successfully addressed those criticisms.” (CCX 803 (Santana, Dep. at 91–93)).

Response to Finding No. 502

Complaint Counsel has no specific response.

503. Down to Earth Organic and Natural used its own judgment to determine whether the McLaren report substantiated ECM’s advertising claims. (CCX 803 (Santana, Dep. at 96)).

Response to Finding No. 503:

Complaint Counsel has no specific response.

504. Island Plastic Bags purchases the ECM additive because it makes plastic biodegradable. (CCX 811 (Hong, Dep. at 11)).

Response to Finding No. 504:

Complaint Counsel has no specific response.

505. Island Plastic Bags’ customers, such as Down to Earth Natural and Organic, simply wanted biodegradable products. (CCX 811 (Hong, Dep. at 42, 66, 70–71, 76, 79–81, 83, 89, 91, 105–08)).

Response to Finding No. 505:

Complaint Counsel has no specific response.

506. Island Plastics Bags was most concerned with whether the ECM additive could be used in their machines, because the additive “doesn’t do [Island Plastic Bags] any good if [Island Plastic Bags] can’t use it through [their] machines.” (CCX 811 (Hong, Dep. at 44)).

Response to Finding No. 506:

Complaint Counsel has no specific response.

507. Island Plastic Bag’s customers were interested in biodegradable plastic because they were interested in sustainability. (CCX 811 (Hong, Dep. at 25)).

Response to Finding No. 507:

Complaint Counsel has no specific response.

508. There is no evidence that the rate of biodegradation was material to Island Plastic Bags when purchasing the ECM additive, so long as the final products were biodegradable. (CCX 811 (Hong, Dep. at 1–117)).

Response to Finding No. 508:

The evidence shows that the rate of biodegradation was material to Island Plastic Bags and its customers based on Island Plastic Bag’s reiteration of ECM’s nine-months-to-five-year claim to prospective customers. CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”).

509. There is no evidence that the rate of biodegradation was material to Island Plastic Bags’ customers when purchasing the ECM amended plastics from Island Plastic Bags, so long as ECM amended plastics would be biodegradable. (CCX 811 (Hong, Dep. at 1–117)).

Response to Finding No. 509:

The evidence shows that the rate of biodegradation was material to Island Plastic Bags and its customers based on Island Plastic Bags reiteration of ECM’s nine-

months-to-five-year claim to prospective customers. CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”).

510. There is no evidence that the rate of biodegradation was relevant to Island Plastic Bags when purchasing the ECM additive, so long as the final products were biodegradable. (CCX 811 (Hong, Dep. at 1–117)).

Response to Finding No. 510:

The evidence shows that the rate of biodegradation was relevant to Island Plastic Bags and its customers based on Island Plastic Bags reiteration of ECM’s nine-months-to-five-year claim to prospective customers. CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”).

511. There is no evidence that the rate of biodegradation was relevant to Island Plastic Bags’ customers when purchasing the ECM amended plastics from Island Plastic Bags, so long as ECM amended plastics would be biodegradable. (CCX 811 (Hong, Dep. at 1–117)).

Response to Finding No. 511:

The evidence shows that the rate of biodegradation was relevant to Island Plastic Bags and its customers based on Island Plastic Bags reiteration of ECM’s nine-months-to-five-year claim to prospective customers. CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”).

512. George Collins is the President of Eagle Film Extruders, Inc. (CCX 804 (Collins, Dep. at 9)).

Response to Finding No. 512:

Complaint Counsel has no specific response.

513. George Collins has been employed at Eagle Film extruders, Inc. since 2001. (CCX 804 (Collins, Dep. at 9)).

Response to Finding No. 513:

Complaint Counsel has no specific response.

514. Eagle Film Extruders, Inc. is a blown film manufacturer of single three layer sheeting. (CCX 804 (Collins, Dep. at 10)).

Response to Finding No. 514:

Complaint Counsel has no specific response.

515. Eagle Film Extruders, Inc. manufacturers only blown film. (CCX 804 (Collins, Dep. at 10)).

Response to Finding No. 515:

Complaint Counsel has no specific response.

516. Eagle Film Extruders, Inc. sells blown film to the markets of food, medical, pharmaceutical, health and beauty, coating films, and signage. (CCX 804 (Collins, Dep. at 10)).

Response to Finding No. 516:

Complaint Counsel has no specific response.

517. Eagle Film Extruders, Inc. purchased the ECM additive beginning in 2008. (CCX 804 (Collins, Dep. at 11, 16)).

Response to Finding No. 517:

Complaint Counsel has no specific response.

518. In 2013, Eagle Film Extruders, Inc. had approximately 18 million dollars in sales. (CCX 804 (Collins, Dep. at 12)).

Response to Finding No. 518:

Complaint Counsel has no specific response.

519. After customers inquired about a product, Eagle Film Extruders contacted Robert Sinclair and then talked with Mr. Sinclair about the ECM additive before deciding to purchase the additive. (CCX 804 (Collins, Dep. at 14–15)).

Response to Finding No. 519:

Complaint Counsel has no specific response.

520. ECM provided information, including test reports, to Eagle Film Extruders, Inc. (CCX 804 (Collins, Dep. at 17)).

Response to Finding No. 520:

Complaint Counsel has no specific response.

521. When discussing biodegradation of plastic containing the ECM additive with Eagle Film Extruders, Inc., Mr. Sinclair did not discuss any specific time frame regarding how long it takes ECM amended plastics to biodegrade. (CCX 804 (Collins, Dep. at 17–18)).

Response to Finding No. 521:

Complaint Counsel has no specific response.

522. Eagle Film Extruders, Inc. understood that plastic containing the ECM additive could take years to biodegrade. (CCX 804 (Collins, Dep. at 18)).

Response to Finding No. 522:

Complaint Counsel has no specific response.

523. If customers had questions about the ECM additive, Eagle Film Extruders, Inc. instructed those customers to talk directly with Bob Sinclair. (CCX 804 (Collins, Dep. at 22)).

Response to Finding No. 523:

Complaint Counsel has no specific response.

524. Eagle Film Extruders, Inc. allows its customers to determine for themselves whether the ECM additive works as claimed. (CCX 804 (Collins, Dep. at 33–34, 53–54)).

Response to Finding No. 524:

Complaint Counsel has no specific response.

525. Eagle Film Extruders, Inc. did not promote blown film containing the ECM additive. (CCX 804 (Collins, Dep. at 35)).

Response to Finding No. 525:

Complaint Counsel has no specific response.

526. Eagle Film Extruders, Inc. represented that ECM amended blown film breaks down in 15 months. (CCX 804 (Collins, Dep. at 47)).

Response to Finding No. 526:

Complaint Counsel has no specific response.

527. David Sandry is the corporate representative for Flexible Plastics. (CCX 809 (Sandry, Dep. at 4)).

Response to Finding No. 527:

Complaint Counsel has no specific response.

528. Flexible Plastics prints and manufactures plastic bags. (CCX 809 (Sandry, Dep. at 8)).

Response to Finding No. 528:

Complaint Counsel has no specific response.

529. Flexible Plastics purchases rolls of plastic from extruders. (CCX 809 (Sandry, Dep. at 9)).

Response to Finding No. 529:

Complaint Counsel has no specific response.

530. Flexible Plastics has used and continues to use the ECM additive in their plastic bags. (CCX 809 (Sandry, Dep. at 10)).

Response to Finding No. 530:

Complaint Counsel has no specific response.

531. Corn based plastics bags were too expensive for Flexible Plastic's customer to purchase. (CCX 809 (Sandry, Dep. at 14–15)).

Response to Finding No. 531:

Complaint Counsel has no specific response.

532. Flexible Plastics understood that by adding the ECM additive to their plastic bags, the additive would simply break down faster than an untreated bag. (CCX 809 (Sandry, Dep. at 17)).

Response to Finding No. 532:

Complaint Counsel has no specific response.

533. Flexible Plastics never distributed ECM marketing materials to their customers. (CCX 809 (Sandry, Dep. at 40)).

Response to Finding No. 533:

Flexible Plastics distributed ECM's logo to customers. CCX-809 (Flexible, Dep. at 24-25 (explaining that he provided logo that ECM sent him to his customers so that they could use it as a "sort of label on the box for, you know, for customers to see.")).

534. There is no evidence that any of Flexible Plastic's customers marketed any rate claim associated with their biodegradable plastic bags. (CCX 809 (Sandry, Dep. at 53)).

Response to Finding No. 534:

Flexible Plastics distributed ECM's logo to customers. CCX-809 (Flexible, Dep. at 24-25) (explaining that he provided logo that ECM sent him to his customers so that they could use it as a "sort of label on the box for, you know, for customers to see.")).

535. Flexible Plastics sells their product all over the country. (CCX 809 (Sandry, Dep. at 62)).

Response to Finding No. 535:

Complaint Counsel has no specific response.

536. Flexible Plastics uses high temperatures, 700 to 750 degrees, in order to make plastic bags. (CCX 809 (Sandry, Dep. at 63-64)).

Response to Finding No. 536:

Complaint Counsel has no specific response.

537. Flexible Plastics sells its product 1) through distributors, who sell the product to the meat processing industry, 2) to small cities, municipalities, and small trash haulers, and 3) through other distributors. (CCX 809 (Sandry, Dep. at 66)).

Response to Finding No. 537:

Complaint Counsel has no specific response.

538. James Blood is the corporate designee for FP International. (CCX 810 (Blood, Dep. at 12-13)).

Response to Finding No. 538:

Complaint Counsel has no specific response.

539. James Blood is the senior vice president and general counsel of FP International. (CCX 810 (Blood, Dep. at 214)).

Response to Finding No. 539:

Complaint Counsel has no specific response.

540. FP International is in the business of manufacturing and selling protective packaging products and packaging systems. (CCX 810 (Blood, Dep. at 13)).

Response to Finding No. 540:

Complaint Counsel has no specific response.

541. FP International’s customers are distributors that distribute and sell to entities that ship products in boxes. (CCX 810 (Blood, Dep. at 15)).

Response to Finding No. 541:

Complaint Counsel has no specific response.

542. FP International began purchasing the ECM additive in 2008. (CCX 810 (Blood, Dep. at 13)).

Response to Finding No. 542:

Complaint Counsel has no specific response.

543. FP International provides a “Biodegradable Packaging Materials: Questions and Answers” section on its website. (RX 33).

Response to Finding No. 543:

Complaint Counsel has no specific response.

544. FP International’s Questions and Answers section explains that the time it takes for a product to fully biodegrade depends on environmental conditions, that the product will biodegrade in either anaerobic or aerobic conditions, and that the products will perform like conventional plastic products. (RX 33).

Response to Finding No. 544:

Complaint Counsel has no specific response.

545. FP International sold loosefill product and air cushion product amended with the ECM additive. (CCX 810 (Blood, Dep. at 17, 22)).

Response to Finding No. 545:

Complaint Counsel has no specific response.

546. FP International engaged the services of multiple scientists to test the biodegradability of their products. (CCX 810 (Blood, Dep. at 57, 87, 163)).

Response to Finding No. 546:

Complaint Counsel has no specific response.

547. FP International engaged Stevens Ecology to test the biodegradability of their products. (CCX 810 (Blood, Dep. at 57)).

Response to Finding No. 547:

Complaint Counsel has no specific response.

548. FP International engaged the services of Dr. Timothy Barber of Environ to test the biodegradability of their products. CCX 810 (Blood, Dep. at 87)).

Response to Finding No. 548:

Complaint Counsel has no specific response.

549. FP International engaged the services of Eden Laboratories to test the biodegradability of their products. (CCX 810 (Blood, Dep. at 163))

Response to Finding No. 549:

Complaint Counsel has no specific response.

550. FP International believes that Environ’s test results demonstrated that plastic amended with the ECM additive will biodegrade. (CCX 810 (Blood, Dep. at 119)).

Response to Finding No. 550:

Complaint Counsel has no specific response.

551. FP International does not state that its products amended with the ECM additive will biodegrade in “some period greater than a year.” (CCX 810 (Blood, Dep. at 192)).

Response to Finding No. 551:

Complaint Counsel has no specific response.

552. FP International decided to transition its prior claims to the claim that ECM amended plastic will biodegrade in landfills in one to five years or more independent of any communication with ECM. (CCX 810 (Blood, Dep. at 193–94)).

Response to Finding No. 552:

Complaint Counsel has no specific response.

553. Based on their testing and experience, FP International realized that it was difficult to assess the time periods in which ECM amended plastic would biodegrade in landfills. (CCX 810 (Blood, Dep. at 194–95)).

Response to Finding No. 553:

Complaint Counsel has no specific response.

554. FP International met with Robert Sinclair in person before entering into any contract with ECM. (CCX 810 (Blood, Dep. at 206)).

Response to Finding No. 554:

Complaint Counsel has no specific response.

555. Adrian Hong is the corporate designee for Island Plastic Bags. (CCX 811 (Hong, Dep. at 9)).

Response to Finding No. 555:

Complaint Counsel has no specific response.

556. Adrian Hong is the General Manager for Island Plastic Bags. (CCX 811 (Hong, Dep. at 110)).

Response to Finding No. 556:

Complaint Counsel has no specific response.

557. Island Plastic Bags has been in business since 1992. (CCX 811 (Hong, Dep. at 9)).

Response to Finding No. 557:

Complaint Counsel has no specific response.

558. Island Plastic Bags manufactures and sells high density and low density polyethylene bags in various dimensions and gauges. (CCX 811 (Hong, Dep. at 9–10)).

Response to Finding No. 558:

Complaint Counsel has no specific response.

559. Island Plastic Bags manufactures and sells plastic cutlery. (CCX 811 (Hong, Dep. at 10)).

Response to Finding No. 559:

Complaint Counsel has no specific response.

560. Island Plastic Bags sells its products to either distributors or retailers. (CCX 811 (Hong, Dep. at 11)).

Response to Finding No. 560:

Complaint Counsel has no specific response.

561. Island Plastic Bags became aware of the ECM additive through discussions with different manufacturing partners. (CCX 811 (Hong, Dep. at 11)).

Response to Finding No. 561:

Complaint Counsel has no specific response.

562. Island Plastic Bags reviewed the McLaren/Hart Report and came to their own conclusions about the biodegradability of plastic amended with the ECM additive. (CCX 811 (Hong, Dep. at 32–33, 38–40)).

Response to Finding No. 562:

Complaint Counsel has no specific response.

563. Island Plastic Bags chose to maintain the nine months to five years claim and not transition the claim to greater than a year even after the Green Guides were revised. (CCX 811 (Hong, Dep. at 55–56, 61)).

Response to Finding No. 563:

Complaint Counsel has no specific response.

564. Consumers do not purchase products from Island Plastic Bags. (CCX 811 (Hong, Dep. at 77)).

Response to Finding No. 564:

Complaint Counsel has no specific response.

565. Consumers do not purchase products made by Island Plastic Bags. (CCX 811 (Hong, Dep. at 77)).

Response to Finding No. 565:

Complaint Counsel has no specific response.

566. Island Plastic Bags created their own marketing materials without ECM's assistance. (CCX 811 (Hong, Dep. at 100)).

Response to Finding No. 566:

Complaint Counsel has no specific response.

567. ECM made itself available to answer Island Plastic Bags' customers' questions. (CCX 811 (Hong, Dep. at 100)).

Response to Finding No. 567:

Complaint Counsel has no specific response.

568. Island Plastic Bags had an approximate annual revenue of 6.8 million dollars each year from 2008 through 2013. (CCX 811 (Hong, Dep. at 113–14)).

Response to Finding No. 568:

Complaint Counsel has no specific response.

569. ECM informed Island Plastic Bags that they needed to qualify their claims in light of the Green Guides. (CCX 811 (Hong, Dep. at 114)).

Response to Finding No. 569:

Complaint Counsel has no specific response.

570. Annette Gormly is the vice president of Kappus Plastic Company. (CCX 812 (Gormly, Dep. at 5)).

Response to Finding No. 570:

Complaint Counsel has no specific response.

571. Kappus Plastic Company manufactures calendered vinyl rigid sheeting. (CCX 812 (Gormly, Dep. at 11)).

Response to Finding No. 571:

Complaint Counsel has no specific response.

572. Kappus Plastic Company produces sheet stock or rolls that it sells to companies. (CCX 812 (Gormly, Dep. at 11)).

Response to Finding No. 572:

Complaint Counsel has no specific response.

573. Most of Kappus Plastic Company's customers are credit card companies. (CCX 812 (Gormly, Dep. at 12)).

Response to Finding No. 573:

Complaint Counsel has no specific response.

574. Kappus Plastic Company has been manufacturing since 1970. (CCX 812 (Gormly, Dep. at 12)).

Response to Finding No. 574:

Complaint Counsel has no specific response.

575. Kappus Plastic Company's customer's customers are primarily banks, and some are other companies or department stores. (CCX 812 (Gormly, Dep. at 12)).

Response to Finding No. 575:

Complaint Counsel has no specific response.

576. Kappus Plastic Company purchased the ECM additive from 2009 through 2013. (CCX 812 (Gormly, Dep. at 13)).

Response to Finding No. 576:

Complaint Counsel has no specific response.

577. Kappus Plastic Company has a laboratory. (CCX 812 (Gormly, Dep. at 17–18, 21)).

Response to Finding No. 577:

Complaint Counsel has no specific response.

578. Kappus Plastic Company did not provide its ECM Certificate directly to any of its customers. (CCX 812 (Gormly, Dep. at 29)).

Response to Finding No. 578:

Complaint Counsel has no specific response.

579. Kappus Plastic Company is familiar with the ASTM. (CCX 812 (Gormly, Dep. at 41)).

Response to Finding No. 579:

Complaint Counsel has no specific response.

580. James Bean is the corporate designee for Quest Plastics, Inc. (CCX 817 (Bean, Dep. at 7)).

Response to Finding No. 580:

Complaint Counsel has no specific response.

581. James Bean is the president and owner of Quest Plastics, Inc. (CCX 817 (Bean, Dep. at 11)).

Response to Finding No. 581:

Complaint Counsel has no specific response.

582. Quest Plastics, Inc. is an injection molding company that makes caps for aerosols, fragrances, and cosmetic packaging. (CCX 817 (Bean, Dep. at 9)).

Response to Finding No. 582:

Complaint Counsel has no specific response.

583. In essence, Quest Plastics, Inc. converts thermoplastic raw material into products such as caps, closures, lipstick cases and other custom molding. (CCX 817 (Bean, Dep. at 10)).

Response to Finding No. 583:

Complaint Counsel has no specific response.

584. James Bean worked for three years at Harvard Medical School conducting open heart surgery on dogs and sheep. (CCX 817 (Bean, Dep. at 16–17)).

Response to Finding No. 584:

Complaint Counsel has no specific response.

585. Quest Plastics, Inc. has been in business for 24 years. (CCX 817 (Bean, Dep. at 11)).

Response to Finding No. 585:

Complaint Counsel has no specific response.

586. James Bean worked as a consultant in the plastics industry. (CCX 817 (Bean, Dep. at 17)).

Response to Finding No. 586:

Complaint Counsel has no specific response.

587. Quest Plastics, Inc. sells its products primarily to companies in the eyelet industry. (CCX 817 (Bean, Dep. at 18)).

Response to Finding No. 587:

Complaint Counsel has no specific response.

588. All of Quest Plastics, Inc.'s customers are companies. (CCX 817 (Bean, Dep. at 19)).

Response to Finding No. 588:

Complaint Counsel has no specific response.

589. Quest Plastics, Inc. has facilities that run tests. (CCX 817 (Bean, Dep. at 39)).

Response to Finding No. 589:

Complaint Counsel has no specific response.

590. Quest Plastics, Inc. does not sell any product directly to consumers. (CCX 817 (Bean, Dep. at 41)).

Response to Finding No. 590:

Complaint Counsel has no specific response.

591. Stephen Joseph is 3M Company's corporate representative. (CCX 821 (Joseph, Dep. at 9)).

Response to Finding No. 591:

Complaint Counsel has no specific response.

592. Stephen Joseph is a senior division scientist at 3M Company. (CCX 821 (Joseph, Dep. at 28)).

Response to Finding No. 592:

Complaint Counsel has no specific response.

593. 3M Company first became aware of the ECM additive by reviewing ECM's website. (CCX 821 (Joseph, Dep. at 31–32)).

Response to Finding No. 593:

Complaint Counsel has no specific response.

594. 3M Company is not aware of using carbon 14 type testing to evaluate the biodegradability of a sample. (CCX 821 (Joseph, Dep. at 67)).

Response to Finding No. 594:

Complaint Counsel has no specific response.

595. 3M Company does not rely on third party information with respect to claims regarding biodegradation of a polymer. (CCX 821 (Joseph, Dep. at 113)).

Response to Finding No. 595:

Complaint Counsel has no specific response.

596. Ramy Samuel is the corporate designee for ANS Plastics Corporation. (CCX 822 (Samuels, Dep. at 7)).

Response to Finding No. 596:

Complaint Counsel has no specific response.

597. Ramy Samuels is one of the owners and is the vice president of ANS Plastics Corporation. (CCX 822 (Samuels, Dep. at 9)).

Response to Finding No. 597:

Complaint Counsel has no specific response.

598. ANS Plastics Corporation manufactures plastic shopping bags. (CCX 822 (Samuels, Dep. at 8)).

Response to Finding No. 598:

Complaint Counsel has no specific response.

599. ANS Plastics Corporation sells to wholesalers, distributors, and retailers such as restaurants, bagel shops, auto part stores, supermarkets, pet stores, and pizza stores. (CCX 822 (Samuels, Dep. at 8–9)).

Response to Finding No. 599:

Complaint Counsel has no specific response.

600. ANS Plastics Corporation has been in business since 1993. (CCX 822 (Samuels, Dep. at 9)).

Response to Finding No. 600:

Complaint Counsel has no specific response.

601. Remy Samuels has been around plastics his entire life. (CCX 822 (Samuels, Dep. at 11))

Response to Finding No. 601:

Complaint Counsel has no specific response.

602. ANS Plastic Corporation's customers contacted ECM directly. (CCX 822 (Samuels, Dep. at 23–24)).

Response to Finding No. 602:

Complaint Counsel has no specific response.

603. No consumer ever purchased an ECM amended product from ANS Plastic Corporation. (CCX 822 (Samuels, Dep. at 26)).

Response to Finding No. 603:

Complaint Counsel has no specific response.

604. No consumer ever purchased an ECM amended product that was manufactured by ANS Plastic Corporation. (CCX 822 (Samuels, Dep. at 26)).

Response to Finding No. 604:

Complaint Counsel has no specific response.

C. Deposition Testimony Confirms that the Rate of Biodegradation of Plastic Containing the ECM Additive is not Material to any of ECM's Customers' Purchasing Decisions

605. BER Plastics never really thought about how long it would take an ECM amended plastic to biodegrade. ((CCX 800 (Ringley, Dep. at 32)).

Response to Finding No. 605:

This finding mischaracterizes BER's deposition testimony. Contrary to Respondent's proposed finding, BER testified as follows:

Q. And in 2009 BER understood that the ECM additive would make plastic biodegrade in nine months to five years?

A. Yes. Never really thought about the – how long it would take to biodegrade.

CCX 800 (Ringley, Dep. at 32) (emphasis added).

606. BER Plastic's customers are interested in biodegradable products. (CCX 800 (Ringley, Dep. at 17)).

Response to Finding No. 606:

Complaint Counsel has no specific response.

607. BER Plastic's customers wanted a product that they could call biodegradable. (CCX 800 (Ringley, Dep. at 17)).

Response to Finding No. 607:

Complaint Counsel has no specific response.

608. BER Plastic's customers wanted a product that they could market as degradable so they could say they are being environmentally sensitive. (CCX 800 (Ringley, Dep. at 18)).

Response to Finding No. 608:

Complaint Counsel has no specific response.

609. BER Plastic's customers want to be able to mark biodegradable on packaging because they are afraid they might otherwise lose business. (CCX 800 (Ringley, Dep. at 18)).

Response to Finding No. 609:

Complaint Counsel has no specific response.

610. All of the customers that BER Plastic's sold ECM amended low density polyethylene to make low density polyethylene bags. (CCX 800 (Ringley, Dep. at 19)).

Response to Finding No. 610:

Complaint Counsel has no specific response.

611. BER Plastics is one of the biggest pillow film producers in the country. (CCX 800 (Ringley, Dep. at 11)).

Response to Finding No. 611:

Complaint Counsel has no specific response.

612. No customer of BER Plastics ever complained that the ECM amended film was not biodegradable. (CCX 800 (Ringley, Dep. at 35)).

Response to Finding No. 612:

Complaint Counsel has no specific response.

613. There is no evidence that the rate of biodegradation was relevant to BER Plastics when purchasing the ECM additive. (CCX 800 (Ringley, Dep. at 1-36)).

Response to Finding No. 613:

Complaint Counsel has no specific response.

614. There is no evidence that the rate of biodegradation was relevant to BER Plastics' customers when purchasing the ECM amended film from BER Plastics. (CCX 800 (Ringley, Dep. at 1–36)).

Response to Finding No. 614:

Complaint Counsel has no specific response.

615. There is no evidence that the rate of biodegradation was material to BER Plastics when purchasing the ECM additive. (CCX 800 (Ringley, Dep. at 1–36)).

Response to Finding No. 615:

Complaint Counsel has no specific response.

616. There is no evidence that the rate of biodegradation was material to BER Plastics' customers when purchasing the ECM amended film from BER Plastics. (CCX 800 (Ringley, Dep. at 1–36)).

Response to Finding No. 616:

Complaint Counsel has no specific response.

617. Dispoz-o's customers were distributors that distributed products to the food service industry, hotel, hospitality, paper houses, and paper industry. (CCX 801 (Kizer, Dep. at 13–14)).

Response to Finding No. 617:

Complaint Counsel has no specific response.

618. Since becoming D & W Fine Pack, the customer base has stayed the same, and D & W Fine Pack sells to distributors. (CCX 801(Kizer, Dep. at 14)).

Response to Finding No. 618:

Complaint Counsel has no specific response.

619. Dispoz-o and D & W Fine Pack purchased an additive from ECM starting in 2008. (CCX 801 (Kizer, Dep. at 19)).

Response to Finding No. 619:

Complaint Counsel has no specific response.

620. Dispoz-o began purchasing the ECM additive because they wanted a “green product that [they] could bring to the marketplace.” (CCX 801 (Kizer, Dep. at 19)).

Response to Finding No. 620:

Complaint Counsel has no specific response.

621. Dispoz-o believed that if they were able to market “a foam tray that had a green story behind it that it would be beneficial.” (CCX 801 (Kizer, Dep. at 20)).

Response to Finding No. 621:

Complaint Counsel has no specific response.

622. By being a “green” product, Dispoz-o wanted something that would be biodegradable or compostable. (CCX 801 (Kizer, Dep. at 21)).

Response to Finding No. 622:

Complaint Counsel has no specific response.

623. Dispoz-o understood that by adding the ECM additive to their products that they would see biodegradation. (CCX 801 (Kizer, Dep. at 22)).

Response to Finding No. 623:

Complaint Counsel has no specific response.

624. Dispoz-o understood biodegradation to mean that the product “would degrade over a period of time.” (CCX 801 (Kizer, Dep. at 22)).

Response to Finding No. 624:

Complaint Counsel has no specific response.

625. Dispoz-o and D & W Fine Pack purchased the ECM additive so that the company could sell a “green” product. (CCX 801 (Kizer, Dep. at 30)).

Response to Finding No. 625:

Complaint Counsel has no specific response.

626. Dispoz-o and D & W Fine Pack’s customers sold the ECM amended plastics through their own chains of distribution with business such as restaurants and hospitality being the at the end of the chains of distribution. (CCX 801 (Kizer, Dep. at 31)).

Response to Finding No. 626:

Complaint Counsel has no specific response.

627. The most prominent marketing claims that Dispoz-o and D & W Fine Pack made regarding their enviroware product line, which was amended with the ECM additive was that it was “100% biodegradable” and that it was “biodegradable.” (CCX 802 (Leiti, Dep. at 47, 49–50)).

Response to Finding No. 627:

Complaint Counsel has no specific response.

628. Mr. Kizer does not know how long Dispoz-o thought an ECM amended product would take to biodegrade. (CCX 801 (Kizer, Dep. at 23)).

Response to Finding No. 628:

Complaint Counsel has no specific response.

629. In May, 2009, D & W Fine Pack stopped making the claim “100% biodegradable” regarding its enviroware line of products containing the ECM additive. (CCX 802 (Leiti, Dep. at 47, 54)).

Response to Finding No. 629:

Complaint Counsel has no specific response.

630. In August, 2009, D & W Fine Pack stopped making the claim “biodegradable” regarding its enviroware line of products containing the ECM additive. (CCX 802 (Leiti, Dep. at 47, 55)).

Response to Finding No. 630:

Complaint Counsel has no specific response.

631. By July, 2011, D & W Fine Pack started making the claim “accelerates the degradation process” regarding its enviroware line of products containing the ECM additive. (CCX 802 (Leiti, Dep. at 47, 55)).

Response to Finding No. 631:

Complaint Counsel has no specific response.

632. D & W Fine Pack’s customers were concerned with what effects enviroware would have on insects in the ground. (CCX 802 (Leiti, Dep. at 61)).

Response to Finding No. 632:

Complaint Counsel has no specific response.

633. There is no evidence that the rate of biodegradation was relevant to Dispoz-o or D & W Fine Pack when purchasing the ECM additive. (CCX 801 (Kizer, Dep. at 1–41); CCX 802 (Leiti, Dep. at 1–182)).

Response to Finding No. 633:

Complaint Counsel has no specific response.

634. There is no evidence that the rate of biodegradation was material Dispoz-o or D & W Fine Pack when purchasing the ECM additive. (CCX 801 (Kizer, Dep. at 1–41); CCX 802 (Leiti, Dep. at 1–182)).

Response to Finding No. 634:

Complaint Counsel has no specific response.

635. There is no evidence that the rate of biodegradation was relevant to Dispoz-o or D & W Fine Pack customers when purchasing the ECM amended film from Dispoz-o or D & W Fine Pack. (CCX 801 (Kizer, Dep. at 1–41); CCX 802 (Leiti, Dep. at 1–182)).

Response to Finding No. 635:

Complaint Counsel has no specific response.

636. Down to Earth Organic and Natural purchased ECM amended plastic because it biodegrades with or without oxygen and because of the price as compared to compostable products. (CCX 803 (Santana, Dep. at 39)).

Response to Finding No. 636:

Complaint Counsel has no specific response.

637. Down to Earth Organic and Natural informed customers that their plastic bags were biodegradable because they wanted to inform customers that they were doing their part to help the environment. (CCX 803 (Santana, Dep. at 43)).

Response to Finding No. 637:

Complaint Counsel has no specific response.

638. Down to Earth Organic and Natural thought the ECM amended plastics would further their purpose of cherishing the land and living in health and harmony. (CCX 803 (Santana, Dep. at 45–46)).

Response to Finding No. 638:

Complaint Counsel has no specific response.

639. Down to Earth Organic and Natural promotes organic farming, sells organic and natural products, and promotes an organic and natural lifestyle. (CCX 803 (Santana, Dep. at 12)).

Response to Finding No. 639:

Complaint Counsel has no specific response.

640. Environmental activists challenging Down to Earth Organic's biodegradability claims thought that it was unacceptable for bags to take nine months to five years for a plastic bag to break down. (CCX 803 (Santana, Dep. at 99)).

Response to Finding No. 640:

Complaint Counsel has no specific response.

641. No consumer actually purchased an ECM amended plastic bag from Down to Earth Organic and Natural. (CCX 803 (Santana, Dep. at 47–48)).

Response to Finding No. 641:

Complaint Counsel has no specific response.

642. There is no evidence that the rate of biodegradation was relevant to Down to Earth Organic and Natural when purchasing the ECM additive. (CCX 803 (Santana, Dep. at 1–114)).

Response to Finding No. 642:

Down To Earth asked ECM about using language that included “nine months to five years” on its grocery bags. CCX-307.

643. There is no evidence that any customer of Down to Earth Organic and Natural purchased items from Down to Earth Organic and Natural because Down to Earth Organic and Natural provided ECM amended bags. (CCX 803 (Santana, Dep. at 1–114)).

Response to Finding No. 643:

Complaint Counsel has no specific response.

644. There is no evidence that the rate of biodegradation of their plastic bags was relevant to Down to Earth Organic and Natural customers when purchasing items from Down to Earth Organic and Natural. (CCX 803 (Santana, Dep. at 1–114)).

Response to Finding No. 644:

Complaint Counsel has no specific response.

645. There is no evidence that the rate of biodegradation was material to Down to Earth Natural and Organic when purchasing the ECM amended plastic bags. (CCX 803 (Santana, Dep. at 1–114)).

Response to Finding No. 645:

Down To Earth asked ECM about using language that included “nine months to five years” on its grocery bags. CCX-307.

646. There is no evidence that the rate of biodegradation of their plastic bags was material to Down to Earth Organic and Natural customers when purchasing items from Down to Earth Organic and Natural. (CCX 803 (Santana, Dep. at 1–114)).

Response to Finding No. 646:

Complaint Counsel has no specific response.

647. Eagle Film Extruders, Inc.’s customers wanted blown film amended with the ECM additive because they wanted to sell an environmentally-friendly biodegradable product. (CCX 804 (Collins, Dep. at 15)).

Response to Finding No. 647:

Complaint Counsel has no specific response.

648. Eagle Film Extruders, Inc. sells blown film to converters. (CCX 804 (Collins, Dep. at 65)).

Response to Finding No. 648:

Complaint Counsel has no specific response.

649. Eagle Film Extruders, Inc. does not sell to end users. (CCX 804 (Collins, Dep. at 65)).

Response to Finding No. 649:

Complaint Counsel has no specific response.

650. “Industry osmosis” is the process of learning things about an industry from being immersed in that industry. (CCX 804 (Collins, Dep. at 67–68)).

Response to Finding No. 650:

Complaint Counsel has no specific response.

651. Eagle Film Extruders, Inc. became aware of ECM through industry osmosis. (CCX 804 (Collins, Dep. at 30)).

Response to Finding No. 651:

Complaint Counsel has no specific response.

652. Eagle Film Extruders, Inc. uses a complex process to determine which products to sell or not to sell. (CCX 804 (Collins, Dep. at 68–69)).

Response to Finding No. 652:

Complaint Counsel has no specific response.

653. There is no evidence that the rate of biodegradation was relevant to Eagle Film Extruders, Inc. when purchasing the ECM additive. (CCX 804 (Collins, Dep. at 1–71)).

Response to Finding No. 653:

Complaint Counsel has no specific response.

654. There is no evidence that the rate of biodegradation was relevant to Eagle Film Extruders, Inc.’s customer when purchasing the ECM amended film from Eagle Film Extruders, Inc. (CCX 804 (Collins, Dep. at 1–71)).

Response to Finding No. 654:

Complaint Counsel has no specific response.

655. There is no evidence that the rate of biodegradation was material to Eagle Film Extruders, Inc. when purchasing the ECM additive. (CCX 804 (Collins, Dep. at 1–71)).

Response to Finding No. 655:

Complaint Counsel has no specific response.

656. There is no evidence that the rate of biodegradation was material to Eagle Film Extruders Inc.’s customers when purchasing the ECM amended film from Eagle Film Extruders, Inc. (CCX 804 (Collins, Dep. at 1–71)).

Response to Finding No. 656:

Complaint Counsel has no specific response.

657. Flexible Plastics was interested in the Plastic containing the ECM additive because their customers asked for biodegradable or greener bags. (CCX 809 (Sandry, Dep. at 13–14)).

Response to Finding No. 657:

Complaint Counsel has no specific response.

658. Flexible Plastic’s customers want to sell a more environmentally friendly plastic bag. (CCX 809 (Sandry, Dep. at 15)).

Response to Finding No. 658:

Complaint Counsel has no specific response.

659. It was important to Flexible Plastics that any additive they added to their bags would not dramatically change their pricing. (CCX 809 (Sandry, Dep. at 18)).

Response to Finding No. 659:

Complaint Counsel has no specific response.

660. When a customer or potential customer asked Flexible Plastics whether they sold biodegradable bags, Flexible Plastics referred the customer or potential customer to ECM’s website. (CCX 809 (Sandry, Dep. at 30–31, 33)).

Response to Finding No. 660:

Complaint Counsel has no specific response.

661. Some of Flexible Plastic’s customer simply wanted a biodegradable bag. (CCX 809 (Sandry, Dep. at 33–34)).

Response to Finding No. 661:

Complaint Counsel has no specific response.

662. Flexible Plastics’ customers simply wanted a product that was more environmentally friendly than traditional plastic bags. (CCX 809 (Sandry, Dep. at 72–73)).

Response to Finding No. 662:

Complaint Counsel has no specific response.

663. Flexible Plastics’ customers provided no specific definition of “biodegradable.” (CCX 809 (Sandry, Dep. at 73)).

Response to Finding No. 663:

Complaint Counsel has no specific response.

664. No Flexible Plastics' customer every said that they needed their products to biodegrade in any specific time frame. (CCX 809 (Sandry, Dep. at 74)).

Response to Finding No. 664:

Complaint Counsel has no specific response.

665. It was important to Flexible Plastics that the ECM additive would cause their plastic bags to become biodegradable. (CCX 809 (Sandry, Dep. at 75)).

Response to Finding No. 665:

Complaint Counsel has no specific response.

666. Flexible Plastics had no definition or time frame in mind regarding the term "biodegradable." (CCX 809 (Sandry, Dep. at 75)).

Response to Finding No. 666:

Complaint Counsel has no specific response.

667. Medical Arts Press, formerly Flexible Plastics' second largest customer, ceased purchasing from Flexible Plastics in 2013 because of the price of Flexible Plastics' product. (CCX 809 (Sandry, Dep. at 75–77)).

Response to Finding No. 667:

Complaint Counsel has no specific response.

668. Flexible Plastics relied on representations made by ECM to the extent that Flexible Plastics could make a "biodegradable" product. (CCX 809 (Sandry, Dep. at 83)).

Response to Finding No. 668:

Complaint Counsel has no specific response.

669. On some of the bags Flexible Plastics sold which contained the ECM additive, there was no identification at all that those bags contained the ECM additive. (CCX 809 (Sandry, Dep. at 43–44)).

Response to Finding No. 669:

Complaint Counsel has no specific response.

670. Some of Flexible Plastic's customers marketed plastic bags amended with the ECM additive as "biodegradable." (CCX 809 (Sandry, Dep. at 52–53)).

Response to Finding No. 670:

Complaint Counsel has no specific response.

671. Quality and cost are the most important factors for Flexible Plastics when deciding which rolls of plastics to purchase. (CCX 809 (Sandry, Dep. at 69–70)).

Response to Finding No. 671:

Complaint Counsel has no specific response.

672. By quality, Flexible Plastics means that they want to purchase plastic rolls that work best with the products that they are producing with the machines that they are using. (CCX 809 (Sandry, Dep. at 70)).

Response to Finding No. 672:

Complaint Counsel has no specific response.

673. There is no evidence that the rate of biodegradation was relevant to Flexible Plastics when purchasing the ECM additive. (CCX 809 (Sandry, Dep. at 1–86)).

Response to Finding No. 673:

Complaint Counsel has no specific response.

674. There is no evidence that the rate of biodegradation was relevant to Flexible Plastics' customers when purchasing the ECM amended bags from Flexible Plastics (CCX 809 (Sandry, Dep. at 1–86)).

Response to Finding No. 674:

Complaint Counsel has no specific response.

675. There is no evidence that the rate of biodegradation was material to Flexible Plastics when purchasing the ECM additive. (CCX 809 (Sandry, Dep. at 1–86)).

Response to Finding No. 675:

Complaint Counsel has no specific response.

676. There is no evidence that the rate of biodegradation was material to Flexible Plastic's customers when purchasing the ECM amended bags from Flexible Plastics. (CCX 809 (Sandry, Dep. at 1–86)).

Response to Finding No. 676:

Complaint Counsel has no specific response.

677. FP International purchases the ECM additive because it allegedly renders plastic biodegradable and because the ECM additive helps with FP International's general philosophy of lessening their impact on the environment. (CCX 810 (Blood, Dep. at 15)).

Response to Finding No. 677:

Complaint Counsel has no specific response.

678. FP International believed that the biodegradable features of the ECM additive would give them a market advantage over competitors. (CCX 810 (Blood, Dep. at 18)).

Response to Finding No. 678:

Complaint Counsel has no specific response.

679. FP International's customers wanted a product that would help lessen the impact on the environment. (CCX 810 (Blood, Dep. at 19)).

Response to Finding No. 679:

Complaint Counsel has no specific response.

680. FP International's customers believed that by using a biodegradable product that they were lessening their impact on the environment. (CCX 810 (Blood, Dep. at 28)).

Response to Finding No. 680:

Complaint Counsel has no specific response.

681. FP International employed a chief scientist, Rod Alire. (CCX 810 (Blood, Dep. at 34, 57, 104)).

Response to Finding No. 681:

Complaint Counsel has no specific response.

682. FP International has an engineering department. (CCX 810 (Blood, Dep. at 67)).

Response to Finding No. 682:

Complaint Counsel has no specific response.

683. FP International relied on testing information and reports provided by ECM, as well as background research by their Chief Scientist when making claims that their ECM amended products would biodegrade. (CCX 810 (Blood, Dep. at 68-69)).

Response to Finding No. 683:

Complaint Counsel has no specific response.

684. FP International’s customers do not care how long it takes ECM amended plastic to biodegrade, so long as it takes less time than non-amended conventional plastics. (CCX 810 (Blood, Dep. at 197)).

Response to Finding No. 684:

Complaint Counsel has no specific response.

685. FP International’s customers only care that, by purchasing ECM amended plastic as opposed to non-amended plastic, that they are lessening their impact on the environment. (CCX 810 (Blood, Dep. at 197)).

Response to Finding No. 685:

Complaint Counsel has no specific response.

686. FP International’s customers define “reasonably short period of time” in the context of how long it takes a plastic to biodegrade as faster than typical plastic. (CCX 810 (Blood, Dep. at 198–99)).

Response to Finding No. 686:

Complaint Counsel has no specific response.

687. FP International made the claim that its ECM amended products would “decompose completely within 9 to 60 months in the presence of microorganisms” because “[i]t was important to convey a message of biodegradability.” (CCX 810 (Blood, Dep. at 25)).

Response to Finding No. 687:

Complaint Counsel has no specific response.

688. FP International provided its customer with the 9 to 60 month time frame for decomposing because they wanted their customers to understand that their products would not biodegrade in the same time frame as a compostable product; FP International was “trying to portray that [their product] was not something that is going to degrade in a much quicker time frame.” (CCX 810 (Blood, Dep. at 28)).

Response to Finding No. 688:

Complaint Counsel has no specific response.

689. There is no evidence that the rate of biodegradation was relevant to FP International when purchasing the ECM additive, so long as ECM amended plastics would biodegrade more quickly than plastic not containing the ECM additive. (CCX 810 (Blood, Dep. at 1–234)).

Response to Finding No. 689:

Complaint Counsel has no specific response.

690. There is no evidence that the rate of biodegradation was relevant to FP International’s customers when purchasing the ECM amended bags from FP International so long as ECM amended plastics would biodegrade more quickly than plastic not containing the ECM additive. (CCX 810 (Blood, Dep. at 1–234)).

Response to Finding No. 690:

Complaint Counsel has no specific response.

691. There is no evidence that the rate of biodegradation was material to FP International when purchasing the ECM additive, so long as ECM amended plastics would biodegrade more quickly than plastic not containing the ECM additive. (CCX 810 (Blood, Dep. at 1–234)).

Response to Finding No. 691:

Complaint Counsel has no specific response.

692. There is no evidence that the rate of biodegradation was material to FP International’s customers when purchasing the ECM amended plastics from FP International, so long as ECM amended plastics would biodegrade more quickly than plastic not containing the ECM additive. (CCX 810 (Blood, Dep. at 1–234)).

Response to Finding No. 692:

Complaint Counsel has no specific response.

693. Kappus Plastic Company purchased the ECM additive because it makes plastic biodegradable. (CCX 812 (Gormly, Dep. at 14)).

Response to Finding No. 693:

Complaint Counsel has no specific response.

694. Kappus Plastic Company’s customers purchased ECM amended plastic in part because it was biodegradable. (CCX 812 (Gormly, Dep. at 15)).

Response to Finding No. 694:

Complaint Counsel has no specific response.

695. Kappus Plastic Company's customers were interested in a biodegradable product because they were looking for environmentally friendly products. (CCX 812 (Gormly, Dep. at 15)).

Response to Finding No. 695:

Complaint Counsel has no specific response.

696. No Kappus Plastic Company products amended with the ECM additive contained any sort of biodegradable logo. (CCX 812 (Gormly, Dep. at 22)).

Response to Finding No. 696:

Complaint Counsel has no specific response.

697. Regarding the biodegradability of their products, Kappus Plastic Company simply informed their customers that they were selling a biodegradable product. (CCX 812 (Gormly, Dep. at 23)).

Response to Finding No. 697:

Complaint Counsel has no specific response.

698. Kappus Plastic Company's customer asked Kappus Plastic Company whether Kappus Plastic Company has a biodegradable product. (CCX 812 (Gormly, Dep. at 46)).

Response to Finding No. 698:

Complaint Counsel has no specific response.

699. Kappus Plastic Company believes that nine months to five years was not a rigid standard for the amount of time it takes ECM amended plastics to biodegrade. (CCX 812 (Gormly, Dep. at 48–50)).

Response to Finding No. 699:

Complaint Counsel has no specific response.

700. There is no evidence that the rate of biodegradation was relevant to Kappus Plastic Company when purchasing the ECM additive. (CCX 812 (Gormly, Dep. at 1–53)).

Response to Finding No. 700:

Kappus included ECM's 9 months to 5 years claim on its marketing materials. CCX-57 (Kappus Plastics: marketing materials stated in bold that its product "will break down in approximately 9 months to 5 years").

701. There is no evidence that the rate of biodegradation was relevant to Kappus Plastic Company's customers when purchasing the ECM amended product from Kappus Plastic Company. (CCX 812 (Gormly, Dep. at 1–53)).

Response to Finding No. 701:

Complaint Counsel has no specific response.

702. There is no evidence that the rate of biodegradation was material to Kappus Plastic Company when purchasing the ECM additive. (CCX 812 (Gormly, Dep. at 1–53)).

Response to Finding No. 702:

Kappus included ECM's 9 months to 5 years claim on its marketing materials. CCX-57 (Kappus Plastics: marketing materials stated in bold that its product "will break down in approximately 9 months to 5 years").

703. There is no evidence that the rate of biodegradation was material to Kappus Plastic Company's customers when purchasing the ECM amended product from Kappus Plastic Company. (CCX 812 (Gormly, Dep. at 1–53)).

Response to Finding No. 703:

Complaint Counsel has no specific response.

704. Quest Plastics, Inc. purchased the ECM additive on behalf of a customer because that customer wanted to produce biodegradable golf tees. (CCX 817 (Bean, Dep. at 19)).

Response to Finding No. 704:

Complaint Counsel has no specific response.

705. Many of Quest Plastics, Inc.'s customers are not interested in biodegradable products because they are concerned with shelf life issues. (CCX 817 (Bean, Dep. at 22–23)).

Response to Finding No. 705:

Complaint Counsel has no specific response.

706. Quest Plastics, Inc. chose to purchase the ECM additive because it is usable in their manufacturing process, was not cost prohibitive, and rendered golf tees biodegradable. (CCX 817 (Bean, Dep. at 25–26)).

Response to Finding No. 706:

Complaint Counsel has no specific response.

707. Quest Plastics, Inc. does not know or care how long it would take the golf tees amended with the ECM additive to biodegrade. (CCX 817 (Bean, Dep. at 27)).

Response to Finding No. 707:

Complaint Counsel has no specific response.

708. 3M Company does not recall whether ECM made any claim regarding the rate at which plastic containing the ECM additive biodegrade. (CCX 821 (Joseph, Dep. at 32)).

Response to Finding No. 708:

Complaint Counsel has no specific response.

709. 3M Company was interested in the ECM additive because they wanted to research whether the additive can help reduce the impact of 3M Company's products on the environment following disposal. (CCX 821 (Joseph, Dep. at 42)).

Response to Finding No. 709:

Complaint Counsel has no specific response.

710. 3M Company's customer never told 3M that they needed a biodegradable product to meet a specific definition. (CCX 821 (Joseph, Dep. at 126)).

Response to Finding No. 710:

Complaint Counsel has no specific response.

711. 3M Company was interested in the ECM additive because of the fact that the ECM additive could potentially lead to biodegradation of the host plastic while at the same time preserving the characteristics of the host plastic. (CCX 821 (Joseph, Dep. at 112)).

Response to Finding No. 711:

Complaint Counsel has no specific response.

712. ANS Plastic Corporation's customers were interested in a biodegradable or "green" product. (CCX 822 (Samuels, Dep. at 12-13)).

Response to Finding No. 712:

Complaint Counsel has no specific response.

713. ANS Plastic Corporation’s customers were interested in a biodegradable product because they “want to be green” and wanted to “call themselves green.” (CCX 822 (Samuels, Dep. at 13)).

Response to Finding No. 713:

Complaint Counsel has no specific response.

714. ANS Plastic Corporation marketed plastic products amended with the ECM additive simply as biodegradable. (CCX 822 (Samuels, Dep. at 22)).

Response to Finding No. 714:

Complaint Counsel has no specific response.

715. ANS Plastic Corporation’s customers just give the ECM amended products to consumers at no cost. (CCX 822 (Samuels, Dep. at 27)).

Response to Finding No. 715:

Complaint Counsel has no specific response.

716. ANS Plastic Corporation simply told its customers that they could purchase a biodegradable bag. (CCX 822 (Samuels, Dep. at 27–28)).

Response to Finding No. 716:

Complaint Counsel has no specific response.

717. ANS Plastic Corporation’s customers never asked about the rate of biodegradation for ECM amended products. (CCX 822 (Samuels, Dep. at 28)).

Response to Finding No. 717:

Complaint Counsel has no specific response.

718. ANS Plastic Corporation’s customers only wanted to know whether they were buying a biodegradable bag. (CCX 822 (Samuels, Dep. at 28)).

Response to Finding No. 718:

Complaint Counsel has no specific response.

719. ANS Plastic Corporation’s customers wanted to purchase a biodegradable bag because they are environmentally conscious and wanted to use bags that would biodegrade. (CCX 822 (Samuels, Dep. at 28)).

Response to Finding No. 719:

Complaint Counsel has no specific response.

720. There is no evidence that the rate of biodegradation was relevant to ANS Plastic Corporation when purchasing the ECM additive. (CCX 822 (Samuels, Dep. at 1–40)).

Response to Finding No. 720:

Complaint Counsel has no specific response.

721. There is no evidence that the rate of biodegradation was relevant to ANS Plastic Corporation’s customers when purchasing the ECM amended product from ANS Plastic Corporation. (CCX 822 (Samuels, Dep. at 1–40)).

Response to Finding No. 721:

Complaint Counsel has no specific response.

722. There is no evidence that the rate of biodegradation was material to ANS Plastic Corporation when purchasing the ECM additive. (CCX 822 (Samuels, Dep. at 1–40)).

Response to Finding No. 722:

Complaint Counsel has no specific response.

723. There is no evidence that the rate of biodegradation was material to ANS Plastic Corporation’s customers when purchasing the ECM amended product from ANS Plastic Corporation. (CCX 822 (Samuels, Dep. at 1–40)).

Response to Finding No. 723:

Complaint Counsel has no specific response.

724. ECM Customers are far more concerned with shelf-life and product durability than the time it takes for the product to fully biodegrade. (RX 132).

Response to Finding No. 724:

This finding is contrary to the evidentiary records. Robert Sinclair admitted many ECM customers inquired about how long it would take ECM Plastics to biodegrade. *See, e.g.*, CCX-423 at 9; CCX-282 at 2 (asking various questions about “degradable timing,” including whether “adding more [additive]” would accelerate the “degradable effect”); CCX-281 at 2 (requesting test results demonstrating the “progress of decomposition during a certain time span (a couple years)”); CCX-279 at 3 (expressing concern about “the ability to claim without exception the speeded up breakdown”); CCX-280 at 3 (“We do have some nagging concerns that we need to resolve. The first question is ‘how long does it take to degrade.’”); CCX-300 at 1

(“Does ECM test, or recommend testing, the end-users’ products to ensure that they biodegrade in less than 5 years?”); CCX-269 at 1 (“What determines 9 months vs 5 years as it is such a variance?”); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use “to meet your stated degradation timeframe of 9 months to 5 years”). Furthermore, ECM customers demonstrated the importance the biodegradability timeframe had to them by reiterating it to their prospective customers. *See, e.g.*, CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”); CCX-33 (Earthware Films; repeating “nine months to five years” in marketing literature); CCX-34 (Earthware Films; repeating “nine months to five years” in memorandum to its distributors); CCX-37 (BioPVC, repeating “nine months to five years” on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product “will break down in approximately 9 months to 5 years”) (emphasis in original); CCX-182 (BioMugs: “This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years.”); CCX-105 (Plascon Films; repeating “nine months to five years” in advertisement); CCX-38 at 1 (ECM customer’s marketing materials exclaiming: “We think you’ll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!”) (ellipses in original).

725. In fact, customers only request information on the time it takes ECM plastics to fully biodegrade in the context of regulatory compliance inquiries. (RX 132-135).

Response to Finding No. 725:

This finding is contrary to the evidentiary records. Robert Sinclair admitted many ECM customers inquired about how long it would take ECM Plastics to biodegrade. *See, e.g.*, CCX-423 at 9; CCX-282 at 2 (asking various questions about “degradable timing,” including whether “adding more [additive]” would accelerate the “degradable effect”); CCX-281 at 2 (requesting test results demonstrating the “progress of decomposition during a certain time span (a couple years)”); CCX-279 at 3 (expressing concern about “the ability to claim without exception the speeded up breakdown”); CCX-280 at 3 (“We do have some nagging concerns that we need to resolve. The first question is ‘how long does it take to degrade.’”); CCX-300 at 1 (“Does ECM test, or recommend testing, the end-users’ products to ensure that they biodegrade in less than 5 years?”); CCX-269 at 1 (“What determines 9 months vs 5 years as it is such a variance?”); CCX-400 at 4 (asking ECM precisely how much additive it needed to use in its products use “to meet your stated degradation timeframe of 9 months to 5 years”). Furthermore, ECM customers demonstrated the

importance the biodegradability timeframe had to them by reiterating it to their prospective customers. *See, e.g.*, CCX-811 at 22 (agreeing that “[b]ecause the prospective customers were interested in purchasing biodegradable plastic, IPB thought that the fact that . . . plastic products made with ECM additives would fully biodegrade in nine months to five years would be important to them”); CCX-33 (Earthware Films; repeating “nine months to five years” in marketing literature); CCX-34 (Earthware Films; repeating “nine months to five years” in memorandum to its distributors); CCX-37 (BioPVC, repeating “nine months to five years” on website); CCX-53 (Gilman Brothers; stating product would degrade in one to five years in marketing material); CCX-57 (Kappus Plastics; marketing materials stated in bold that its product “will break down in approximately 9 months to 5 years”) (emphasis in original); CCX-182 (BioMugs: “This BioMug is made of a unique plastic that renders it biodegradable in 1-5 years.”); CCX-105 (Plascon Films; repeating “nine months to five years” in advertisement); CCX-38 at 1 (ECM customer’s marketing materials exclaiming: “We think you’ll agree that this is an environmental bargain. . . especially when compared to the unknown breakdown time of other modern plastic materials!”) (ellipses in original).

D. Deposition Testimony Does Not Help Complaint Counsel Meet Its Burden of Proof

726. No direct customer of ECM testified and no customer of ECM testified at the hearing in this case. (Tr. 1–3006).

Response to Finding No. 726:

Complaint Counsel has no specific response.

727. No consumer of any product manufactured with the ECM additive testified at the hearing in this case. (Tr. 1–3006).

Response to Finding No. 727:

Complaint Counsel has no specific response.

728. No consumer relied on any claim made by ECM when making a purchasing decision. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 728:

Complaint Counsel has no specific response.

729. No consumer considers the rate of biodegradation to be material to his or her purchasing decision when choosing to buy a product labeled biodegradable as

opposed to a similar product not labeled biodegradable. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 729:

Complaint Counsel has no specific response.

730. No consumer relied on any rate claim made by ECM when making a purchasing decision. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 730:

Complaint Counsel has no specific response.

731. No consumer suffered a legally cognizable injury as a result of any claim made by ECM. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 731:

The Court should disregard this finding because it attempts to state a legal conclusion, not a fact.

732. No consumer ever knowingly purchased a Plastic containing the ECM additive. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 732:

Complaint Counsel has no specific response.

733. No consumer ever purchased a Plastic containing the ECM additive. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 733:

Complaint Counsel has no specific response.

734. No consumer ever spent any money on any Plastic containing the ECM additive. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 734:

Complaint Counsel has no specific response.

735. ECM never communicated directly with any consumer regarding the biodegradability features of the ECM additive. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 735:

Complaint Counsel has no specific response.

736. It is not relevant to consumers how long a biodegradable product takes to fully biodegrade. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 736:

Complaint Counsel has no specific response.

737. None of ECM’s customers expect ECM amended plastics to completely decompose into elements found in nature within one year of customary disposal. (Sinclair, Tr. 785).

Response to Finding No. 737:

Complaint Counsel has no specific response.

738. No harm occurs to any consumer even if ECM’s claims are false. (Tr. 1–3006; CCX 0–CCX 1108).

Response to Finding No. 738:

The Court should disregard this finding because it attempts to state a legal conclusion, not a fact.

739. The vast majority of advertisements and products made by ECM and ECM’s customers regarding ECM amended plastics do not mention or focus on rates of biodegradation. (RX 00; RX 02; RX 03; RX 14; RX 15; RX 16; RX 17; RX 22; RX 26; RX 28; RX 29; RX 30; RX 315; CCX-30 ; CCX-31; CCX 32; CCX 36; CCX 39; CCX 43; CCX 46; CCX 47; CCX 49; CCX 50; CCX 52; CCX 59; CCX 60; CCX 63’ CCX 64; CCX 65; CCX 66; CCX 79; CCX 97; CCX 98; CCX 99; CCX 100; CCX 101; CCX 103; CCX 104; CCX 107; CCX 109–CCX 133; CCX 135; CCX 136; CCX 138; CCX 139; CCX 140; CCX 142–CCX 151).

Response to Finding No. 739:

ECM repeatedly claimed that its additive enables conventional, non-degradable plastic to fully biodegrade in nine months to five years. (CCX-3; CCX-5; CCX-6; CCX-7 at 6; CCX-10; CCX-19 at 5; CCX-242 at 15; CCX-245; CCX-269; CCX-275-CCX-280; CCX-283; CCX-296; CCX-299; CCX-303; CCX-326; CCX-384; CCX-809 (Flexible, Dep. at 20; CCX-800 (BER, Dep. at 19; CCX-822 (ANS, Dep. at 13; CCX-812 (Kappus, Dep. at 14); (Sinclair, Tr. 768 (“We certainly have, you know, used those words out there . . .”)); (Sinclair, Tr. 974-975 (discussing Sinclair email characterizing 9 month to 5 year time frame as “a window of biodegradation”)); (Sinclair, Tr. 983 (discussing CCX 1008, 2009 Sinclair email claiming that biodegradation time for most products will be nine months to five years)); (Sinclair, Tr. 1606 (discussing 2007 Sinclair affidavit)); (Sullivan, Tr. 716 (testifying that ECM

told customers its additive would cause plastics to biodegrade in a landfill in nine months to five years)); (RX-135 at 1, 5).

V. BACKGROUND ON THE ECM ADDITIVE AND PLASTICS PRODUCED WITH THE ECM ADDITIVE

740. ECM sells a “MasterBatch Pellet” that includes a biodegradable component along with an otherwise non-biodegradable (or conventional) plastic carrier resin. (RX 371; RX 656; RX 681).

Response to Finding No. 740:

Complaint Counsel has no specific response.

741. The ECM additive’s formula is a trade secret. (Sinclair, Tr. 777).

Response to Finding No. 741:

Complaint Counsel has no specific response.

742. ECM chose not to patent the additive because scientists had convinced them that it could not be reverse-engineered, and it has yet to be. (Sinclair, Tr. 777–78).

Response to Finding No. 742:

Complaint Counsel has no specific response.

743. Analytical laboratories attempted to determine the specific ingredients, but none has identified the correct formula. (Sinclair, Tr. 777–78; RX 563).

Response to Finding No. 743:

Complaint Counsel has no specific response.

744. ECM offers a “load rate” of 70% in its pellets, meaning that every pellet will contain approximately 70% of the “active” biodegradable formula, along with 30% conventional polymer resin. (CCX 818 (Sinclair, Dep. 118–20)).

Response to Finding No. 744:

Complaint Counsel has no specific response.

745. ECM prescribes that plastics manufacturers blend the pellet into their plastics at a 1% rate, resulting in a uniform distribution of the pellet throughout the plastic and at a level that ensures maximum utility without compromising the plastic’s integrity. (Sinclair, Tr. 765, 775–76, 783, 787–88, 790; CCX 20; RX 137).

Response to Finding No. 745:

Complaint Counsel has no specific response.

746. Blending of the ECM additive requires no additional equipment from plastics manufacturers so long as the manufacturer is already equipped to blend color additives. (RX 137).

Response to Finding No. 746:

Complaint Counsel has no specific response.

747. Through testing and history of use, ECM has established that a 1% load rating in finished plastics is required to maintain the additive's efficacy vis-à-vis biodegradation. (Sinclair, Tr. 765, 775–76, 783, 787–88, 790; RX 683; CCX 2).

Response to Finding No. 747:

Complaint Counsel has no specific response.

748. For all plastics properly manufactured with ECM's additive, at least 1% of the final plastic will include the ECM additive based on weight. (Sinclair, Tr. 783; RX 678).

Response to Finding No. 748:

Complaint Counsel has no specific response.

749. Like many other plastic additives (e.g., coloring agents), manufacturers introduce the ECM additive into the plastic during the initial blending process. (Sinclair, Tr. 797; RX 135).

Response to Finding No. 749:

Complaint Counsel has no specific response.

750. Plastics are commonly manufactured using one of several techniques, including extrusion molding, injection molding, or blow molding. (Sahu, Tr. 1816–17; RX 656).

Response to Finding No. 750:

Complaint Counsel has no specific response.

751. Extrusion molding involves a heated plastic compound continuously injected through a long die cast in the desired shape. (Sahu, Tr. 1816; RX 783).

Response to Finding No. 751:

Complaint Counsel has no specific response.

752. There are many different types of plastic polymers, but where ECM additives are used, the additive is intended to be mixed uniformly throughout the plastic polymer through a heated blending process, just like a coloring additive. (Sahu, Tr. 1813–14; RX 520).

Response to Finding No. 752:

Complaint Counsel has no specific response.

753. ECM's customers manufacture many plastic polymers, but the bulk of the plastics incorporating ECM's technology consist of polypropylene (PP), polystyrene (PS), and polyethylenes (PE). (RX 458; RX 522).

Response to Finding No. 753:

Complaint Counsel has no specific response.

754. Over seventy (70) percent of ECM plastics are PE plastics. Companies frequently use ECM's technology in plastics such as films (e.g., grocery "t-shirt" bags, packaging cushions, etc.). (RX 520; RX 471; RX 849).

Response to Finding No. 754:

Complaint Counsel has no specific response.

755. In North America, conventional plastics like PE or PP primarily come from domestic natural gas and are substances that contain varying formations of hydrocarbon bonds or polymers. (RX 458).

Response to Finding No. 755:

Complaint Counsel has no specific response.

756. A polymer is simply a molecular structure consisting of a string of similar units bonded together. (RX 458).

Response to Finding No. 756:

Complaint Counsel has no specific response.

757. Prior to a potential customer running product samples, ECM will often discuss the manufacturing process with the customer ahead of time to determine the most cost effective and productive method. (Sinclair, Tr. 762).

Response to Finding No. 757:

Complaint Counsel has no specific response.

758. Manufacturing some plastics with the ECM additive can require more process modifications than others, so ECM works with potential customers to prevent scorching and other manufacturing problems. (Sinclair, Tr. 762).

Response to Finding No. 758:

Complaint Counsel has no specific response.

759. Although the process is involved, most ECM customers can accomplish it quite readily. (Sinclair, Tr. 762).

Response to Finding No. 759:

Complaint Counsel has no specific response.

VI. WHY BIODEGRADATION OF PLASTIC CONTAINING THE ECM ADDITIVE MAY NOT OCCUR

760. There are four primary manufacturing considerations that affect the biodegradability of an ECM plastic. (Sinclair, Tr. 787–790).

Response to Finding No. 760:

Complaint Counsel has no specific response.

761. First, polymers that are manufactured at very high temperatures can run the risk of scorching the ECM additive. (Sinclair, Tr. 788).

Response to Finding No. 761:

Complaint Counsel has no specific response.

762. Second, the ECM additive must remain dry because it is hydroscopic and will absorb atmospheric moisture. (Sinclair, Tr. 789).

Response to Finding No. 762:

Complaint Counsel has no specific response.

763. To prevent this, ECM ships its additive in bags with a moisture barrier liner, but customers must properly store the additive as well. (Sinclair, Tr. 789).

Response to Finding No. 763:

Complaint Counsel has no specific response.

764. Third, uniform and complete distribution of the additive throughout every layer of the plastic is essential to guarantee biodegradability. (Sinclair, Tr. 788).

Response to Finding No. 764:

Complaint Counsel has no specific response.

765. Fourth, the load rate of the additive must be at least one percent (1%) by weight. (Sinclair, Tr. 787–88).

Response to Finding No. 765:

Complaint Counsel has no specific response.

766. The failure to adhere to all four elements compromises the biodegradability of the plastic. (Sinclair, Tr. 790).

Response to Finding No. 766:

Complaint Counsel has no specific response.

VII. CONTRARY TO COMPLAINT COUNSEL’S EXTREMELY NARROW DEFINITION, THE ONLY SCIENTIFICALLY ACCEPTED DEFINITION OF “BIODEGRADABLE” IS BROAD

767. Complaint Counsel requires that any unqualified biodegradable claim regarding any item be supported by competent and reliable scientific evidence “assur[ing] complete decomposition within **one year** and replicat[ing], i.e., simulat[ing], the physical conditions found in landfills, where most trash is disposed.” (Complaint, ¶ 4(A)) (emphasis added and subtracted).

Response to Finding No. 767:

Complaint Counsel has no specific response.

768. Complaint Counsel defines a biodegradable item as an “entire item that [will] break down into elements found in nature within one year after customary disposal.” (Complaint, P. 9; McCarthy, Tr. 484–85; CCX 891 (McCarthy Rep.)).

Response to Finding No. 768:

Complaint Counsel has no specific response.

769. The FTC’s Green Guides “state that marketers should not make unqualified degradable claims for items destined for landfills, incinerators, or recycling facilities

because complete decomposition in those specific environments will not occur within one year.” (RX 347 § IV).

Response to Finding No. 769:

Complaint Counsel has no specific response.

770. The FTC’s Statement of Basis and Purpose make clear that “[t]he final [Green] guides state that an qualified degradable claim for items entering the solid waste stream should be substantiated with competent and reliable scientific evidence that the entire item will fully decompose within one year after customary disposal.” (RX 358 § IV(E)(4)).”

Response to Finding No. 770:

Complaint Counsel has no specific response.

771. Complaint Counsel asked Dr. McCarthy to assume, and Dr. McCarthy did assume, that “‘biodegradable’ means that the entire treated plastic will completely break down and return to nature, decompose into elements found in nature, within one year after customary disposal.” (McCarthy, Tr. 681).

Response to Finding No. 771:

Complaint Counsel has no specific response.

772. The FTC’s Green Guides and the FTC’s Statement of Basis and Purpose cite no support in any peer reviewed literature that “degradable” means that a product fully decomposes within one year after customary disposal. (RX347; RX 348).

Response to Finding No. 772:

Complaint Counsel has no specific response.

773. The FTC’s Green Guides and the FTC’s Statement of Basis and Purpose cite no support in any peer reviewed literature that the definition of “degradable” includes any time limit or time constraint. (RX 347; RX 348).

Response to Finding No. 773:

Complaint Counsel has no specific response.

774. Scientific literature defines the term “biodegradable” as *an on-going process* without any specific time limit: “the chemical dissolution of materials by bacteria or by other biological means.” (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 774:

Complaint Counsel has no specific response.

775. “Biodegradation takes place by the action of enzymes, chemical degradation with living organisms.” (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 775:

Complaint Counsel has no specific response.

776. Biodegradation has been described as a “two step” process. (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 776:

Complaint Counsel has no specific response.

777. “The first step is the fragmentation of the polymers into lower molecular mass species by means of abiotic reactions, like oxidation, photodegradation or hydrolysis, or biotic reactions, like degradations by microorganisms.” (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 777:

Complaint Counsel has no specific response.

778. The second step is “the bioassimilation of polymer fragments by the microorganisms and their mineralization.” (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 778:

Complaint Counsel has no specific response.

779. Degradation results “from the action of naturally occurring microorganisms such as bacteria, fungi, and algae.” (G. Gnanavel, V.P. Mohana Jeya Vali, and M. Thirumarimurugan, 1:3 International Journal of Pharmaceutical and Chemical Sciences 670, 671 (July–Sept. 2012)).

Response to Finding No. 779:

Complaint Counsel has no specific response.

780. The Merriam-Webster dictionary defines “biodegradable” as something “capable of being **slowly** destroyed and broken down into very small parts by natural processes, bacteria, etc.” or “capable of being broken down especially into innocuous products by the action of living things (as microorganisms).” (See “Biodegradable.” *Merriam-Webster.com*. Merriam-Webster, n.d. Web. 22 July 2014, *available at* <http://www.merriam-webster.com/dictionary/biodegradable>) (emphasis added).

Response to Finding No. 780:

Complaint Counsel has no specific response.

781. Other sources have defined “biodegradable” to mean “capable of being decomposed by bacteria or other biological means.” (*Collins English Dictionary*, 10th Ed. 2009 (July 22, 2014), *available at* <http://dictionary.reference.com/browse/biodegradation>).

Response to Finding No. 781:

Complaint Counsel has no specific response.

782. Contrary to Complaint Counsel’s and the FTC’s one year restricted definition of biodegradation, Dr. Tolaymat testified that “[b]iodegradation is the conversion of organic matter through the action of bacteria and fungi into more elementary components or elements.” (Tolaymat, Tr. 130).

Response to Finding No. 782:

Complaint Counsel has no specific response.

783. Dr. Tolaymat’s definition of biodegradation includes no time limit or time constraint. (Tolaymat, Tr. 130).

Response to Finding No. 783:

Complaint Counsel has no specific response.

784. Dr. Tolaymat’s definition of biodegradation—containing no time limit or time constraint—conflicts with Dr. McCarthy’s definition in footnote one of McCarthy’s report, which requires “that the entire treated plastic will completely break down and return to nature (*i.e.*, decompose into elements found in nature) within one year after customary disposal (*i.e.*, incinerator, landfill, or recycling). (Tolaymat, Tr. 130; CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 784:

The Court should disregard this finding because it merely provides an opinion and does not state any fact.

785. Dr. McCarthy has published that “the definition of biodegradable polymer varies greatly among scientists, manufacturers, and consumers.” (McCarthy, Tr. 489–490; RX 924).

Response to Finding No. 785:

Complaint Counsel has no specific response.

786. Similarly, Dr. McCarthy testified that “[m]any different definitions [of biodegradation] have officially been adopted, depending on the background of the defining standard organizations and their particular interests.” (McCarthy, Tr. 527–528; RX 925).

Response to Finding No. 786:

Complaint Counsel has no specific response.

787. Dr. McCarthy’s own writings, outside of this litigation, that define biodegradation do not include the qualifier that an item must completely breakdown within a period of one year. (Sahu, Tr. 1783, 1785).

Response to Finding No. 787:

Complaint Counsel has no specific response.

788. Contrary to Complaint Counsel’s and the FTC’s time restricted definition of biodegradation, Dr. Michel testified that “Biodegradation is the mineralization of materials as a result of the action of naturally-occurring microorganisms such as bacteria and fungi.” (Michel, Tr. 2907–08; CCX 880).

Response to Finding No. 788:

Complaint Counsel has no specific response.

789. Dr. Michel’s definition of biodegradation—containing no time limit or time constraint—conflicts with Dr. McCarthy’s definition in footnote one of McCarthy’s report, which requires “that the entire treated plastic will completely break down and return to nature (*i.e.*, decompose into elements found in nature) within one year after customary disposal (*i.e.*, incinerator, landfill, or recycling). (Michel, Tr. 2907–08; CCX 880; CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 789:

Complaint Counsel has no specific response.

790. The common scientific definition of biodegradation is degradation by biological means. (Sahu, Tr. 1782).

Response to Finding No. 790:

Complaint Counsel has no specific response.

791. “[B]iodegradation means different things to different researchers ... or in different contexts.” (Sahu, Tr. 1760).

Response to Finding No. 791:

Complaint Counsel has no specific response.

792. Biodegradation is a process by which microbial organisms sustain their life by eating and metabolizing a material. (Barber, Tr. 2069).

Response to Finding No. 792:

Complaint Counsel has no specific response.

793. “[F]rom a microbiological standpoint [biodegradation] really is [] the conversion of ... one substance to another substance as the result of biological activity.” (Burnette, Tr. 2375).

Response to Finding No. 793:

Complaint Counsel has no specific response.

794. “[I]n all contexts [biodegradation] simply means the breakdown of whatever is the object of interest using biological means, using essentially biota such as bacteria or fungi or other type of naturally occurring or evolving biota in the environment.” (Sahu, Tr. 1760).

Response to Finding No. 794:

Complaint Counsel has no specific response.

795. The ASTM defines biodegradation, as related to plastic products, as the process by which natural biota decompose a plastic product into different chemical materials. (Sinclair, Tr. 782).

Response to Finding No. 795:

Complaint Counsel has no specific response.

796. The ASTM has never defined biodegradation as the test plastic completely breaking down into elements found in nature within one year of customary disposal. (Sinclair, Tr. 782).

Response to Finding No. 796:

Complaint Counsel has no specific response.

797. The plastics industry has never adopted a definition of biodegradation that requires a plastic product to completely decompose and break down into elements found in nature within one year after customary disposal in a landfill. (Sinclair, Tr. 782–83).

Response to Finding No. 797:

Complaint Counsel has no specific response.

798. The scientific literature defining biodegradation does not contain a time restraint. (Sahu, Tr. 1783).

Response to Finding No. 798:

Complaint Counsel has no specific response.

799. No peer reviewed literature defines “biodegradation” to be limited to a “complete breakdown of plastics into elements found in nature within one year after customary disposal.” (Barlaz, Tr. 2281).

Response to Finding No. 799:

Complaint Counsel has no specific response.

800. No scientist has published a peer reviewed article defining biodegradation to be limited to the “complete breakdown of a plastic or material into elements found in nature within one year after customary disposal.” (Burnette, Tr. 2376).

Response to Finding No. 800:

Complaint Counsel has no specific response.

801. Dr. Tolaymat understands that anaerobic biodegradation occurs at a slower rate than aerobic biodegradation. (Tolaymat, Tr. 130).

Response to Finding No. 801:

Complaint Counsel has no specific response.

802. According to Dr. Tolaymat, “[a]erobic biodegradation is the process of decomposing organic matter in the presence of oxygen.” (Tolaymat, Tr. 127).

Response to Finding No. 802:

Complaint Counsel has no specific response.

803. According to Dr. Tolaymat, “[a]naerobic biodegrading is the process of decomposing organic matter without the presence of oxygen.” (Tolaymat, Tr. 130).

Response to Finding No. 803:

Complaint Counsel has no specific response.

804. Even the most easily biodegradable substances, such as food waste, will not biodegrade in a MSW landfill within one year after customary disposal. (RX 853 (Barlaz, Rep. at 11); CCX 893 (Tolaymat, Rep. at 16)).

Response to Finding No. 804:

Complaint Counsel has no specific response.

805. Not even tree trunks, orange peels, or banana peels, all generally accepted to be biodegradable in the environment, can reliably break down into elements found in nature within one year after customary disposal. (McCarthy, Tr. 503, 506, 508–09, RX 841 (McCarthy, Dep. at 187)).

Response to Finding No. 805:

Complaint Counsel has no specific response.

806. Outside of this litigation, Drs. McCarthy, Tolaymat, and Michel have never defined biodegradation to be the complete breakdown of an item into elements found in nature within one year after customary disposal. (Michel, Tr. 2908; McCarthy, Tr. 488; *see generally* Tolaymat, Tr.).

Response to Finding No. 806:

Complaint Counsel has no specific response.

807. There is no evidence that, outside the context of this litigation, any one of Drs. McCarthy, Tolaymat, and Michel have ever defined biodegradable to be limited by any time or rate restriction. (*See generally* McCarthy, Tr; Tolaymat, Tr; Michel, Tr.).

Response to Finding No. 807:

Complaint Counsel has no specific response.

808. Biodegradability is a process. (Barber, Tr. 2069).

Response to Finding No. 808:

Complaint Counsel has no specific response.

809. Whether a material is “biodegradable” means whether biological organisms, microbial organisms, can sustain their life functions and eat and metabolize the material. (Barber, Tr. 2069).

Response to Finding No. 809:

Complaint Counsel has no specific response.

810. Some standards have been put in place by various organizations that attempt to define a time span for this process, but biodegradation is not subject to a time span limitation because it is an ongoing process. (Barber, Tr. 2069).

Response to Finding No. 810:

Complaint Counsel has no specific response.

811. The ASTM definition of “degradable plastics” is a plastic that will break down into different chemical materials. (Sinclair, Tr. 782).

Response to Finding No. 811:

Complaint Counsel has no specific response.

812. The ASTM definition of “biodegradable plastics” is a plastic which breaks down by natural biota. (Sinclair, Tr. 782).

Response to Finding No. 812:

Complaint Counsel has no specific response.

813. The ASTM definition of “biodegradation” contains no requirement that the test plastic completely break down into elements found in nature within one year of customary disposal. (Sinclair, Tr. 782).

Response to Finding No. 813:

Complaint Counsel has no specific response.

814. The biodegradable plastics industry has never adopted a definition of “biodegradation” that the test plastic completely break down into elements found in nature within one year of customary disposal. (Sinclair, Tr. 782–83).

Response to Finding No. 814:

Complaint Counsel has no specific response.

815. In 16 CFR § 260.8(c), codifying FTC guidance language, FTC prevents marketers from marketing their products as degradable “if the items do not completely decompose within one year after customary disposal.” (RX 347).

Response to Finding No. 815:

Complaint Counsel has no specific response.

816. In 16 CFR 260.7(b), codifying FTC guidance language, FTC allows marketers to market their products as compostable if the marketer has “competent and reliable scientific evidence that all the materials in the item will break down into, or otherwise become part of usable compost in a safe and timely manner in an appropriate composting facility, or in a home compost pile or device.” (RX 347).

Response to Finding No. 816:

Complaint Counsel has no specific response.

817. Thus, the definition of biodegradable includes a year time limit and a complete degradation component, while the definition of compostable includes no time limit. (RX 347).

Response to Finding No. 817:

Complaint Counsel has no specific response.

A. THE GREEN GUIDES’ DEFINITION OF BIODEGRADABLE IS INAPPOSITE IN THIS CASE

A. Both Dr. Stewart and Dr. Frederick Agree that the APCO and Synovate Surveys are Flawed and Insufficient to Support the One Year Rule

818. Complaint Counsel and FTC’s definition of biodegradation as requiring the complete decomposition of a material into elements found in nature within one year after customary disposal is referenced in an agency guidance in the Green Guides and in the Green Guides’ Statement of Basis and Purpose. (RX 347; RX 348).

Response to Finding No. 818:

Complaint Counsel has no specific response.

819. The Green Guides state that “[i]t is deceptive to make an unqualified degradable claim for items entering the solid waste stream if the items do not completely decompose within one year after customary disposal.” (RX 347, at § 260.8).

Response to Finding No. 819:

Complaint Counsel has no specific response.

820. The FTC Commission cites two consumer perception surveys to support the one year rule. (RX 347, at § IV(E)(4)(A)).

Response to Finding No. 820:

Complaint Counsel has no specific response.

821. These were the only two consumer perception surveys available to the FTC regarding consumer perception of biodegradability at the time the FTC issued its guidance definition of biodegradable to mean that the product must completely decompose into elements found in nature within one year after customary disposal. (Stewart, Tr. 2511).

Response to Finding No. 821:

Complaint Counsel has no specific response.

822. The first survey cited by the Commission is a survey done by APCO Insight, wherein 60 percent of respondents purportedly expected that an item marked as degradable without qualification will fully decompose in less than one year. (RX 347, at § IV(E)(4)(A)).

Response to Finding No. 822:

Complaint Counsel has no specific response.

823. The second survey cited by the Commission in drafting the one year rule was conducted by Synovate, wherein 25 percent of respondents expected that an item marked as degradable without qualification will fully decompose in less than one year. (RX 347, at § IV(E)(4)(A)).

Response to Finding No. 823:

Complaint Counsel has no specific response.

824. The APCO survey found that:

- “Americans are slightly more likely to say the terms biodegradable and compostable mean something different rather than the same.”

- 48% of those surveyed thought that the terms meant something different, while 40% thought they meant the same.
- The leading perceived similarity between both terms was that both decompose and are not harmful to the environment.
- Those surveyed believed that compostable materials will break down in three months to a year, while biodegradable materials are expected to break down in one to two years.
- Most adults believe that compostable materials are natural (leaves, trigs, etc.) while biodegradable materials are manmade (synthetics).
- Most adults believe that biodegradable materials will completely disappear whereas compostable materials turn into soil or fertilizer.
- Both compostable and biodegradable packaging “are seen as likely to reduce landfill burdens, pollution, and even the amount of litter in the environment.”
- Americans are uneducated about both compostable material and biodegradable material, and an education component associated with the rollout of the packaging is needed.
- Educated individuals (college graduates) are more understanding of longer natural decomposition times.

(RX 596).

Response to Finding No. 824:

Complaint Counsel has no specific response.

825. The Synovate study found that:

- “Of all the venues in which respondents were asked where products labeled biodegradable would decompose, ‘landfills’ received the highest score (72%) followed by ‘open environment’ (51%) and ‘commercial composting’ (51%).”
- 23% of respondents attributed the difference between biodegradation in landfills and biodegradation in composting environments to “duration of degradation.”
- “Of those who mentioned factors related to the duration of degradation, the majority said landfills take longer to biodegrade.”

- 72% of respondents believe that traditional plastics will not biodegrade on their own.
- 84% of respondents believe biodegradable plastic products will be beneficial to landfills.
- 25% of respondents believed plastics should biodegrade in less than one year.
- 70% of respondents believed that a biodegradation window of 5 years or less for plastics was appropriate.
- 93% of respondents believe it is ok to label a package “biodegradable” if it decomposes in a landfill.
- 38% of respondents claimed they often or always check for green aspects on a product label.
- 62% of respondents stated they are willing to pay a higher price for products that are less burdensome on the environment.

(RX 673).

Response to Finding No. 825:

Complaint Counsel has no specific response.

826. Both Dr. Stewart and Dr. Frederick believe the APCO and Synovate studies are flawed. (Frederick, Tr. 1045, 1049-51; Stewart, Tr. 2513–17; RX 856 (Stewart Rep. at 5-9)).

Response to Finding No. 826:

Complaint Counsel has no specific response.

827. A close ended question is one in which “there was a list of possible responses that were presented to the respondent, and the respondent needed to choose from one of the responses that was presented in order to give an answer.” (Stewart, Tr. 2513).

Response to Finding No. 827:

Complaint Counsel has no specific response.

828. As part of his work in this case, Complaint Counsel’s survey expert Dr. Frederick reviewed both the APCO and Synovate surveys. (Frederick, Tr. 1036).

Response to Finding No. 828:

Complaint Counsel has no specific response.

829. APCO stands for American Plastics Council. (Frederick, Tr. 1036).

Response to Finding No. 829:

Complaint Counsel has no specific response.

830. The APCO survey was a telephone survey with 1003 responses. (Frederick, Tr. 1036).

Response to Finding No. 830:

Complaint Counsel has no specific response.

831. According to Dr. Frederick, the validity of a survey refers to how accurately the survey measured what it intended to measure. (Frederick, Tr. 1042; CCX 890 (Frederick, Rep. at 8)).

Response to Finding No. 831:

Complaint Counsel has no specific response.

832. According to Dr. Frederick's testimony, the APCO is not valid; however, in his expert report, Dr. Frederick concludes that the APCO survey is valid. (Frederick, Tr. 1042; CCX 890 (Frederick, Rep. at 8-9)).

Response to Finding No. 832:

This finding mischaracterizes Dr. Frederick's testimony and the record in this case. In the portion of Dr. Frederick's testimony cited by Respondent, Respondent asked Dr. Frederick if he could determine whether the APCO study was valid, "standing alone." However, Dr. Frederick repeatedly testified as to the convergent validity of the APCO study. *See, e.g.*, (Frederick, Tr. 1155, 1173).

833. Question four of the APCO study asked respondents "[i]f a package is labeled 'biodegradable,' what should be the maximum amount of time that it should take for that package to decompose?" (RX 597, P. 2).

Response to Finding No. 833:

Complaint Counsel has no specific response.

834. Question four of the APCO survey was closed-ended. (RX 597, at P. 2).

Response to Finding No. 834:

Complaint Counsel has no specific response.

835. Question four of the APCO survey provided respondents with 6 substantive answer options: “One month or less,” “Three months,” “six months,” “one year,” “two to four years,” “Five years or more.” (RX 597, at P. 2).

Response to Finding No. 835:

Complaint Counsel has no specific response.

836. According to Dr. Frederick, the biggest problem with question four of the APCO survey “is the allocation of response options.” (Frederick, Tr. 1045).

Response to Finding No. 836:

Complaint Counsel has no specific response.

837. According to Dr. Frederick, the response options in question four of the APCO survey, with four of the six response options being one year or less, carry the “strong suggestion that the experimenter expects these are the responses that people are going to give ... causing people to give those responses in greater numbers than they would if the question used a different design.” (Frederick, Tr. 1045).

Response to Finding No. 837:

Complaint Counsel has no specific response.

838. Another problem with APCO Survey Question four, according to Dr. Frederick, is that it used the word “should” instead of “would.” (Frederick, Tr. 1142).

Response to Finding No. 838:

Complaint Counsel has no specific response.

839. According to Dr. Frederick, the Synovate study is reliable but invalid. (Frederick, Tr. 1048–51).

Response to Finding No. 839:

This finding mischaracterizes Dr. Frederick’s testimony and the record in this case. Dr. Frederick repeatedly testified as to the convergent validity of the Synovate study. *See, e.g.*, (Frederick, Tr. 1155, 1173). Moreover, Dr. Frederick also expressly testified about the convergent validity of the Synovate study in his expert report in evidence. CCX-890, ¶ 24.

840. Question 19 of the Synovate survey asked respondents, “[w]hat do you believe is a reasonable amount of time for a biodegradable plastic package to decompose in a landfill?” (Frederick, Tr. 1048).

Response to Finding No. 840:

Complaint Counsel has no specific response.

841. According to Dr. Frederick, Synovate survey question 19 uses the word “reasonable,” meaning that the interviewer is asking the respondent what he or she “would like to happen, what kind of product should be produced.” (Frederick, Tr. 1050).

Response to Finding No. 841:

Complaint Counsel has no specific response.

842. Another flaw, according to Dr. Frederick, in Synovate survey question 19 is that it is a close ended question. (Frederick, Tr. 1049–1051, 1276–77, 1280).

Response to Finding No. 842:

Complaint Counsel has no specific response.

843. According to Dr. Frederick, it happens “a fair bit” that a survey is reliable but not valid. (Frederick, Tr. 1041).

Response to Finding No. 843:

Complaint Counsel has no specific response.

844. According to Dr. Frederick, a close ended question asking respondents to define “love” cannot afford the respondents the full opportunity to explain what they understand love to mean. (Frederick, Tr. 1273).

Response to Finding No. 844:

Complaint Counsel has no specific response.

845. According to Dr. Frederick, it is difficult for a person to offer a response to a question when that person does not understand a verb in the question being asked, for example, when the respondent does not understand “biodegradable,” in the question “how much time will it take to biodegrade.” (Frederick, Tr., 1276).

Response to Finding No. 845:

Complaint Counsel has no specific response.

846. Dr. Frederick faults both the APCO and Synovate surveys for having closed-ended rather than open-ended questions. (Frederick, Tr. 1280).

Response to Finding No. 847:

Complaint Counsel has no specific response.

847. Dr. Stewart reviewed both the APCO and Synovate surveys. (Stewart, Tr. 2512).

Response to Finding No. 847:

Complaint Counsel has no specific response.

848. The use of close ended questions in the APCO survey was premature given the state of knowledge of consumers' understanding of biodegradability. (Stewart, Tr. 2513-14).

Response to Finding No. 848:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

849. To use closed-ended questions in a meaningful way requires a deep understanding of all the potential responses that an individual might give. (Stewart, Tr. 2513).

Response to Finding No. 849:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

850. The response options to APCO survey question four were not balanced. (Stewart, Tr. 2513).

Response to Finding No. 850:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

851. Two-thirds of the options that were offered to respondents in APCO question four were one year or less, which predisposes people to select a shorter time frame rather than a longer time frame. (Stewart, Tr. 2513).

Response to Finding No. 851:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

852. The APCO survey, with respect to the question of how long would it take for something to biodegrade, is not valid. (Stewart, Tr. 2514).

Response to Finding No. 852:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

853. The APCO survey is invalid because it does not provide adequate opportunity for consumers to offer their perceptions of how long it would take for something to biodegrade. (Stewart, Tr. 2514).

Response to Finding No. 853:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

854. APCO survey question four is inherently biased because it offers many more opportunities to select an answer that reflects one year or less than a longer time period. (Stewart, Tr. 2514–15).

Response to Finding No. 854:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

855. Conclusions about people's perceptions of the length of time that biodegradation should require cannot be drawn from the APCO survey. (Stewart, Tr. 2515).

Response to Finding No. 855:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

856. The Synovate survey is flawed because it uses closed-ended questions when asking about the length of time that biodegradation should occur. (Stewart, Tr. 2515).

Response to Finding No. 856:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

857. Given the current understanding and state of knowledge with respect to consumer perception of biodegradation, open-ended questions are "much more suitable, much more appropriate, much more informative, than closed-ended questions." (Stewart, Tr. 2516).

Response to Finding No. 857:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

858. Numerous problems arise when using closed-ended questions to determine the percentage of the population that share the same beliefs. (Stewart, Tr. 2516–17).

Response to Finding No. 858:

The Court should disregard this finding because it merely provides an opinion by Respondent’s expert and does not state any fact.

859. One problem with using closed-ended questions is that the limited possible answer choices will preclude respondents from giving an accurate answer that reflects their real perceptions. (Stewart, Tr. 2517).

Response to Finding No. 859:

The Court should disregard this finding because it merely provides an opinion by Respondent’s expert and does not state any fact.

860. One reason surveyors need to do more work involving open-ended questions and interviews early in the exploration of a topic like biodegradation is so that surveyors can be sure that when they do finally do design close-ended questions, that they have given people the full array of response options. (Stewart, Tr. 2517).

Response to Finding No. 860:

The Court should disregard this finding because it merely provides an opinion by Respondent’s expert and does not state any fact.

861. “[M]isleading homogeneity’ is simply a situation in which one characterizes a sample or a population as being more alike, more similar, more homogenous than is actually the case.” (Stewart, Tr. 2518).

Response to Finding No. 861:

Complaint Counsel has no specific response.

862. One good example of misleading homogeneity is that in the 1950s it looked like Americans were very homogenous with respect to their preferences for media; however that false appearance of homogeneity, i.e. misleading homogeneity, occurred only because Americans had only three channels to choose from when watching television. (Stewart, Tr. 2518–19).

Response to Finding No. 862:

Complaint Counsel has no specific response.

863. APCO survey question four created a sense of far greater homogeneity than actually exists. (Stewart, Tr. 2519).

Response to Finding No. 863:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

864. Misleading homogeneity also exists in the Synovate survey. (Stewart, Tr. 2520).

Response to Finding No. 864:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

865. Both the APCO and Synovate surveys have "serious limitations." (Stewart, Tr. 2593).

Response to Finding No. 865:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

866. The Green Guides criticize the APCO and Synovate surveys in a manner similar to Dr. Stewart. (Stewart, Tr. 2593–94).

Response to Finding No. 866:

Complaint Counsel has no specific response.

867. The APCO study uses close-ended questions, which are unhelpful and misleading when there are many possible answers among respondents. (Stewart, Tr. 2512–13; RX 856 (Stewart Rep. at 7); RX-858 (Frederick, Dep. at 35–36, 165)).

Response to Finding No. 867:

Complaint Counsel has no specific response.

868. When beginning consumer perception work in a new area, open-ended questions are essential. (Stewart, Tr. 2509–10, 2516–18; RX 856 (Stewart, Rep. at 7)).

Response to Finding No. 868:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

869. Close-ended questions inherently suggest greater homogeneity within a sample of respondents than may actually exist because close-ended questions exist in a universe with only four or five possible responses. (Stewart, Tr. 2516–17; RX 856 (Stewart, Rep. at 7))

Response to Finding No. 869:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

870. An example of misleading homogeneity is found in the APCO survey question regarding how long it should take for something to decompose if it is labeled biodegradable. (Stewart, Tr. 2514, 2519; RX 856 (Stewart, Rep. at 7)).

Response to Finding No. 870:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

871. In question four of the APCO survey, four of the six response options are a year or less, and Drs. Frederick and Stewart concluded that it is not surprising that 60% of the respondents selected an answer of one year or less. (Frederick, Tr. 1045; RX 856 (Stewart, Rep. at 7–8)).

Response to Finding No. 871:

Complaint Counsel has no specific response.

872. In fact, a random selection of answers by respondents to question four of the APCO survey would yield 66% of responses within the “year or less” category. (RX 856 (Stewart, Rep. at 7–8); RX-597, at 2).

Response to Finding No. 872:

Complaint Counsel has no specific response.

873. Dr. Frederick disagrees with the statement in the FTC's Green Guides Statement of Basis and Purpose that “[t]he Synovate study results suggest that respondents' answers may have been not only biased but also influenced by a tendency to avoid extreme answers.” (RX 348 at IV(E)(4)(a); RX-858 (Frederick, Dep. at 155–56)).

Response to Finding No. 873:

Complaint Counsel has no specific response.

874. Dr. Frederick disagrees with the statement in the FTC's Green Guides Statement of Basis and Purpose that “[r]eliable real word conclusions cannot be drawn from the Synovate study.” (RX 348 at IV(E)(4)(a); RX-858 (Frederick, Dep. at 157–58)).

Response to Finding No. 874:

Complaint Counsel has no specific response.

875. Dr. Frederick has criticisms for both the APCO and Synovate surveys. (Frederick, Tr. 1270).

Response to Finding No. 875:

Complaint Counsel has no specific response.

876. Dr. Frederick believes that the APCO study has the potential to introduce bias because of the way in which response options were presented and because of the use of the word “should.” (Frederick, Tr. 1270).

Response to Finding No. 876:

Complaint Counsel has no specific response.

877. Dr. Stewart and Dr. Frederick both agree that the APCO survey is flawed with respect to the response options provided to respondents. (Stewart, Tr. 2618).

Response to Finding No. 877:

Complaint Counsel has no specific response.

B. Complaint Counsel’s Survey is Incompetent and Unreliable, and Should be Disregarded

878. Dr. Frederick is not an expert in the standards that apply to the evaluation of survey evidence in federal administrative proceedings. (Frederick, Tr. 1185).

Response to Finding No. 878:

Complaint Counsel has no specific response.

879. Dr. Frederick is not familiar with the standards used to determine qualifications of survey experts to testify in federal court. (Frederick, Tr. 1185).

Response to Finding No. 879:

Complaint Counsel has no specific response.

880. Dr. Frederick is not familiar with the standards that are used to determine the qualifications of survey evidence in proceedings before the Federal Trade Commission. (Frederick, Tr. 1185)

Response to Finding No. 880:

Complaint Counsel has no specific response.

881. Dr. Frederick is not familiar with the Reference Manual on Scientific Evidence, Third Edition. (Frederick, Tr. 1187).

Response to Finding No. 881:

Complaint Counsel has no specific response.

882. Dr. Frederick is not familiar with the Manual on Complex Litigation, Fourth Edition. (Frederick, Tr. 1187).

Response to Finding No. 882:

Complaint Counsel has no specific response.

883. Dr. Frederick knows of no specific criteria that are required to be present in a survey in order for a survey to be valid. (Frederick, Tr. 1190).

Response to Finding No. 883:

Complaint Counsel has no specific response.

884. Dr. Frederick is not familiar with the concept of “disruptive questioning.” (Frederick, Tr. 1190).

Response to Finding No. 884:

Complaint Counsel has no specific response.

885. Complaint Counsel drafted sections of Dr. Frederick’s expert report. (Frederick, Tr. 1191–92).

Response to Finding No. 885:

Complaint Counsel has no specific response.

886. Dr. Frederick did not draft the table of contents to his expert report. (Frederick, Tr. 1191).

Response to Finding No. 886:

Complaint Counsel has no specific response.

887. Dr. Frederick did not draft paragraphs 6, 7, 9, 10, 12 and part of paragraph 13 of his expert report. (Frederick, Tr. 1194–95).

Response to Finding No. 887:

Complaint Counsel has no specific response.

888. Dr. Frederick believes that Complaint Counsel drafted the table of contents, and paragraphs 6, 7, 9, 10, and 12 and part of paragraph 13 of his expert report. (Frederick, Tr. 1194–95).

Response to Finding No. 888:

Complaint Counsel has no specific response.

889. Complaint Counsel drafted three of the four references on page seven of Dr. Frederick’s expert report, namely the Google Consumer Surveys Product Overview reference, the Google Incorporated, et al. reference, and the Nate Silver reference. (Frederick, Tr. 1195).

Response to Finding No. 889:

Complaint Counsel has no specific response.

890. Dr. Frederick did not draft footnotes two and three on page seven of his expert report. (Frederick, Tr. 1196).

Response to Finding No. 890:

Complaint Counsel has no specific response.

891. Dr. Frederick did not draft footnote 6 on page 11 of his expert report. (Frederick, Tr. 1196).

Response to Finding No. 891:

Complaint Counsel has no specific response.

892. Dr. Frederick did not draft, and Complaint Counsel drafted footnotes 8 and 10 and the parenthetical which reads “besting better-known rivals such as Gallup, CNN, and Rasmussen,” on page 12 of Dr. Frederick’s expert report. (Frederick, Tr. 1196).

Response to Finding No. 892:

Complaint Counsel has no specific response.

893. Complaint Counsel also drafted the reference to Nate Silver’s blog on page 12 of Dr. Frederick’s expert report. (Frederick, Tr. 1196).

Response to Finding No. 893:

Complaint Counsel has no specific response.

894. Before seeing the draft of his expert report after Complaint Counsel revised it, Dr. Frederick was not aware of any of the content that Complaint Counsel added to his expert report. (Frederick, Tr. 1195–96).

Response to Finding No. 894:

Complaint Counsel has no specific response.

895. The only surveys Dr. Frederick conducted in this proceeding were Google Consumer Surveys. (Frederick, Tr. 1196).

Response to Finding No. 895:

Complaint Counsel has no specific response.

896. Dr. Frederick knew of but failed to perform an internet panel survey for this proceeding. (Frederick, Tr. 1197).

Response to Finding No. 896:

Complaint Counsel has no specific response.

897. Dr. Frederick knew of but failed to perform an in person interview for this proceeding. (Frederick, Tr. 1197).

Response to Finding No. 897:

Complaint Counsel has no specific response.

898. Dr. Frederick knew of but failed to perform an e-mail survey for this proceeding. (Frederick, Tr. 1197).

Response to Finding No. 898:

Complaint Counsel has no specific response.

899. The FTC paid Dr. Frederick a flat fee of \$40,000 to be a witness in this case. (Frederick, Tr. 1201).

Response to Finding No. 899:

Complaint Counsel has no specific response.

900. The less Dr. Frederick had to pay for a survey, on assistants, and on costs, the more money he would net as pay for his work in this case. (Frederick, Tr. 1201).

Response to Finding No. 900:

Complaint Counsel has no specific response.

901. In total, Dr. Frederick's Google Consumer Surveys cost an estimated \$2,000.00. (Frederick, Tr. 1203).

Response to Finding No. 901:

Complaint Counsel has no specific response.

902. Of the \$40,000.00 the FTC paid to Dr. Frederick, Dr. Frederick profited approximately \$32,010.00. (Frederick, Tr. 1203).

Response to Finding No. 902:

Complaint Counsel has no specific response.

903. Two important reasons why Dr. Frederick chose to use Google Consumer Surveys for his work in this case as opposed to other survey methodologies are because of the low costs of conducting a Google Consumer Survey and because of his familiarity with Google Consumer Survey. (Frederick, Tr. 1206).

Response to Finding No. 903:

Complaint Counsel has no specific response.

904. The purpose of Dr. Frederick's Google Consumer Survey was an effort to demonstrate that despite its flaws, the APCO survey produced valid and reliable results. (Stewart, Tr. 2616; RX 856 (Stewart, Rep at 8 n. 4)).

Response to Finding No. 904:

Complaint Counsel has no specific response.

905. The purpose of Dr. Frederick's Google Consumer Survey was not intended to be an objective analysis of what people believe about biodegradability. (Stewart, Tr. 2616; RX 856 (Stewart, Rep at 8 n. 4)).

Response to Finding No. 904:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

906. Dr. Frederick conducted survey research for this litigation using Google Consumer Surveys. (Frederick, Tr. 1060).

Response to Finding No. 906:

Complaint Counsel has no specific response.

907. No single person was ever presented with more than one question in Dr. Frederick's Google Consumer Surveys. (Frederick, Tr. 1224).

Response to Finding No. 907:

Complaint Counsel has no specific response.

908. Dr. Frederick's Google Consumer Surveys did not contain any screening questions. (Frederick, Tr. 1224–25).

Response to Finding No. 908:

Complaint Counsel has no specific response.

909. Dr. Frederick could have, but did not ask any questions to help eliminate those respondents who may have been completely ignorant of the subject of plastics biodegradation or entirely uninterested in participating in his Google Consumer Surveys. (Frederick, Tr. 1227–28).

Response to Finding No. 909:

Complaint Counsel has no specific response.

910. Dr. Frederick did not provide to any of the respondents any definitions of terms in his Google Consumer Survey questions. (Frederick, Tr. 1228).

Response to Finding No. 910:

Complaint Counsel has no specific response.

911. The survey research Dr. Frederick performed for this litigation cannot be characterized as a survey. (Stewart, Tr. 2596).

Response to Finding No. 911:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

912. Dr. Frederick's Google Consumer Surveys do not meet the typical definitions of a survey as would be used in the marketing and survey profession. (Stewart, Tr. 2596).

Response to Finding No. 912:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

913. Dr. Frederick did not follow the principles for survey research explained in the Manual for Complex Litigation, Fourth Edition in conducting his Google Consumer Surveys. (Stewart, Tr. 2596–97).

Response to Finding No. 913:

Complaint Counsel has no specific response.

914. Dr. Frederick did not follow the Standards for Scientific Evidence, Third Edition in conducting his Google Consumer Surveys. (Stewart, Tr. 2597).

Response to Finding No. 914:

Complaint Counsel has no specific response.

915. Dr. Frederick’s Google Consumer Survey does not meet generally accepted standards for survey research. (Stewart, Tr. 2598; RX 856 (Stewart, Rep. at 10)).

Response to Finding No. 915:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

916. There are seven characteristics of acceptable survey research: 1) the population was properly chosen and defined; 2) the sample chosen was representative of that population 3) the data gathered were accurately reported; 4) the data were analyzed in accordance with accepted statistical principles; 5) the questions asked were clear and not leading; 6) the survey was conducted by qualified persons following proper interview procedures; and 7) the process was conducted so as to ensure objectivity (the study was double blind). (Stewart, Tr. 2599; RX 856 (Stewart, Rep. at 10)).

Response to Finding No. 916:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

917. Dr. Frederick’s Google Consumer Survey fails to satisfy most of the seven characteristics of acceptable survey research. (Stewart, Tr. 2599-2604).

Response to Finding No. 917:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

918. Dr. Frederick’s Google Consumer Survey failed to properly choose and define a population because it is not clear what the population was that he was analyzing;

while it appears to be some subset of the American population, it's not defined by an age and there is no lower bound. (Stewart, Tr. 2600).

Response to Finding No. 918:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

919. Dr. Frederick's Google Consumer Survey is defined in terms of who participated in the survey, which is not an appropriate way to define a population. (Stewart, Tr. 2600).

Response to Finding No. 919:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact.

920. Dr. Frederick collected no demographic information from his respondents. (Stewart, Tr. 2600).

Response to Finding No. 920:

Professor Frederick collected demographic information from approximately 29,000 responses to his GCS surveys. (Frederick, Tr. 1062-1064); (CCX-863 (results); CCX-867 (product overview); CCX-868 at 3 (product summary); CCX-976 (GCS illustration Professor Frederick prepared and testified about); CCX-1074 (Google promotional video explaining GCS); CCX-865 at 3 (discussing Professor Frederick's teleconferences with Google)).

921. Dr. Frederick's Google Consumer Survey failed to implement a sample that was representative of the population. (Stewart, Tr. 2600).

Response to Finding No. 921:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

922. There is no way to know whether Dr. Frederick's population was representative or not. (Stewart, Tr. 2600).

Response to Finding No. 922:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

923. Dr. Frederick failed to gather and accurately report the data obtained in his Google Consumer Survey. (Stewart, Tr. 2601).

Response to Finding No. 923:

The Court should disregard this finding because it merely provides an opinion by Respondent's expert and does not state any fact. Furthermore, every piece of data collected in response to each of Professor Frederick's questions is in the record. CCX-863.

924. Dr. Frederick ignored some data because some respondents did not offer the time frames he was looking for. (Stewart, Tr. 2601).

Response to Finding No. 924:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

925. Dr. Frederick's questions provided no opportunity for respondents to qualify their answers. (Stewart, Tr. 2601).

Response to Finding No. 925:

Complaint Counsel has no specific response.

926. Ignoring some data is the same as not reporting it accurately. (Stewart, Tr. 2601).

Response to Finding No. 926:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

927. Dr. Frederick failed to analyze the data in accordance with accepted statistical principles. (Stewart, Tr. 2601-02).

Response to Finding No. 927:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

928. By ignoring significant portions of the data obtained in his Google Consumer Surveys, Dr. Frederick is misrepresenting the data. (Stewart, Tr. 2602).

Response to Finding No. 9298

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

929. It is not appropriate for a researcher not to code a response because that response does not fit into a desirable structure. (Stewart, Tr. 2602).

Response to Finding No. 929:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

930. Dr. Frederick provided no evidence or testimony that consumer's thought that it was important for a product to be labeled "biodegradable." (Frederick, Tr. 1025–1424; CCX 860 (Frederick, Rep.); CCX 865 (Frederick Rebuttal Rep.)).

Response to Finding No. 930:

Complaint Counsel has no specific response.

931. Dr. Frederick provided no evidence or testimony that the term "biodegradable" was material to any consumer's purchasing decision. (Frederick, Tr. 1025–1424; CCX 860 (Frederick, Rep.); CCX 865 (Frederick Rebuttal Rep.)).

Response to Finding No. 931:

Complaint Counsel has no specific response.

932. Dr. Frederick provided no evidence or testimony that any consumer relied on any representation made by ECM. (Frederick, Tr. 1025–1424; CCX 860 (Frederick, Rep.); CCX 865 (Frederick Rebuttal Rep.)).

Response to Finding No. 932:

Complaint Counsel has no specific response.

933. In order to be valid, a survey must report all of the data and statistics. (Stewart, Tr. 2602).

Response to Finding No. 934:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

934. The questions in Dr. Frederick's Google Consumer Surveys were not clear and were misleading. (Stewart, Tr. 2602).

Response to Finding No. 934:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

935. For individuals who have no understanding of the general meaning of biodegradability, it is not clear what questions asking about biodegradability would mean to those individuals. (Stewart, Tr. 2602–03).

Response to Finding No. 935:

Complaint Counsel has no specific response.

936. Proper interview procedures as understood in generally accepted standards of survey research were not followed in Dr. Frederick’s Google Consumer Surveys. (Stewart, Tr. 2603).

Response to Finding No. 936:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

937. Dr. Frederick’s Google Consumer Surveys involved Dr. Frederick, a researcher knowledgeable of the desire for a particular outcome, being very active in the data collection and coding of the research. (Stewart, Tr. 2603).

Response to Finding No. 937:

Complaint Counsel has no specific response.

938. Andrew Meyer is Dr. Frederick’s graduate student. (Frederick, Tr. 1284, 1316).

Response to Finding No. 938:

Complaint Counsel has no specific response.

939. The process of Dr. Frederick’s Google Consumer Survey was not conducted so as to ensure objectivity. (Stewart, Tr. 2603).

Response to Finding No. 939:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

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940. Dr. Frederick and Mr. Meyer coded nearly all of the responses to the Google Consumer Survey questions. (Stewart, Tr. 2604; Frederick, Tr 1285).

Response to Finding No. 940:

Complaint Counsel has no specific response.

941. Dr. Frederick's coding process was not double-blinded; the people involved in the actual coding were not blind. (Stewart, Tr. 2604).

Response to Finding No. 941:

Complaint Counsel has no specific response.

942. Dr. Frederick and Mr. Meyer were aware of the sponsor of the research, the purpose of the research, and understood what was sought as a result of the research. (Stewart, 2604; Frederick, Tr. 1285)

Response to Finding No. 942:

Complaint Counsel has no specific response.

943. Dr. Frederick's Google Consumer Survey is not reliable and is not valid. (Stewart, Tr. 2604).

Response to Finding No. 944:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

944. Dr. Frederick's Google Consumer Survey results cannot be relied upon. (Stewart, Tr. 2604).

Response to Finding No. 946:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

945. No conclusions can be drawn from Dr. Frederick's Google Consumer Surveys. (Stewart, Tr. 2604).

Response to Finding No. 945:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

946. It is very difficult to draw any inferences about the validity of research based on an answer to a single question, particularly when the researcher does not know anything about that particular respondent. (Stewart, Tr. 2605).

Response to Finding No. 946:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

947. When there is only one question asked of a respondent, a researcher cannot know what the response indicates, whether it is a sincere response, whether it is a response that would be subject to qualification if there were a follow-up question. (Stewart, Tr. 2605).

Response to Finding No. 947:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

948. When there is only one question asked of a respondent, a researcher cannot know what that response means. (Stewart, Tr. 2605–06).

Response to Finding No. 948:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

949. A researcher cannot address the question of what a consumer's perception of "biodegradable" is with a single question. (Stewart, Tr. 2606).

Response to Finding No. 949:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

950. In order to obtain nuances, dependencies, and contextual effects of a consumer's belief of what "biodegradable" means, a researcher must ask follow up questions. (Stewart, Tr. 2606).

Response to Finding No. 950:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

951. Dr. Frederick's used a strictly numerical approach in his Google Consumer Surveys. (Stewart, Tr. 2606).

Response to Finding No. 951:

Professor Frederick employed a bright-line rule that "any response containing both a numeric specification and an accompanying temporal unit" was coded, and other responses were not. CCX-865 at 6; (Frederick, Tr. 1128).

952. A strictly numerical approach is objectionable, particularly in the absence of other information, because it narrowly limits the ability of respondents to express their full opinions. (Stewart, Tr. 2606–07).

Response to Finding No. 952:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

953. By restricting responses to a particular type of response, a researcher by definition creates greater homogeneity than would be the case if the researcher allowed respondents more latitude in terms of how they answer the question. (Stewart, Tr. 2607).

Response to Finding No. 953:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

954. Dr. Frederick’s sampling methods were haphazard and inconsistent. (Stewart, Tr. 2607–08; RX 856 (Stewart, Rep. at 11)).

Response to Finding No. 954:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

955. As a result of Dr. Frederick’s population being poorly defined and the inability to know the characteristics of people who may show up at the particular website where Dr. Frederick’s survey questions were posted, there is no way to develop an assessment of whether or not the respondents to Dr. Frederick’s Google Consumer Survey were appropriate, interested, or even willing to give sincere responses. (Stewart, Tr. 2608).

Response to Finding No. 955:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

956. Many of the responses given to Dr. Frederick’s Google Consumer Survey were nonsensical and inappropriate to the question asked. (Stewart, Tr. 2608).

Response to Finding No. 956:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact. Moreover, Professor Frederick

coded very few responses that provided very short biodegradation time estimates. (Frederick, Tr. 1302-1305; 1377).

957. The GreenBook Blog is a publication that is well-known in the practicing market research community and well-read researchers. (Stewart, Tr. 2611).

Response to Finding No. 957:

Complaint Counsel has no specific response.

958. Disinterest bias refers to the fact that if people are uninterested in a survey, if they are disengaged, or, even worse, if the survey serves as an interruption for an activity that they are more interested in than the survey, that those people will be likely to give insincere, random, and often nonsensical response to simply get past what is essentially an interruption in what they were doing before being confronted by the survey. (Stewart, Tr. 2609, 2612).

Response to Finding No. 958:

Complaint Counsel has no specific response.

959. “Editing,” in the survey research context, refers to a process whereby one or more neutral individuals will go through data and identify nonsensical, nonresponsive types and eliminate those. (Stewart, Tr. 2613).

Response to Finding No. 959:

Complaint Counsel has no specific response.

960. The editing process is very important and needs to be carried out by someone who is not knowledgeable of the purpose of the research. (Stewart, Tr. 2613).

Response to Finding No. 960:

Complaint Counsel has no specific response.

961. Dr. Frederick failed to appropriately use the editing process in his Google Consumer Surveys. (Stewart, Tr. 2616).

Response to Finding No. 961:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

962. Dr. Frederick inappropriately used the editing process to edit out responses which did not fit his prior notion of the structure that acceptable answers should fit. (Stewart, Tr. 2616).

Response to Finding No. 962:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

963. Dr. Frederick inappropriately used the editing process to push the responses in a direction consistent with what he was looking for as opposed to an honest reporting of the responses of the participants in the survey. (Stewart, Tr. 2616).

Response to Finding No. 963:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

964. The design of Dr. Frederick's Google Consumer Surveys prevents anyone from making any conclusions about the source of the respondents' false beliefs. (Stewart, Tr. 2616-17).

Response to Finding No. 964:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

965. There is no evidence in or from Dr. Frederick's Google Consumer Surveys that ECM caused any false belief in any respondent. (Stewart, Tr. 2617).

Response to Finding No. 965:

Complaint Counsel has no specific response.

966. Dr. Stewart's survey produced very different results than Dr. Frederick's Google Consumer Survey. (Stewart, Tr. 2617).

Response to Finding No. 966:

Complaint Counsel has no specific response.

967. Two surveys that are both flawed that produce similar results are still flawed. (Stewart, Tr. 2620).

Response to Finding No. 967:

Complaint Counsel has no specific response.

968. The fact that two flawed surveys might reflect something similar may simply reflect the fact that they share the same flaw. (Stewart, Tr. 2620).

Response to Finding No. 968:

Complaint Counsel has no specific response.

969. Regardless of how many flawed surveys produce similar results, the surveys remain flawed. (Stewart, Tr. 2620).

Response to Finding No. 969:

Complaint Counsel has no specific response.

970. When numerous flawed surveys produce similar outcomes, the similarity of outcomes may simply be a reflection of the fact that the flawed surveys share the same flaw. (Stewart, Tr. 2620).

Response to Finding No. 970:

Complaint Counsel has no specific response.

971. Dr. Frederick adopted a rule in coding his responses that held that any response with a number and a unit was counted, whether valid or not. (Stewart, Tr. 2613).

Response to Finding No. 971:

Complaint Counsel has no specific response.

972. Dr. Frederick did not code response to his Google Consumer Survey questions that suggest that the respondent did not know the answer. (Stewart, Tr. 2613; RX 856 (Stewart, Rep. at 12)).

Response to Finding No. 972:

Complaint Counsel has no specific response.

973. The implications of Dr. Fredrick failing to code response wherein respondents are suggesting that they do not know the answer are 1) that no one can know how many people who gave a response that Dr. Frederick coded might have actually not known an answer, but gave a response he or she thought valid to get through the survey wall; and 2) that to the extent that “don’t know” is a perfectly reasonable response, the researcher needs to include those individuals who do not know into the total sample—the “don’t know” responses cannot be ignored simply because they did not give the type of answer the researcher wanted. (Stewart, Tr. 2614).

Response to Finding No. 973:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

974. The coding in Dr. Frederick's Google Consumer Surveys was not double blind. (Stewart, Tr. 2615).

Response to Finding No. 974:

Neither GCS respondents (who provided data) nor GCS itself (who collected the data) knew who sponsored Professor Frederick's study. (Stewart, Tr. 2745-2746); (Frederick, Tr. 1132).

975. In Dr. Frederick's Google Consumer Surveys, the people doing the vast majority of the coding were fully aware of what was being sought from the survey. (Stewart, Tr. 2615; Frederick, Tr. 1285).

Response to Finding No. 975:

Complaint Counsel has no specific response.

976. Dr. Frederick's coding of his Google Consumer Surveys lacked objectivity because the coding ignored certain responses that did not fit into the form of answer that Dr. Frederick desired. (Stewart, Tr. 2615; Frederick, Tr. 1128).

Response to Finding No. 976:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

977. The results of Dr. Frederick's coding demonstrate that there was a clear desire to push the responses in a particular direction. (Stewart, Tr. 2615).

Response to Finding No. 977:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

978. The coding in Dr. Frederick's Google Consumer Surveys lacked objectivity. (Stewart, Tr. 2615).

Response to Finding No. 978:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

979. Using Google Consumer Surveys, Dr. Frederick asked a single question to nearly 29,000 individual respondents. (Frederick, Tr. 1060, 1207, 1223).

Response to Finding No. 979:

Complaint Counsel has no specific response.

980. When Judge Chappell asked Dr. Frederick “did I understand you to say that anyone who responds to the Google survey, each person only gets one question?” Dr. Frederick replied “in my survey, any single respondent only received one question.” (Frederick, Tr. 1217)

Response to Finding No. 980:

Complaint Counsel has no specific response.

981. When Judge Chappell then clarified, “so one person may say how long does it take for a product to biodegrade, and that same person is not asked how long does it take for a product to biodegrade.” Dr. Frederick answered “that’s absolutely correct.” (Frederick, Tr. 1217).

Response to Finding No. 981:

Complaint Counsel has no specific response.

982. Dr. Frederick is not familiar with anonymous browsing features. (Frederick, Tr. 1088).

Response to Finding No. 982:

Complaint Counsel has no specific response.

983. Dr. Frederick does not know what Google does with a respondent to a Google Consumer Survey question that, for example, goes to a proxy server or uses any of the new anonymous surfing features on most late editions of web browsers. (Frederick, Tr. 1088–89).

Response to Finding No. 983:

Complaint Counsel has no specific response.

984. Dr. Frederick does not know what Google does if a respondent uses some type of cloaking or anonymous technology before responding to a Google Consumer Survey question. (Frederick, Tr. 1088).

Response to Finding No. 984:

Complaint Counsel has no specific response.

985. Dr. Frederick does not know what proxy servers are. (Frederick, Tr. 1088).

Response to Finding No. 985:

Complaint Counsel has no specific response.

986. Google, and not Dr. Frederick, chooses the websites on which to present the surveys.

Response to Finding No. 986:

Complaint Counsel has no specific response.

987. The Federal Trade Commission has never relied upon a Google Consumer Survey as the basis for its decision in administrative case. (Frederick, Tr. 1191).

Response to Finding No. 987:

Complaint Counsel has no specific response.

988. A person engaged in an online search for specific content can suddenly be presented with an unanticipated popup or a survey wall that contains a single survey question, or multiple survey questions from Google Consumer Surveys. (Frederick, Tr. 1207).

Response to Finding No. 988:

Complaint Counsel has no specific response.

989. Dr. Frederick does not know which websites featured his survey questions. (Frederick, Tr. 1208).

Response to Finding No. 989:

Complaint Counsel has no specific response.

990. Dr. Frederick does not know the specific sites on which any particular respondent encountered his Google Consumer Survey questions. (Frederick, Tr. 1209).

Response to Finding No. 990:

Complaint Counsel has no specific response.

991. When a person using the internet encounters a Google Consumer Survey question after clicking a link, that person gets some of the content from that link, but the rest of the content is redacted unless and until that person either completes the Google Consumer Survey question or pays money for the content. (Frederick, Tr. 1212).

Response to Finding No. 991:

Complaint Counsel has no specific response.

992. Dr. Frederick did not choose the number of websites on which his questions were posted. (Frederick, Tr. 1213).

Response to Finding No. 992:

Complaint Counsel has no specific response.

993. Google limits the number of characters in a survey question to a set figure. (Frederick, Tr. 1214–15).

Response to Finding No. 993:

Complaint Counsel has no specific response.

994. In three separate instances Dr. Frederick had to revise questions he wanted to ask survey respondents because his proposed questions contained too many characters according to Google. (Frederick, Tr. 1215).

Response to Finding No. 994:

Complaint Counsel has no specific response.

995. Dr. Frederick used four types of questions in his surveys: open-ended questions, binary questions, multichotomous questions, and hybrid questions. (Frederick, Tr. 1215–16).

Response to Finding No. 996:

Complaint Counsel has no specific response.

996. In an open-ended question a respondent can type in whatever he or she wants. (Frederick, Tr. 1215–16).

Response to Finding No. 996:

Complaint Counsel has no specific response.

997. In a binary question, the respondent can click either the button yes or the button no. (Frederick, Tr. 1516).

Response to Finding No. 997:

Complaint Counsel has no specific response.

998. In a multichotomous question, the respondent can choose one of five answers.

Response to Finding No. 998:

Complaint Counsel has no specific response.

999. In a hybrid question, respondents were restricted to providing a numeric answer. (Frederick, Tr. 1216).

Response to Finding No. 999:

Complaint Counsel has no specific response.

1000. For the binary and multichotomous questions, Dr. Frederick does not know whether any answers given by respondents were valid. (Frederick, Tr. 1220).

Response to Finding No. 1000:

Complaint Counsel has no specific response.

1001. In the binary and multichotomous questions, Dr. Frederick believes that some respondents were actually just clicking buttons at random in order to get through the survey. (Frederick, Tr. 1220).

Response to Finding No. 1001:

Complaint Counsel has no specific response.

1002. Dr. Frederick did not ask any questions of respondents in his Google Consumer Surveys to determine if the respondents understood the meaning of any of the terms in the questions. (Frederick, Tr. 1228).

Response to Finding No. 1002:

Complaint Counsel has no specific response.

1003. Dr. Frederick did not ask any questions in his Google Consumer Surveys to prevent those who lack knowledge of, or an interest in, the subject matter of plastic biodegradation from participating in his surveys. (Frederick, Tr. 1228).

Response to Finding No. 1003:

Complaint Counsel has no specific response.

1004. Google provides only indirect circumstantial evidence or information on Google Consumer Survey's respondents' demographics. (Frederick, Tr. 1229).

Response to Finding No. 1004:

Complaint Counsel has no specific response.

1005. Google uses a respondent's cookies or web site visitation information to infer a respondent's gender and age, and these inferences can be wrong. (Frederick, Tr. 1229).

Response to Finding No. 1005:

Complaint Counsel has no specific response.

1006. According to Dr. Frederick, “there are several reasons why it would be difficult for Google to make, you know, a really accurate imputation of various demographic characteristics. (Frederick, Tr. 1230).

Response to Finding No. 1006:

Complaint Counsel has no specific response.

1007. Dr. Frederick, could have, but chose not to, ask any two part questions in his surveys where the first question obtains direct information on the respondent’s demographics. (Frederick, Tr. 1231).

Response to Finding No. 1007:

Complaint Counsel has no specific response.

1008. Dr. Frederick is confused as to who the relevant population was for his survey, whether it is “any adult that would buy a plastic product” or “any person who would buy a plastic product.” (Frederick, Tr. 1232).

Response to Finding No. 1008:

The Court should disregard this finding because it is not supported by the citation to the record.

1009. Dr. Frederick has no way of knowing whether someone who would not buy a plastic product participated in his Google Consumer Surveys. (Frederick, Tr. 1235–36).

Response to Finding No. 1009:

Complaint Counsel has no specific response.

1010. Regardless of how Dr. Frederick wanted to define his survey population, Google defined it for him as the “general population in the United States on Google Consumer Surveys Publisher Network.” (Frederick, Tr. 1238–39).

Response to Finding No. 1010:

Complaint Counsel has no specific response.

1011. People who are not adults may have responded to Dr. Frederick’s survey. (Frederick, Tr. 1239).

Response to Finding No. 1011:

Complaint Counsel has no specific response.

1012. An IP address of a survey respondent can only tell Google the location, but not the age, nationality, or gender of the person who is actually answered the survey question. (Frederick, Tr. 1239).

Response to Finding No. 1012:

Complaint Counsel has no specific response.

1013. Google, and by extension Dr. Frederick, cannot know who is answering any given Google Consumer Survey question. (Frederick, Tr. 1239).

Response to Finding No. 1013:

Complaint Counsel has no specific response.

1014. Google Consumer Surveys provides no means for the surveyor to follow up with a respondent in order to gain a better understanding of what the respondent intended to convey in his or her response to an open-ended question. (Frederick, Tr. 1247–48).

Response to Finding No. 1014:

Complaint Counsel has no specific response.

1015. Dr. Frederick does not contend that all responses to his Google Consumer Surveys were given sincerely. (Frederick, Tr. 1248–49).

Response to Finding No. 1015:

Complaint Counsel has no specific response.

1016. Dr. Frederick does not contend that all respondents who answered his Google Consumer Survey questions actually read the questions. (Frederick, Tr. 1253).

Response to Finding No. 1016:

Complaint Counsel has no specific response.

1017. Dr. Frederick’s only basis for determining whether any given response to any question in his Google Consumer Surveys is sincere is “entirely inferential.” (Frederick, Tr. 1254).

Response to Finding No. 1017:

Complaint Counsel has no specific response.

1018. Dr. Frederick does not contend that all respondents to his Google Consumer Surveys comprehended every term in his questions. (Frederick, Tr. 1254).

Response to Finding No. 1018:

Complaint Counsel has no specific response.

1019. Seventy-five percent of potential respondents who saw Dr. Frederick's Google Consumer Survey questions opted not to answer the question. (Frederick, Tr. 1254-55).

Response to Finding No. 1019:

Complaint Counsel has no specific response.

1020. Dr. Frederick is one of the authors of an article entitled "The Limits of Attraction." (CCX 977).

Response to Finding No. 1020:

Complaint Counsel has no specific response.

1021. This article notes that some respondents who answer questions from Google Consumer Surveys "answer randomly to regain access to the web page as quickly as possible[.]" (CCX 977 at P. 5 n. 5).

Response to Finding No. 1021:

Complaint Counsel has no specific response.

1022. Dr. Frederick thinks "it's a certainty" that some respondents to Google Consumer Survey questions will answer questions randomly. (Frederick, Tr. 1257).

Response to Finding No. 1022:

Complaint Counsel has no specific response.

1023. The images Dr. Frederick used in his Google Consumer Survey questions are not actual images of products in the marketplace. (Frederick, Tr. 1265).

Response to Finding No. 1023:

Complaint Counsel has no specific response.

1024. The images Dr. Frederick used in his Google Consumer Survey questions are invented photo-shopped images created electronically by Andrew Meyer's wife, who superimposed the ECM logo onto certain electronic images. (Frederick, Tr. 1265, 1316).

Response to Finding No. 1024:

Complaint Counsel has no specific response.

1025. Dr. Frederick has never seen any actual product containing an ECM logo or the words “biodegradable from ECM.” (Frederick, Tr. 1266).

Response to Finding No. 1025:

Complaint Counsel has no specific response.

1026. Dr. Frederick did not specify in his Google Consumer Survey questions the type of plastic to which he was referring to in any given question. (Frederick, Tr. 1266).

Response to Finding No. 1026:

Complaint Counsel has no specific response.

1027. One such image created by Dr. Frederick and his employees was what appeared to be a Tupperware container with the ECM logo; this Tupperware container appears to be thicker than other plastic images Dr. Frederick used in his Google Consumer Surveys. (Frederick, Tr. 1266–67; CCX 860 (Frederick, Rep. at 31–32)).

Response to Finding No. 1027:

Complaint Counsel has no specific response.

1028. None of the questions in Dr. Frederick’s Google Consumer Surveys were identical to any of the questions in the APCO or Synovate surveys. (Frederick, Tr. 1277–78).

Response to Finding No. 1028:

Complaint Counsel has no specific response.

1029. Dr. Frederick’s Google Consumer Survey did not use the same survey method as either the APCO or Synovate surveys. (Frederick, Tr. 1278).

Response to Finding No. 1029:

Complaint Counsel has no specific response.

1030. Dr. Frederick defines coding as extracting from a raw response to a survey question an amount of time. (Frederick, Tr. 1282).

Response to Finding No. 1030:

Complaint Counsel has no specific response.

1031. Dr. Frederick, Andrew Meyer, Mohammad Saeed, Lacie D'Amato, and Jane Coates were the coders for Dr. Frederick's Google Consumer Surveys. (Frederick, Tr. 1282).

Response to Finding No. 1031:

Complaint Counsel has no specific response.

1032. Andrew Meyer is Dr. Frederick's graduate student. (Frederick, Tr. 1284).

Response to Finding No. 1032:

Complaint Counsel has no specific response.

1033. Mohammad Saeed is an undergraduate student. (Frederick, Tr. 1285).

Response to Finding No. 1033:

Complaint Counsel has no specific response.

1034. According to Dr. Frederick, some degree of judgment is required in order to code response. (Frederick, Tr. 1283).

Response to Finding No. 1034:

Complaint Counsel has no specific response.

1035. Mr. Meyer was aware that FTC was the sponsor of the Google Consumer Surveys. (Frederick, Tr. 1285).

Response to Finding No. 1035:

Complaint Counsel has no specific response.

1036. Dr. Frederick was the primary coder of the Google Consumer Surveys. (Frederick, Tr. 1285).

Response to Finding No. 1036:

Complaint Counsel has no specific response.

1037. Collectively, Dr. Frederick and Mr. Meyer coded almost all of the responses to Dr. Frederick's Google Consumer Surveys. (Frederick, Tr. 1285).

Response to Finding No. 1037:

Complaint Counsel has no specific response.

1038. Both Dr. Frederick and Mr. Meyer knew that ECM is the respondent in this case. (Frederick, Tr. 1286).

Response to Finding No. 1038:

Complaint Counsel has no specific response.

1039. The first e-mail Dr. Frederick received regarding this proceeding was from Bob Klein, president of Applied Marketing Sciences, Inc., on February 3, 2014. (Frederick, Tr. 1287–88; RX 814).

Response to Finding No. 1039:

Complaint Counsel has no specific response.

1040. The first e-mail Dr. Frederick received regarding this proceeding stated in its entirety:

Hi Shane –

An interesting opportunity has come up that you may be interested in. The FTC is going after a maker of an additive to plastic that claims to make the resulting film “biodegradable.” Science says it doesn’t work. One of their advertising claims is “biodegrades in some period greater than one year” (which is ridiculous when you think it because everything will biodegrade eventually.) But the issue is anchoring which is why I am calling you. Will this claim result in consumers thinking that it is closer to a year than 100 years? Is it okay for me to pass your name along to the FTC attorney who can explain more about what he wants. My sense is that it will be a short report that spells out your credentials and states your opinion. There will be a trial in June. He would like to speak with you this week if you are interested. Let me know if is okay to pass your name along to him.

(RX 814).

Response to Finding No. 1040:

Complaint Counsel has no specific response.

1041. As a coder and as the principal investigator, Dr. Frederick purportedly exercised his judgment to set a bright-line rule no non-numerical response of time periods to his Google Consumer Survey question would be coded. (Frederick, Tr. 1306).

Response to Finding No. 1041:

Complaint Counsel has no specific response.

1042. When coding responses to his Google Consumer Survey questions, Dr. Frederick chose to exclude from his data answers like “I don’t know,” “it varies,” and “it depends,” “depends on what it is made of,” “depends on what it is made of, who knows,” “who knows,” “unknown,” “depends on what it is,” “not sure,” “varies,” “I think it varies,” “it depends on what type of material,” “no idea,” “I have no clue,” “depends on the type of material,” “depends on environment,” “depends on product,” “not enough information,” “it varies based on many different conditions,” “depends on the material,” “ambiguous,” “it would be ambig,” and “ambig.” (Frederick, Tr. 1299; 1306–09).

Response to Finding No. 1042:

Complaint Counsel has no specific response.

1043. Dr. Frederick chose to code the raw responses of “one nanosecond,” “forever,” “24 hours,” “immediately,” “17 days,” “one hour,” “one second,” “a human lifetime,” “10,100 years,” “ten minutes,” “122 minutes,” “one minute,” “one hour,” “ten seconds,” “276.5 days,” “one second,” “ten minutes,” “minutes,” “22 days,” “72 hours,” “30 minutes,” “45 seconds,” a week,” “90 minutes,” “60 seconds,” “a few days,” and “one hour.” (Frederick, Tr. 1302–05; RX 951).

Response to Finding No. 1043:

Complaint Counsel has no specific response.

1044. Dr. Frederick chose to code the raw response “never.” (Frederick, Tr. 1302; RX 951).

Response to Finding No. 1044:

Complaint Counsel has no specific response.

1045. According to Dr. Frederick, a respondent who is otherwise predisposed to take a survey question seriously might think that a question about how much time a plastic takes to biodegrade is ridiculous because it lacks essential facts. (Frederick, Tr. 1313).

Response to Finding No. 1045:

Complaint Counsel has no specific response.

1046. According to Dr. Frederick, a person who does not take a survey question seriously is more likely to answer that question insincerely, whimsically, or with just a guess. (Frederick, Tr. 1313–14).

Response to Finding No. 1046:

Complaint Counsel has no specific response.

1047. According to Dr. Frederick, most people do not have the experience of watching a plastic biodegrade. (Frederick, Tr. 1315).

Response to Finding No. 1047:

Complaint Counsel has no specific response.

1048. Not a single one of the images Dr. Frederick used in his Google Consumer Surveys was an actual plastic product in the market with an ECM logo or with a biodegradable claim upon it. (Frederick, Tr. 1317).

Response to Finding No. 1048:

Complaint Counsel has no specific response.

1049. Andrew Meyer's wife, who photo-shopped the images used in Dr. Frederick's survey, was probably aware that ECM was the respondent in this case and that this was being brought by the FTC against ECM. (Frederick, Tr. 1317–18).

Response to Finding No. 1049:

Complaint Counsel has no specific response.

1050. Dr. Frederick has never seen any product that contained both the ECM logo and term "biodegradable" on it. (Frederick, Tr. 1318).

Response to Finding No. 1050:

Complaint Counsel has no specific response.

1051. Dr. Frederick had no formatting discretion when presenting images in his Google survey because Google provides only fifteen image formats from which to choose. (Frederick, Tr. 1319).

Response to Finding No. 1051:

Complaint Counsel has no specific response.

1052. Dr. Frederick had no ability to control how much contrast Google used when presenting the images in his Google Consumer Surveys. (Frederick, Tr. 1319).

Response to Finding No. 1052:

Complaint Counsel has no specific response.

1053. Dr. Frederick had no ability to control the actual screen size that is presented to a respondent answering his Google Consumer Surveys. (Frederick, Tr. 1319).

Response to Finding No. 1053:

Complaint Counsel has no specific response.

1054. Dr. Frederick had no ability to control the number of pixels associated with the images he used in his Google Consumer Surveys. (Frederick, Tr. 1319).

Response to Finding No. 1054:

Complaint Counsel has no specific response.

1055. At the time Dr. Frederick conducted his Google Consumer Surveys, he had never actually seen a Google Consumer Survey question live on a website. (Frederick, Tr. 1320).

Response to Finding No. 1055:

Complaint Counsel has no specific response.

1056. According to Dr. Frederick, Google Consumer Survey respondents sometimes give random answers to questions. (Frederick, Tr. 1320).

Response to Finding No. 1056:

Complaint Counsel has no specific response.

1057. According to Dr. Frederick, a stratified sample is when you try to have a full range of demographic characteristics in a study. (Frederick, Tr. 1322).

Response to Finding No. 1057:

Complaint Counsel has no specific response.

1058. According to Dr. Frederick, Google Consumer Survey attempts to have a stratified sample by merely inferring demographic characteristics. (Frederick, Tr. 1322).

Response to Finding No. 1058:

Complaint Counsel has no specific response.

1059. Dr. Frederick does not know how many people with cell phones live in households with landlines. (Frederick, Tr. 1324).

Response to Finding No. 1059:

Complaint Counsel has no specific response.

1060. Dr. Frederick does not know how many adult children live with their parents or grandparents in the United States. (Frederick, Tr. 1325).

Response to Finding No. 1060:

Complaint Counsel has no specific response.

1061. Complaint Counsel provided Dr. Frederick with CCX 862, which is information on the demographics of the United States' population from the Census Bureau. (Frederick, Tr. 1327; CCX 862).

Response to Finding No. 1061:

Complaint Counsel has no specific response.

1062. According to Dr. Frederick, about 40% of Americans over age 14 are also over age 50. (Frederick, Tr. 1327; CCX 862).

Response to Finding No. 1062:

Complaint Counsel has no specific response.

1063. According to Dr. Frederick about half of Americans over age 19 are also over age 50. (Frederick, Tr. 1327; CCX 862).

Response to Finding No. 1063:

Complaint Counsel has no specific response.

1064. Dr. Frederick does not know what percentage of people in the United States under age 50 access the internet exclusively through mobile devices.

Response to Finding No. 1064:

Complaint Counsel has no specific response.

1065. Dr. Frederick does not know whether people can access a Google Consumer Survey on a mobile device. (Frederick, Tr. 1329).

Response to Finding No. 1065:

Complaint Counsel has no specific response.

1066. Dr. Frederick does not know what percentage of global mobile internet users use a mobile device as their primary or exclusive means of using the internet. (Frederick, Tr. 1331).

Response to Finding No. 1066:

Complaint Counsel has no specific response.

1067. Dr. Frederick believes that younger people use more mobile devices and that older people tend to you fixed PC to access the internet. (Frederick, Tr. 1332).

Response to Finding No. 1067:

Complaint Counsel has no specific response.

1068. Dr. Frederick does not know the difference between a static IP address and a dynamic IP address. (Frederick, Tr. 1332).

Response to Finding No. 1068:

Complaint Counsel has no specific response.

1069. Dr. Frederick is not familiar with dynamic host configuration protocol. (Frederick, Tr. 1333).

Response to Finding No. 1070:

Complaint Counsel has no specific response.

1070. Dr. Frederick does not know how dynamic host configuration protocol assigns IP addresses. (Frederick, Tr. 1333).

Response to Finding No. 1070:

Complaint Counsel has no specific response.

1071. Dr. Frederick does not know what percentage of internet users block cookies. (Frederick, Tr. 1335).

Response to Finding No. 1071:

Complaint Counsel has no specific response.

1072. Dr. Frederick does not know what percentage of internet users mask their identities online. (Frederick, Tr. 1335)

Response to Finding No. 1072:

Complaint Counsel has no specific response.

1073. Dr. Frederick does not know what percentage of internet users rely on Google Chrome's feature that allows you to browse privately. (Frederick, Tr. 1334–35).

Response to Finding No. 1073:

Complaint Counsel has no specific response.

1074. Dr. Frederick does not know whether Google accepts a response from a user browsing anonymously. (Frederick, Tr. 1337).

Response to Finding No. 1074:

Complaint Counsel has no specific response.

1075. If a family of four shares one computer, and one of those users answers a Google Consumer Survey question, neither Google nor the surveyor can know which of those four users answered the survey question. (Frederick, Tr. 1337-38).

Response to Finding No. 1075:

Complaint Counsel has no specific response.

1076. Dr. Frederick cannot know what caused his survey respondents to wait 20 seconds before keying in a response to his survey questions. (Frederick, Tr. 1342).

Response to Finding No. 1076:

Complaint Counsel has no specific response.

1077. Survey respondents were able to read part of the article before deciding whether to answer the Google Consumer Survey question in Dr. Frederick's surveys. (Frederick, Tr. 1343).

Response to Finding No. 1077:

Complaint Counsel has no specific response.

1078. Dr. Frederick cannot account for the exact reason why any particular person took 22 seconds to respond to his survey questions. (Frederick, Tr. 1344).

Response to Finding No. 1078:

Complaint Counsel has no specific response.

1079. The only qualified claims Dr. Frederick tested in his Google Consumer surveys were ECM's former nine month to five year qualification and ECM's some period greater than a year claims. (Frederick, Tr. 1345-46).

Response to Finding No. 1079:

Complaint Counsel has no specific response.

1080. Before writing his expert report, Dr. Frederick had never read the FTC's Green Guides. (Frederick, Tr. 1346).

Response to Finding No. 1080:

Complaint Counsel has no specific response.

1081. In support of the One Year Rule, FTC relies on a survey conducted by APCO Insight, and dismisses a survey conducted by Synovate. (RX 347, at § IV(E)(4)(A)).

Response to Finding No. 1081:

Complaint Counsel has no specific response.

1082. According to FTC, the APCO survey concluded that 60% of respondents expect that an item marketed as degradable will fully decompose in one year or less. (RX 347, at § IV(E)(4)(A)).

Response to Finding No. 1082:

Complaint Counsel has no specific response.

1083. However, four of the six potential answer choices fell within the range of “one year or less.” (RX 856 (Stewart Rep. at 7)).

Response to Finding No. 1083:

Complaint Counsel has no specific response.

1084. A random selection of these potential answer choices would yield 66% falling within the range of “one year or less,” and when people are asked questions about that which they know little, a near perfect distribution of answer choices should be expected. (RX 856 (Stewart Rep. at 8)).

Response to Finding No. 1084:

Complaint Counsel has no specific response.

1085. Dr. Frederick is unfamiliar with the Reference Manual on Scientific Evidence, and has no “specific criterion in mind” as to what makes a survey valid. (Frederick, Tr. 1185–1191; RX 858 (Frederick, Dep. at 186)).

Response to Finding No. 1085:

Complaint Counsel has no specific response.

1086. Dr. Frederick does not “know what other people have written” regarding what constitutes acceptable survey principles that define a valid survey. (RX 858 (Frederick, Dep. at 186–187)).

Response to Finding No. 1086:

Complaint Counsel has no specific response.

1087. Dr. Frederick chose the Google Survey interface despite the fact that no Google Consumer Survey has ever been relied upon as evidence in an FTC proceeding, and that its use has never been approved of or validated in any peer reviewed literature. (Frederick, Tr. 1191; RX 858 (Frederick, Dep. at 189)).

Response to Finding No. 1087:

Complaint Counsel has no specific response.

1088. Dr. Frederick also chose to use a Google Consumer Survey to save money. (Frederick, Tr. 1206; RX 858 (Frederick, Dep. at 123)).

Response to Finding No. 1088:

Complaint Counsel has no specific response.

1089. Dr. Frederick was paid a flat fee of \$40,000 by the FTC, of which Dr. Frederick was entitled to keep whatever amount he did not spend. (Frederick, Tr. 1201; RX 858 (Frederick, Dep. at 8)).

Response to Finding No. 1090:

Complaint Counsel has no specific response.

1090. There is no way to ascertain the degree to which the sample of respondents used in Google Consumer Surveys is representative of any identifiable population; the sample itself is unknown and unknowable, because there is no verification of respondents with Google Survey; rather, information on respondents is merely inferred by Google from information associated with or that resides on a computer. (Frederick, Tr. 1228; RX 856 (Stewart, Rep. at 10–11)).

Response to Finding No. 1090:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent's expert and does not state any fact. Furthermore, the finding is misleading because it mischaracterizes Dr. Frederick's testimony. In the portion of the transcript cited by Respondent, Dr. Frederick was merely asked if Google Consumer Surveys could guarantee that the information they supply about the demographics of a particular respondent is accurate and true. Accordingly, the citation to Dr. Frederick's testimony does not support the finding.

1091. Dr. Frederick declined to pay the additional fee to include two-part questions that would have provided direct information about the respondent population. (Frederick, Tr. 1230–1231).

Response to Finding No. 1091:

Complaint Counsel has no specific response.

1092. Dr. Frederick rejected the option of including screener questions in his Google surveys. (Frederick, Tr. 1224).

Response to Finding No. 1092:

Complaint Counsel has no specific response.

1093. Google survey uses no screener questions to assure that the respondent is of relevant age or even understands the English language. (RX 856 (Stewart, Rep. at 11)).

Response to Finding No. 1093:

Complaint Counsel has no specific response.

1094. Dr. Frederick admits that his Google survey population is not representative of the target population; stating that there are “two populations here...the population about which we’re trying to draw inferences... [and] the people who answered the surveys that I posted on Google Consumer Surveys.” (Frederick, Tr. 1234).

Response to Finding No. 1094:

This finding mischaracterizes Dr. Frederick’s testimony. Respondent was asking Dr. Frederick what the relevant population for his surveys were and whether he knew if certain people answered his surveys. In answering Respondent’s questions, Dr. Frederick did not admit that his surveys are not representative, but rather clarified as follows:

Q. But you have no way of knowing whether they answered your survey question; right?

A. Well, I mean, now you're asking something different. Now you're asking about the people who are in my survey. I mean, again, I'm not trying to be difficult. There are two populations here, the population about which we're trying to draw inferences regarding how some particular claim might influence their behavior and the characteristics of the population or the people who answered the surveys that I posted on Google Consumer Surveys. I just want to be clear what you're asking me about.

(Frederick, Tr. 1232-1234).

1095. Google survey generally works by giving internet users access to “premium content” in exchange for answering a question, as opposed to paying for a subscription; therefore, the questions are at best a distraction and barrier to respondents whose objective is to access information, not complete a survey. (Frederick, Tr. 1206–1207; RX 856 (Stewart, Rep. at 11)).

Response to Finding No. 1095:

Complaint Counsel has no specific response.

1096. The disinterest bias explains why so many respondents answered Dr. Frederick’s survey with nonsensical answers. (RX 856 (Stewart, Rep. at 11)).

Response to Finding No. 1096:

Complaint Counsel has no specific response.

1097. While Dr. Stewart’s survey utilized well-trained and blind coders, Dr. Frederick merely vetted coders for the ability to read and follow directions and did not ensure blinding. (RX 856 (Stewart, Rep. at 26); RX 858 (Frederick, Dep. at 168–169)).

Response to Finding No. 1097:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent’s expert and does not state any fact. Furthermore, neither GCS respondents (who provided data) nor GCS itself (who collected the data) knew who sponsored Professor Frederick’s study. (Stewart, Tr. 2745-2746); (Frederick, Tr. 1132).

1098. Dr. Frederick’s coders did not consistently apply the coding rules. (RX 856 (Stewart, Rep. at 13)).

Response to Finding No. 1098:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1099. Dr. Frederick’s survey failed to code accurate and relevant responses such as “don’t know.” (Frederick, Tr. 1306–1308; RX 856 (Stewart, Rep. at 12)).

Response to Finding No. 1099:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent’s expert and does not state any fact.

1100. Dr. Frederick’s survey did not code answers indicating critical thought by the respondent, such as, “it depends on where it ends up” or “it depends on what it is.” (Frederick, Tr. 1306–1308).

Response to Finding No. 1100:

Complaint Counsel has no specific response.

1101. Dr. Frederick’s supervising coder, Andrew Meyer, was aware that Dr. Frederick’s research was going to be used by Complaint Counsel against ECM. (Frederick, Tr. 1285–1287; RX 858 (Frederick, Dep. at 176)).

Response to Finding No. 1101:

Complaint Counsel has no specific response.

1102. This failure to use “blind coders” deviates from customary practice and may infect the survey with coder bias. (RX 856 (Stewart Rep. at 13)).

Response to Finding No. 1102:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1103. Unlike in Dr. Stewart’s survey, there is no evidence that Dr. Frederick used multiple coders in the coding process to implement a reliability check. (RX 856 (Stewart, Rep. at 13)).

Response to Finding No. 1103:

Complaint Counsel has no specific response.

1104. Significant flaws aside, Dr. Frederick’s survey indicates considerable diversity among respondents in terms of their claimed knowledge about biodegradable products and their views about the time it takes various materials to biodegrade. (RX 856 (Stewart Rep. at 13-14)).

Response to Finding No. 1104:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent’s expert and does not state any fact.

VIII. COMPLAINT COUNSEL HAS NOT DEMONSTRATED THAT THE RATE OF BIODEGRADATION IN LANDFILLS IS MATERIAL TO CONSUMER PURCHASING DECISIONS

1105. In support of his expert opinion in this case, Dr. Stewart performed a survey in the spring of 2014. (Stewart, Tr. 2494).

Response to Finding No. 1105:

Complaint Counsel has no specific response.

1106. When exploring a new field of consumer survey research that has not previously been researched extensively it is best to conduct open-ended survey research with a personal interviewer, either face to face or by telephone. (Stewart, Tr. 2510).

Response to Finding No. 1106:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1107. Using a personal interviewer in a survey affords the surveyor to explore in depth what people's perceptions are. (Stewart, Tr. 2510).

Response to Finding No. 1107:

Complaint Counsel has no specific response.

1108. The subject of public perception of biodegradation and biodegradation of plastics as a field of consumer survey research has not been researched extensively. (Stewart, Tr. 2510–11).

Response to Finding No. 1108:

Complaint Counsel has no specific response.

1109. Outside of the surveys conducted for the present litigation, only two surveys exist that explore the issue of public perception of biodegradation and biodegradation of plastics. (Stewart, Tr. 2511).

Response to Finding No. 1109:

Complaint Counsel has no specific response.

1110. Given the limited amount of research work done in the field of public perception of biodegradation and biodegradation of plastics, the survey methodologies that should be used to explore that field can only be done with a personal interview and the use of open-ended questions. (Stewart, Tr. 2511).

Response to Finding No. 1110:

Complaint Counsel has no specific response.

1111. Dr. Stewart reviewed the APCO study and the Synovate study. (Stewart, Tr. 2512).

Response to Finding No. 1111:

Complaint Counsel has no specific response.

1112. One purported purpose of the APCO survey was to discern public perception of the rate of biodegradation. (Stewart, Tr. 2514).

Response to Finding No. 1112:

Complaint Counsel has no specific response.

1113. The APCO study used mostly closed-ended questions. (Stewart, Tr. 2513).

Response to Finding No. 1113:

Complaint Counsel has no specific response.

1114. The Synovate survey included questions relative to the rate of biodegradation. (Stewart, Tr. 2515).

Response to Finding No. 1114:

Complaint Counsel has no specific response.

1115. Closed-ended questions are questions where a list of possible responses to a question are provided to the respondent, and where the respondent must choose from one of the responses that were provided in order to give an answer to the question. (Stewart, Tr. 2513).

Response to Finding No. 1115:

Complaint Counsel has no specific response.

1116. The form of the questions used in the APCO survey was premature given the state of knowledge of the topics covered by the APCO survey. (Stewart, Tr. 2513).

Response to Finding No. 1116:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1117. Closed-ended questions are appropriate only where the surveyor already has a deep understanding of all potential responses that an individual might give to a question. (Stewart, Tr. 2513).

Response to Finding No. 1117:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1118. The response options given in the APCO survey were incomplete. (Stewart, Tr. 2513).

Response to Finding No. 1118:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1119. The response options in the APCO survey to questions about how long it should take for something to biodegrade were not balanced. (Stewart, Tr. 2514).

Response to Finding No. 1119:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1120. Two-thirds of the response options in the APCO survey to the question of how long it should take for something to biodegrade were one year or less, which predisposes people to select a short time frame than a longer time frame. (Stewart, Tr. 2514).

Response to Finding No. 1120:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent's expert and does not state any fact.

1121. With respect to the question of how long it would take something to biodegrade, the APCO survey is invalid. (Stewart, Tr. 2514).

Response to Finding No. 1121:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1122. The APCO survey is invalid because it does not provide adequate opportunity for respondents to offer their perceptions. (Stewart, Tr. 2514).

Response to Finding No. 1122:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1123. The APCO survey's question of how long it would take something to biodegrade is biased because it offers many more opportunities to select an answer that reflects one year or less than a longer time period. (Stewart, Tr. 2514–15).

Response to Finding No. 1123:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1124. The Synovate survey inappropriately uses closed-ended questions when asking about the length of time that biodegradation should occur. (Stewart, Tr. 2515).

Response to Finding No. 1124:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1125. The response options in the Synovate survey for the question of how long should something take to biodegrade are biased. (Stewart, Tr. 2515).

Response to Finding No. 1125:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1126. Given the current understanding and state of knowledge with respect to consumer perception of biodegradation, open-ended questions are much more suitable, appropriate, and informative than closed-ended questions. (Stewart, Tr. 2516).

Response to Finding No. 1126:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1127. One problem with closed-ended questions is that the limited response options may preclude respondents from giving an accurate answer that reflects their real perceptions by forcing the respondent to choose a response that may most closely reflect his or her view but may not be close at all. (Stewart, Tr. 2517).

Response to Finding No. 1127:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1128. On reason why surveyors need more work involving open-ended questions and interviews early in the exploration of a topic like biodegradation is so that surveyors can be sure that when they do finally design closed-ended questions, that they give people the full array of response options. (Stewart, Tr. 2517).

Response to Finding No. 1128:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1129. “Misleading homogeneity” is a situation in which one characterizes a sample or a population as being more alike, more similar, or more homogeneous than is actually the case. (Stewart, Tr. 2518).

Response to Finding No. 1129:

Complaint Counsel has no specific response.

1130. Misleading homogeneity in a survey occurs when respondents have a limited number of potential responses they can offer. (Stewart, Tr. 2518).

Response to Finding No. 1130:

Complaint Counsel has no specific response.

1131. The APCO survey afforded respondents no opportunity for any dependencies or contexts. (Stewart, Tr. 2519).

Response to Finding No. 1131:

Complaint Counsel has no specific response.

1132. The Synovate survey results in misleading homogeneity because of the relatively small number of time frames in the response options. (Stewart, Tr. 2520).

Response to Finding No. 1132:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1133. Consumers have nuanced perceptions of biodegradability. (Stewart, Tr. 2630).

Response to Finding No. 1133:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1134. There is evidence that consumers who purchase biodegradable products seek out and obtain truthful scientific information about what “biodegradable” means. (Stewart, Tr. 2658–59).

Response to Finding No. 1134:

Complaint Counsel has no specific response.

1135. If there are no shared beliefs among consumers, there is no evidence that deception occurred. (Stewart, Tr. 2660).

Response to Finding No. 1135:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1136. According to Dr. Frederick, a protest or bypass response is a response given by a respondent for the sole purpose of getting past a survey wall. (Frederick, Tr. 1123).

Response to Finding No. 1136:

Complaint Counsel has no specific response.

1137. In a telephone survey, a protest response is in the form of the respondent hanging up the telephone. (Stewart, Tr. 2665),

Response to Finding No. 1137:

Complaint Counsel has no specific response.

1138. In an internet survey, where the respondent must enter some information in order to obtain desired content, a protest response can take any number of forms, including what could be interpreted answers. (Stewart, Tr. 2666; Frederick, Tr. 1123).

Response to Finding No. 1138:

Complaint Counsel has no specific response.

1139. In terms of the validity of a survey, it is far better for a protest response to be a hang up of the telephone—thus providing the researcher absolutely no data—than entering a protest response into a survey which actually becomes incorporated into the larger data set and is ultimately used in an analysis. (Stewart, Tr. 2666).

Response to Finding No. 1139:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1140. The composition of Dr. Frederick's Google Consumer Survey sample cannot be known. (Stewart, Tr. 2672–73).

Response to Finding No. 1140:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1141. Dr. Stewart obtained demographic information from his respondents directly. (Stewart, Tr. 2672–75).

Response to Finding No. 1141:

Complaint Counsel has no specific response.

1142. Dr. Frederick received demographic information from Google that Google merely inferred. (Stewart, Tr. 2674–75, 2743).

Response to Finding No. 1142:

Complaint Counsel has no specific response.

1143. Google Consumer Surveys is an untested product. (Stewart, Tr. 2683).

Response to Finding No. 1143:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1144. Google Consumer Surveys is not a transparent product. (Stewart, Tr. 2683).

Response to Finding No. 1144:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1145. Google Consumer Surveys will not provide market researchers sufficient information to adequately evaluate the product. (Stewart, Tr. 2683).

Response to Finding No. 1145:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1146. Many professional marketing associations require transparency when evaluating whether a survey product is legitimate. (Stewart, Tr. 2683).

Response to Finding No. 1146:

Complaint Counsel has no specific response.

1147. Most marketing research professionals agree that Google Consumer Surveys is not in the legitimate market research business. (Stewart, Tr. 2683).

Response to Finding No. 1147:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1148. There is no such thing as misleading heterogeneity. (Stewart, Tr. 2770).

Response to Finding No. 1148:

Complaint Counsel has no specific response.

1149. To the extent that misleading heterogeneity exists, it is not analogous to misleading homogeneity. (Stewart, Tr. 2770).

Response to Finding No. 1149:

Complaint Counsel has no specific response.

1150. Scholars have written two responses criticizing Dr. Frederick's article entitled "The Limits of Attraction." (Stewart, Tr. 2807).

Response to Finding No. 1150:

Complaint Counsel has no specific response.

1151. The article entitled "The Limits of Attraction" does not rely on Google Consumer Surveys at all. (Stewart, Tr. 2808).

Response to Finding No. 1151:

Complaint Counsel has no specific response.

1152. The only reference to Google Consumer Surveys in the article entitled "The Limits of Attraction" was in a footnote. (Stewart, Tr. 2808; CCX 977).

Response to Finding No. 1152:

Complaint Counsel has no specific response.

1153. The footnote in the article entitled "The Limits of Attraction" referring to Google Consumer Surveys was neither supportive nor non-supportive of what was actually contained in "The Limits of Attraction" article. (Stewart, Tr. 2808).

Response to Finding No. 1153:

Complaint Counsel has no specific response.

1154. Dr. Stewart coded every response to his survey. (Stewart, Tr. 2810).

Response to Finding No. 1154:

Complaint Counsel has no specific response.

1155. Dr. Frederick coded only those responses which happened to give a numerical score a time interval. (Stewart, Tr. 2810).

Response to Finding No. 1155:

Complaint Counsel has no specific response.

1156. Dr. Stewart's codes classified the actual responses of the survey participants. (Stewart, Tr. 2811).

Response to Finding No. 1156:

Complaint Counsel has no specific response.

1157. The totality of the questions asked in Dr. Stewart's survey provided a much brighter and richer picture of people's perceptions of biodegradability than if Dr. Stewart asked only one question of each respondent. (Stewart, Tr. 2812).

Response to Finding No. 1157:

Complaint Counsel has no specific response.

1158. In interpreting the meaning of any specific time offered by a survey respondent, it is important to know how they responded to other questions in the survey. (Stewart, Tr. 2813).

Response to Finding No. 1158:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1159. Virtually everyone understands that the time a product takes to biodegrade is dependent upon a variety of factors. (Stewart, Tr. 2813).

Response to Finding No. 1159:

Complaint Counsel has no specific response.

1160. The totality of the evidence obtained from Dr. Stewart's survey indicates that consumers have a very rich and nuanced understanding of biodegradability. (Stewart, Tr. 2814).

Response to Finding No. 1160:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1161. Consumers understand that the process of biodegradation is highly dependent upon the type of material, the environment, the size of material, and the biodegrading context. (Stewart, Tr. 2814).

Response to Finding No. 1161:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1162. There is a huge variety of opinions among consumers about how long biodegradation actually takes and what the process actually entails. (Stewart, Tr. 2814).

Response to Finding No. 1162:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1163. There is an empirical basis for concluding that the ages of the respondents in Dr. Stewart's survey were representative of the relevant population. (Stewart, Tr. 2808).

Response to Finding No. 1163:

Complaint Counsel has no specific response.

1164. Dr. Stewart's survey was designed and conducted under a variety of general principles of survey research that are reflected in various textbooks and in other treatments of survey research. (Stewart, Tr. 2521).

Response to Finding No. 1164:

Complaint Counsel has no specific response.

1165. The Manual for Complex Litigation lists specific characteristics that a reliable and valid survey should possess, and those principles reflect the general understanding in the professional literature. (Stewart, Tr. 2521).

Response to Finding No. 1165:

Complaint Counsel has no specific response.

1166. In designing and implementing his survey, Dr. Stewart relied upon the principle that the relevant population should be clearly identified. (Stewart, Tr. 2522–23).

Response to Finding No. 1166:

Complaint Counsel has no specific response.

1167. When designing a survey, the individuals or other entities to which one wants to extrapolate the results of a survey need to be very clearly identified, appropriate, and relevant to whatever the issue may be. (Stewart, Tr. 2523).

Response to Finding No. 1167:

Complaint Counsel has no specific response.

1168. In designing and implementing his survey, Dr. Stewart relied upon the principle that there needs to be a well-articulated sampling plan that results in sample from the population—a smaller subset of individuals from the relevant population so that the results of the survey can be extrapolated to the relevant population. (Stewart, Tr. 2523).

Response to Finding No. 1168:

Complaint Counsel has no specific response.

1169. In designing and implementing his survey, Dr. Stewart relied upon the principle that the questions asked must be clear and not misleading (Stewart, Tr. 2523).

Response to Finding No. 1169:

Complaint Counsel has no specific response.

1170. In designing and implementing his survey, Dr. Stewart relied upon the principle that the survey needs to be designed and implemented by people who are well-qualified and who follow well-accepted procedures. (Stewart, Tr. 2523).

Response to Finding No. 1170:

Complaint Counsel has no specific response.

1171. In designing and implementing his survey, Dr. Stewart relied upon the principle that the data analysis needs to follow well-accepted standards of data analysis. (Stewart, Tr. 2523).

Response to Finding No. 1171:

Complaint Counsel has no specific response.

1172. All four of the general standards Dr. Stewart relied upon when implementing and designing his survey in this case, “really need[] to be used as the metric against which one evaluates the reliability and validity of a survey.” (Stewart, Tr. 2524).

Response to Finding No. 1172:

Complaint Counsel has no specific response.

1173. The Federal Trade Commission accepts and applies the standards that are articulated in most professional organizations as well as in the Manual for Complex Litigation. (Stewart, Tr. 2525).

Response to Finding No. 1173:

Complaint Counsel has no specific response.

1174. Dr. Stewart's survey used interviewers who could ask follow-up questions and use probes to obtain more complete answers from respondents. (Stewart, Tr. 2526).

Response to Finding No. 1174:

Complaint Counsel has no specific response.

1175. Dr. Stewart's survey also utilized some open-ended questions in order to fully explore people's complete perceptions rather than simply asking people to select from a set of predetermined alternatives. (Stewart, Tr. 2526).

Response to Finding No. 1175:

Complaint Counsel has no specific response.

1176. Dr. Stewart ultimately decided to conduct a telephone survey because it is more efficient than a mall intercept or a central location study while maintaining the benefit of an interviewer and open-ended questions. (Stewart, Tr. 2526–27).

Response to Finding No. 1176:

Complaint Counsel has no specific response.

1177. By using a telephone survey, Dr. Stewart was able to obtain a more representative sample than using a mall intercept survey. (Stewart, Tr. 2527).

Response to Finding No. 1177:

Complaint Counsel has no specific response.

1178. The interviewers in Dr. Stewart's survey were live callers who were well-trained professional interviewers who were assisted in their work by computer-assisted telephone interviewing technology which provides a means by which their work could be monitored and a means for capturing responses of the survey respondents. (Stewart, Tr. 2527).

Response to Finding No. 1178:

Complaint Counsel has no specific response.

1179. Dr. Stewart authored the questions used in his survey. (Stewart, Tr. 2527).

Response to Finding No. 1179:

Complaint Counsel has no specific response.

1180. Dr. Stewart identified the universe studied in his survey. (Stewart, Tr. 2527).

Response to Finding No. 1180:

Complaint Counsel has no specific response.

1181. Dr. Stewart identified the sampling source used for making phone calls in his survey. (Stewart, Tr. 2527–28).

Response to Finding No. 1181:

Complaint Counsel has no specific response.

1182. California Survey Research Services programmed Dr. Stewart’s questionnaire into the computer-assisted telephone interviewing under Dr. Stewart’s direction. (Stewart, Tr. 2528).

Response to Finding No. 1182:

Complaint Counsel has no specific response.

1183. Dr. Stewart has relied upon California Survey Research Services in a variety of contexts for more than twenty years. (Stewart, Tr. 2528).

Response to Finding No. 1183:

Complaint Counsel has no specific response.

1184. Other than ECM’s attorneys providing Dr. Stewart with the initial issue, “what does ‘biodegradable’ mean to consumers,” it was entirely Dr. Stewart’s responsibility to design, implement, and interpret the survey. (Stewart, Tr. 2529).

Response to Finding No. 1184:

Complaint Counsel has no specific response.

1185. Dr. Stewart was wholly responsible for writing the questions asked in his survey. (Stewart, Tr. 2529).

Response to Finding No. 1185:

Complaint Counsel has no specific response.

1186. Dr. Stewart’s survey was a telephone interview assisted by a technology known as computer-assisted telephone interviewing. (Stewart, Tr. 2529).

Response to Finding No. 1186:

Complaint Counsel has no specific response.

1187. Dr. Stewart’s survey intended to use a large majority of open ended questions. (Stewart, Tr. 2529-30).

Response to Finding No. 1187:

Complaint Counsel has no specific response.

1188. Dr. Stewart’s survey was intended to obtain a random sample of households with landlines. (Stewart, Tr. 2529–30).

Response to Finding No. 1188:

Complaint Counsel has no specific response.

1189. The acronym for computer-assisted telephone interviewing is “CATI.” (Stewart, Tr. 2530).

Response to Finding No. 1189:

Complaint Counsel has no specific response.

1190. CATI is essentially hardware and software that is designed to create a structure to assist interviewers in the design and implementation of a telephone survey. (Stewart, Tr. 2530).

Response to Finding No. 1190:

Complaint Counsel has no specific response.

1191. CATI essentially automates the dialing of telephone numbers so that it takes the control of what number is dialed away from the interviewer. (Stewart, Tr. 2530).

Response to Finding No. 1191:

Complaint Counsel has no specific response.

1192. Once CATI reaches a connection with a potential respondent, CATI causes the interviewer’s monitor to bring up one question at a time so that there is no opportunity for the interviewer to deviate from the order of questions. (Stewart, Tr. 2530–31).

Response to Finding No. 1192:

Complaint Counsel has no specific response.

1193. After recording a response from a respondent, the interviewer clicks a “continue” button that brings up the next question in the survey. (Stewart, Tr. 2531).

Response to Finding No. 1193:

Complaint Counsel has no specific response.

1194. Dr. Stewart’s survey had the simple objective of trying to understand the perceptions of consumers with respect biodegradability, what the meaning of the term was, complete with any contingencies, dependencies, or context effects that they might bring to bear. (Stewart, Tr. 2531).

Response to Finding No. 1194:

Complaint Counsel has no specific response.

1195. “Relevant population” means the group of people to whom the researcher wants to extrapolate the results of the survey. (Stewart, Tr. 2532).

Response to Finding No. 1195:

Complaint Counsel has no specific response.

1196. Dr. Stewart defined the relevant population for his survey as adults in the United States age 18 and older who indicated that they had some general understanding of what the term “biodegradable” means. (Stewart, Tr. 2532).

Response to Finding No. 1196:

Complaint Counsel has no specific response.

1197. Dr. Stewart’s survey’s population also excluded anyone who he thought was atypically knowledgeable on the subject of biodegradation. (Stewart, Tr. 2532–33).

Response to Finding No. 1197:

Complaint Counsel has no specific response.

1198. Dr. Stewart chose to exclude from his survey people who indicated that they did not have a general understanding of the term “biodegradable” because it makes no sense to ask people the meaning of a term when they have already self-identified that they do not know what that term means. (Stewart, Tr. 2533).

Response to Finding No. 1198:

Complaint Counsel has no specific response.

1199. If people who had no general understanding of the term “biodegradable” nevertheless participated in Dr. Stewart’s survey, they would simply be guessing, offering random responses, and not be giving meaningful responses to the survey questions. (Stewart, Tr. 2533).

Response to Finding No. 1199:

Complaint Counsel has no specific response.

1200. As a precursor to asking questions that explore more deeply the meaning of a term, the first thing a researcher needs to understand is whether people have the basic knowledge base necessary to respond to that question. (Stewart, Tr. 2533).

Response to Finding No. 1200:

Complaint Counsel has no specific response.

1201. If a potential respondent indicates that he or she has no idea what biodegradation means, there is no point in asking them a series of questions about something that they have already said they do not know anything about. (Stewart, Tr. 2533).

Response to Finding No. 1201:

Complaint Counsel has no specific response.

1202. Screening questions are a set of preliminary questions that are asked at the very beginning of a survey to determine whether or not a respondent should receive the substantive questionnaire or whether they should be excluded. (Stewart, Tr. 2534).

Response to Finding No. 1202:

Complaint Counsel has no specific response.

1203. Screening questions can be used to assure that a certain variability among respondents exists. (Stewart, Tr. 2534).

Response to Finding No. 1203:

Complaint Counsel has no specific response.

1204. An example of a screening question is asking whether a respondent is male or female, so that the researcher can assure that the respondents as a whole will be roughly 50% male and 50% female. (Stewart, Tr. 2534).

Response to Finding No. 1204:

Complaint Counsel has no specific response.

1205. Screening questions are used for qualifying people and for assuring a more representative sample. (Stewart, Tr. 2541).

Response to Finding No. 1205:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent's expert and does not state any fact.

1206. Dr. Stewart's survey included screening questions asking about respondents' age, gender, general employment status, and whether the respondent was knowledgeable or not about the term "biodegradable." (Stewart, Tr. 2535).

Response to Finding No. 1206:

Complaint Counsel has no specific response.

1207. The gender and age screening questions in Dr. Stewart's survey were designed assure that his survey had an adequate number of people of each gender and within each age category. (Stewart, Tr. 2535).

Response to Finding No. 1207:

Complaint Counsel has no specific response.

1208. The general employment screening question in Dr. Stewart's survey was designed to eliminate certain kinds of people from participating in the survey, such as people who might be atypical in terms of their response, which is very commonly done in survey research. (Stewart, Tr. 2535–36).

Response to Finding No. 1208:

Complaint Counsel has no specific response.

1209. Dr. Stewart included the screening question about whether respondents had a general knowledge of the term "biodegradable" because it makes no sense to ask people about a topic that they self-identify they know little or nothing about, because those people would only answer, at best, with guesses and random responses. (Stewart, Tr. 2536).

Response to Finding No. 1209:

Complaint Counsel has no specific response.

1210. It is a big mistake to have no screening questions in a survey on biodegradation. (Stewart, Tr. 2536).

Response to Finding No. 1210:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1211. Without screening questions, the surveyor cannot exclude people that are quite atypical and likely to introduce error into the results. (Stewart, Tr. 2537).

Response to Finding No. 1211:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1212. To have no screenings in a survey on biodegradation creates a number of problems and calls into question the validity of that survey. (Stewart, Tr. 2537).

Response to Finding No. 1212:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1213. A survey on biodegradation that does not contain screening questions has the potential for introducing a lot of error into the survey. (Stewart, Tr. 2537).

Response to Finding No. 1213:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1214. A survey without screening questions is not capable of being analyzed for the general representativeness of the sample. (Stewart, Tr. 2537).

Response to Finding No. 1214:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1215. In the field of survey research, "sampling" means the process by which researchers select a subset of individuals from a larger population. (Stewart, Tr. 2538).

Response to Finding No. 1215:

Complaint Counsel has no specific response.

1216. In general, appropriate sampling procedures are designed to assure that the subset that researchers select are generally and broadly representative of the larger population. (Stewart, Tr. 2538).

Response to Finding No. 1216:

Complaint Counsel has no specific response.

1217. The primary principle to guide the selection of a sample is to create and implement a sampling plan that will provide the researcher a representative sample in the sense that the sample is like the larger population to whom the researcher wishes to extrapolate. (Stewart, Tr. 2538).

Response to Finding No. 1217:

Complaint Counsel has no specific response.

1218. There are important elements of the sampling plan that are important in order to have a valid survey. (Stewart, Tr. 2538).

Response to Finding No. 1218:

Complaint Counsel has no specific response.

1219. One important element of a sampling plan is to first clearly define what the relevant population is, because without knowing the larger group to which the researcher is extrapolating, it is hard to know whether the sample would be representative of the relevant population. (Stewart, Tr. 2539).

Response to Finding No. 1219:

Complaint Counsel has no specific response.

1220. Another important element of a sampling plan is the ability to verify how representative the same is on at least some key demographic information. (Stewart, Tr. 2539).

Response to Finding No. 1220:

Complaint Counsel has no specific response.

1221. Another important element of sampling plans is to assure that the respondents are actually capable of answering questions. (Stewart, Tr. 2539).

Response to Finding No. 1221:

Complaint Counsel has no specific response.

1222. Two broad categories of sampling plans exist: probability sampling and nonprobability sampling. (Stewart, Tr. 2539–40).

Response to Finding No. 1222:

Complaint Counsel has no specific response.

1223. Probability sampling is sampling where the researcher knows, in advance of actually doing the sampling, what the probability of selection of any individual might be. (Stewart, Tr. 2539–40).

Response to Finding No. 1223:

Complaint Counsel has no specific response.

1224. Non-probability sampling is where the researcher does not know in advance what the probability of selecting any one individual is because a respondent can simply refuse to participate in the survey. (Stewart, Tr. 2540).

Response to Finding No. 1224:

Complaint Counsel has no specific response.

1225. Most of the work done by marketing researches involves non-probability samples because people can decline to participate in the surveys. (Stewart, Tr. 2540).

Response to Finding No. 1225:

Complaint Counsel has no specific response.

1226. Dr. Stewart’s sample in his survey was a non-probability sample because respondents could refuse to participate. (Stewart, Tr. 2541).

Response to Finding No. 1226:

Complaint Counsel has no specific response.

1227. Dr. Stewart’s survey used a random digit dialing approach so that the telephone numbers were randomly selected. (Stewart, Tr. 2541).

Response to Finding No. 1228:

Complaint Counsel has no specific response.

1228. The use of random-digit dialing sampling is one of the things researchers can do to assure a more representative sample. (Stewart, Tr. 2541).

Response to Finding No. 1228:

Complaint Counsel has no specific response.

1229. Most business decisions that employ surveys are based on non-probability samples. (Stewart, Tr. 2542).

Response to Finding No. 1229:

Complaint Counsel has no specific response.

1230. The sample in Dr. Stewart's survey was representative. (Stewart, Tr. 2543).

Response to Finding No. 1230:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1231. Dr. Stewart used a sample size of 400 in his survey. (Stewart, Tr. 2544).

Response to Finding No. 1231:

Complaint Counsel has no specific response.

1232. Dr. Stewart chose to use 400 as a sample size because it's near that number that is where the researchers reach the point of diminishing returns in terms of sample. (Stewart, Tr. 2544).

Response to Finding No. 1232:

Complaint Counsel has no specific response.

1233. With 400 respondents for a simple yes/no question, in the case of the greatest variability, the research will be within plus or minus 5 percent of any percent the researcher may estimate. (Stewart, Tr. 2545).

Response to Finding No. 1233:

Complaint Counsel has no specific response.

1234. In order to get to plus or minus 3 percent, the researcher needs to triple the size of the sample to about 1200 respondents. (Stewart, Tr. 2545).

Response to Finding No. 1234:

Complaint Counsel has no specific response.

1235. Dr. Stewart used two sources to obtain telephone numbers of individuals surveyed in his survey. (Stewart, Tr. 2545).

Response to Finding No. 1235:

Complaint Counsel has no specific response.

1236. One source Dr. Stewart used to obtain telephone numbers was Scientific Telephone Sampling which is a firm that is in the business of generating samples for survey research. (Stewart, Tr. 2545).

Response to Finding No. 1236:

Complaint Counsel has no specific response.

1237. Scientific Telephone Sampling generated a random-digit dialing sample by taking listed phone numbers that are publicly available and randomly changing the last two digits in order to create a true random sample of telephone numbers in the sense that the resulting sample includes unlisted numbers. (Stewart, Tr. 2545–46).

Response to Finding No. 1237:

Complaint Counsel has no specific response.

1238. The APCO survey also used a random-digit dialing sample. (Stewart, Tr. 2546).

Response to Finding No. 1238:

Complaint Counsel has no specific response.

1239. Dr. Stewart also employed an age-enhanced sample that he obtained from Survey Sampling, Incorporated which is a company that does preparation, analysis, and provision of names and telephone numbers for survey research. (Stewart, Tr. 2546).

Response to Finding No. 1239:

Complaint Counsel has no specific response.

1240. Survey Sampling, Incorporated provided Dr. Stewart with a supplement that included a larger percentage of households known to contain younger consumers. (Stewart, Tr. 2546).

Response to Finding No. 1240:

Complaint Counsel has no specific response.

1241. Dr. Stewart combined the random-digit dialing sample obtained from Scientific Telephone Sampling and the age-enhanced sample from Survey Sampling Incorporated to create the final source of numbers that were used for the dialing his survey. (Stewart, Tr. 2546).

Response to Finding No. 1241:

Complaint Counsel has no specific response.

1242. Both Scientific Telephone Sampling and Survey Sampling, Incorporated are well-known and highly respected providers of sample lists in survey research. (Stewart, Tr. 2549).

Response to Finding No. 1242:

Complaint Counsel has no specific response.

1243. Dr. Stewart included screening questions in his survey in order to ensure that the respondents surveyed were representative of the relevant population. (Stewart, Tr. 2551).

Response to Finding No. 1243:

Complaint Counsel has no specific response.

1244. Dr. Stewart established soft quotas for the demographics in his survey to ensure that men and women, as well as various age categories, were well represented in the survey sample. (Stewart, Tr. 2551).

Response to Finding No. 1244:

Complaint Counsel has no specific response.

1245. In Dr. Stewart's survey, live interviewers read questions to respondents over the telephone. (Stewart, Tr. 2552).

Response to Finding No. 1245:

Complaint Counsel has no specific response.

1246. California Survey Research Services is a well-known firm specializing in telephone, mail, and internet surveys that has been in the business of surveys for 30 years. (Stewart, Tr. 2552).

Response to Finding No. 1246:

Complaint Counsel has no specific response.

1247. California Survey Research Services does research for a wide range of business, not-for-profit, university, and government organizations. (Stewart, Tr. 2552).

Response to Finding No. 1247:

Complaint Counsel has no specific response.

1248. Dr. Stewart designed the survey, the sampling plan, and the set of questions in his survey. (Stewart, Tr. 2552).

Response to Finding No. 1248:

Complaint Counsel has no specific response.

1249. After California Survey Research Services programmed Dr. Stewart's survey into CATI system, Dr. Stewart viewed the questionnaire through a link and, after reviewing it, Dr. Stewart approved the survey.

Response to Finding No. 1249:

Complaint Counsel has no specific response.

1250. California Survey Research Services employs multiple layers of supervision when implementing a survey. (Stewart, Tr. 2553).

Response to Finding No. 1250:

Complaint Counsel has no specific response.

1251. Dr. Stewart assured that the design of his survey was double blind. (Stewart, Tr. 2553).

Response to Finding No. 1251:

Complaint Counsel has no specific response.

1252. "Double blind" means that the interviewers and any of other personnel directly involved with collecting or coding the data were not aware of the sponsor or purpose of the research, nor were the respondents aware of either the purpose or the sponsor of the research. (Stewart, Tr. 2553-54).

Response to Finding No. 1252:

Complaint Counsel has no specific response.

1253. Where a survey is double-blind, it is unlikely that a respondent or interviewer will seek to be helpful by offering a response that they think is consistent with what the researcher is looking for. (Stewart, Tr. 2554).

Response to Finding No. 1253:

Complaint Counsel has no specific response.

1254. A survey that is not double-blind calls into question the validity of that survey. (Stewart, Tr. 2554).

Response to Finding No. 1254:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1255. California Survey Research Services coded the responses to Dr. Stewart's survey. (Stewart, Tr. 2554).

Response to Finding No. 1255:

Complaint Counsel has no specific response.

1256. It would have been problematic for Dr. Stewart to code the answers to his survey because the mere fact that he knew the purpose of the research could influence how he coded the data. (Stewart, Tr. 2555).

Response to Finding No. 1256:

Complaint Counsel has no specific response.

1257. In Dr. Stewart's survey, disagreements between coders were resolved by the coders getting together, comparing notes, and attempting to resolve their differences. (Stewart, Tr. 2556).

Response to Finding No. 1257:

Complaint Counsel has no specific response.

1258. Blinding of coders is very important when coding open-ended questions because the coders are, in effect, transforming the data into categories of responses. (Stewart, Tr. 2557).

Response to Finding No. 1258:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1259. To the degree that the coders have a prior understanding of what the researcher is looking for, that prior understanding can influence what codes the coders arrive at and how they code the data. (Stewart, Tr. 2557).

Response to Finding No. 1259:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1260. All of the interviewers who implemented Dr. Stewart's were trained in general interviewing technique and also were specifically trained to the protocol that was used in Dr. Stewart's survey. (Stewart, Tr. 2558).

Response to Finding No. 1260:

Complaint Counsel has no specific response.

1261. Supervisory personnel trained the interviewers, answered the interviewers' questions, were on-site at the time the interviewing took place, and could therefore address any problems that arose during the survey. (Stewart, Tr. 2558–59).

Response to Finding No. 1262:

Complaint Counsel has no specific response.

1262. Supervisory personnel also had the ability to randomly monitor the interviewing as it was taking place in real time, so that they could determine whether the interview was actually taking place and whether the protocol was actually being followed. (Stewart, Tr. 2559).

Response to Finding No. 1262:

Complaint Counsel has no specific response.

1263. The mere fact that supervisory personnel were able to listen to interviews in real time at will assures a higher degree of integrity and attention to instructions among the interviewers. (Stewart, Tr. 2559).

Response to Finding No. 1263:

Complaint Counsel has no specific response.

1264. The interviewers had an opportunity for debriefing to discuss any questions, problems, or issues that arose after they completed a practice interview. (Stewart, Tr. 2560).

Response to Finding No. 1264:

Complaint Counsel has no specific response.

1265. Interviewers' ability to participate in briefing ensures a higher quality and efficiency of the interviewing process and acts as a way to standardize the interviewers. (Stewart, Tr. 2560).

Response to Finding No. 1265:

Complaint Counsel has no specific response.

1266. Dr. Stewart's main questionnaire used primarily open-ended questions. (Stewart, Tr. 2561).

Response to Finding No. 1266:

Complaint Counsel has no specific response.

1267. By allowing respondents to answer the survey questions in their own words, Dr. Stewart was able to identify any qualifications, dependencies, and contexts that might be present in a respondent's answer. (Stewart, Tr. 2562).

Response to Finding No. 1267:

Complaint Counsel has no specific response.

1268. It would have been a mistake for Dr. Stewart not to use a screen questionnaire in his survey for two reasons. (Stewart, Tr. 2562).

Response to Finding No. 1268:

Complaint Counsel has no specific response.

1269. First, without a screener questionnaire it is not possible for a researcher to obtain accurate demographic information and therefore the researcher has no way to verify the degree to which the sample was generally representative of the larger population. (Stewart, Tr. 2562).

Response to Finding No. 1269:

Complaint Counsel has no specific response.

1270. Second, the absence of a screener prevents a researcher from eliminating people who were atypical. (Stewart, Tr. 2562).

Response to Finding No. 1270:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1271. The coders in Dr. Stewart's survey reviewed the responses to the open-ended questions to determine the broad categories that would seem to capture the responses. (Stewart, Tr. 2565).

Response to Finding No. 1271:

Complaint Counsel has no specific response.

1272. The categories that best captured respondents' responses to open-ended questions in Dr. Stewart's survey became the code book. (Stewart, Tr. 2564–65).

Response to Finding No. 1272:

Complaint Counsel has no specific response.

1273. Dr. Stewart approved the code book. (Stewart, Tr. 2565).

Response to Finding No. 1273:

Complaint Counsel has no specific response.

1274. Dr. Stewart survey contained a main questionnaire which is the same as the substantive questionnaire. (Stewart, Tr. 2566).

Response to Finding No. 1274:

Complaint Counsel has no specific response.

1275. The main questionnaire in Dr. Stewart's survey answered the question of what the relevant population understands the meaning of the term "biodegradable" to mean. (Stewart, Tr. 2566).

Response to Finding No. 1275:

Complaint Counsel has no specific response.

1276. Dr. Stewart's main questionnaire used the funnel approach, which starts with general open-ended questions and progresses to more specific open-ended questions, and finally some closed-ended questions. (Stewart, Tr. 2566).

Response to Finding No. 1276:

Complaint Counsel has no specific response.

1277. Leading questions, questions which both suggest an answer and ask a question, are not appropriate. (Stewart, Tr. 2567).

Response to Finding No. 1277:

Complaint Counsel has no specific response.

1278. None of the questions in Dr. Stewart's survey were leading. (Stewart, Tr. 2568).

Response to Finding No. 1278:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1279. Dr. Stewart’s screener questionnaire contained six questions, and his main questionnaire contained about 15 questions. (Stewart, Tr. 2569).

Response to Finding No. 1279:

Complaint Counsel has no specific response.

1280. Not every respondent was asked every question in Dr. Stewart’s main questionnaire. (Stewart, Tr. 2569).

Response to Finding No. 1280:

Complaint Counsel has no specific response.

1281. If a respondent disconnected the phone call during the survey, that respondent’s answers were not counted and that respondent was recorded as a “terminate.” (Stewart, Tr. 2569–70).

Response to Finding No. 1281:

Complaint Counsel has no specific response.

1282. Asking a respondent only one question in a survey on the meaning of “biodegradable” does not allow a researcher to get a rich understanding of how a respondent actually understands “biodegradable.” (Stewart, Tr. 2570).

Response to Finding No. 1282:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1283. In Dr. Stewart’s survey, 19% of respondents were aged 18–34, 23% of respondents were aged 35–49, 29% percent of respondents were aged 50–65, and 29% of respondent were aged 66 and older. (Stewart, Tr. 2572; RX 605).

Response to Finding No. 1283:

Complaint Counsel has no specific response.

1284. In Dr. Stewart’s survey, 201 respondents were female and 199 respondents were male. (Stewart, Tr. 2572; RX 605).

Response to Finding No. 1284:

Complaint Counsel has no specific response.

1285. Dr. Stewart’s respondents are broadly representative. (Stewart, Tr. 2572).

Response to Finding No. 1285:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1286. Dr. David Stewart, a survey expert whose work has repeatedly been credited by ALJs of the FTC and the Commission itself, designed a telephone survey in order to determine how consumers who actually purchase products made from or packaged in plastic perceive the meaning of the term "biodegradability." (Stewart, Tr. 2493-94, 2505-09; RX 856 (Stewart, Rep. at 15)).

Response to Finding No. 1286:

Complaint Counsel has no specific response.

1287. Dr. Stewart's survey also assessed the message that consumers take away from claims made by ECM. (RX-856 (Stewart, D., Expert Report at 15)).

Response to Finding No. 1287:

Complaint Counsel has no specific response.

1288. Dr. Stewart's survey used well-designed, non-leading, and clear open-ended questions that allowed real consumers to answer in their own words and to provide qualifications, contextual information, or other information that established a richer meaning of consumer responses than is typically obtained when only closed-ended questions appear (or single questions are posed without human interface) in a survey. (Stewart, Tr. 2526-27; RX 856 (Stewart, Rep. at 15)).

Response to Finding No. 1288:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1289. Dr. Stewart designed and conducted his survey in accordance with well-established principles of survey research offered in litigation, as articulated in the Manual for Complex Litigation. (Stewart, Tr. 2522; RX 856 (Stewart, Rep. at 16)).

Response to Finding No. 1289:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1290. The interviewers and their supervisors for Dr. Stewart's survey were blind in the sense that they did not know for whom the survey was being conducted. (Stewart, Tr. 2553-54; RX 843 (Stewart Dep. at 276)).

Response to Finding No. 1290:

Complaint Counsel has no specific response.

1291. Once the respondents were appropriately selected from a list of telephone numbers based on an algorithm employed by the CATI system, interviewers clarified to potential respondents that the call was for research purposes and not telemarketing. (RX 856 (Stewart, Rep. at 19)).

Response to Finding No. 1291:

Complaint Counsel has no specific response.

1292. The screener questions in Dr. Stewart's survey ensured that the respondent was over 18, asked their age and gender to ensure that appropriate diversity was represented within the sample, ensured that they or anyone in their household did not work for a manufacturer of plastic products or a waste disposal organization, ensured that they had purchased a product in a plastic container or containing plastic within the past month, and ensured they had a general understanding of the term biodegradable. (Stewart, Tr. 2532–33, 2535–36; RX 856 (Stewart, Rep. at 19–20)).

Response to Finding No. 1292:

Complaint Counsel has no specific response.

1293. All but two of the questions in Dr. Stewart's main questionnaire were open-ended questions, which have the advantage of allowing respondents to offer answers that are qualified, provide context, or are otherwise nuanced, and which are useful for clarifying terminology by gauging the meanings of words and for informing variability among respondents. (RX 856 (Stewart, Rep. at 20)).

Response to Finding No. 1293:

Complaint Counsel has no specific response.

1294. The first few questions in Dr. Stewart's survey asked respondents about their perceptions of biodegradability generally. (RX 856 (Stewart, Rep. at 21)).

Response to Finding No. 1294:

Complaint Counsel has no specific response.

1295. For example, Q4 in Dr. Stewart's survey asked, "If something is biodegradable, how long do you think it would take for it to decompose or decay?" (RX 856 (Stewart, Rep. at 21)).

Response to Finding No. 1295:

Complaint Counsel has no specific response.

1296. The next set of questions in Dr. Stewart's survey asked the respondents to indicate in their own words what claims adapted from claims used by ECM mean to them. (RX 856 (Stewart, Rep. at 21)).

Response to Finding No. 1296:

Complaint Counsel has no specific response.

1297. The field work for Dr. Stewart's survey cost \$37,500. (Stewart, Tr. 2648; RX-856 (Stewart, Rep. at 23)).

Response to Finding No. 1297:

Complaint Counsel has no specific response.

1298. Dr. Stewart's survey was pre-tested by conducting a small pilot project, which confirmed that no changes to the survey design were necessary. (RX 856 (Stewart, Rep. at 23)).

Response to Finding No. 1298:

Complaint Counsel has no specific response.

1299. All verbatim responses to Dr. Stewart's survey were coded independently by two coders and any disagreements were resolved in discussion. (Stewart, Tr. 2556-57; RX 856 (Stewart Rep. at 23)).

Response to Finding No. 1299:

Complaint Counsel has no specific response.

1300. Ninety-eight percent of the respondents to Dr. Stewart's survey believe that different types of products biodegrade, decompose, or decay at different rates. (Stewart, Tr. 2577).

Response to Finding No. 1300:

Complaint Counsel has no specific response.

1301. Ninety-eight percent of the respondents to Dr. Stewart's indicated that they would have to qualify any answer about the amount of time it would take for something to biodegrade based on the material. (Stewart, Tr. 2577).

Response to Finding No. 1301:

Complaint Counsel has no specific response.

1302. Ninety-eight percent of the respondents to Dr. Stewart's do not believe that there is a uniform rate for materials biodegrading and that the rate really depends on the material. (Stewart, Tr. 2577).

Response to Finding No. 1302:

Complaint Counsel has no specific response.

1303. Consumers have a very nuanced understanding of biodegradability. (Stewart, Tr. 2579).

Response to Finding No. 1303:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1304. Consumers understand that the process of biodegradation is one that can vary quite substantially depending on the material, the context, where the item is disposed of, and the size of the product. (Stewart, Tr. 2579).

Response to Finding No. 1304:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1305. Consumers believe that the word "biodegradable" means to decay or destruct, and believe in general terms that the process of biodegradation is one whereby the product breaks down in some way. (Stewart, Tr. 2579).

Response to Finding No. 1305:

Complaint Counsel has no specific response.

1306. The most common response, by far, to the question "[i]f something is degradable, how long do you think it would take for it to decompose or decay?" in Dr. Stewart's survey was that "it depends on the material or type of product." (Stewart, Tr. 2580).

Response to Finding No. 1306:

Complaint Counsel has no specific response.

1307. The most common response that provided a clear time period to the question "[i]f something is degradable, how long do you think it would take for it to decompose or decay?" was one to five years, given by 6% of respondents. (Stewart, Tr. 2580).

Response to Finding No. 1307:

Complaint Counsel has no specific response.

1308. Any answer to the question “[i]f something is degradable, how long do you think it would take for it to decompose or decay?” in Dr. Stewart’s survey must be put into the context of the other questions in his survey because we know that 98% of respondents believe that the type of material makes a difference in the rate of biodegradation. (Stewart, Tr. 2581; RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1308:

Complaint Counsel has no specific response.

1309. If the interviewers in Dr. Stewart’s survey probed the respondents who gave a clear time frame in response to the question “[i]f something is degradable, how long do you think it would take for it to decompose or decay?”, the data would likely have detected dependencies, contextual effects, and differences among materials. (Stewart, Tr. 2581).

Response to Finding No. 1309:

Complaint Counsel has no specific response.

1310. There is a wide array of differences amongst respondents about how long a degradable object takes to decompose or decay.

Response to Finding No. 1310:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1311. There is great agreement, 98%, that the amount of time something takes to degrade depends upon factors such as the material, the context, and the environment. (Stewart, Tr. 2581; RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1311:

Complaint Counsel has no specific response.

1312. Not one respondent to Dr. Stewart’s survey understood biodegradation to mean the complete breakdown of the substance into elements in nature within one year after customary disposal. (Stewart, Tr. 2583).

Response to Finding No. 1312:

Complaint Counsel has no specific response.

1313. The fact that consumers may hold a mistaken belief about how long something takes to biodegrade does not mean that that mistaken belief was attributable the action of any marketer, including ECM. (Stewart, Tr. 2584–85).

Response to Finding No. 1313:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1314. Dr. Stewart’s survey presented three claims three of ECM’s stylized claims to respondents. (Stewart, Tr. 2585).

Response to Finding No. 1314:

Complaint Counsel has no specific response.

1315. Americans have a shared understanding of the word “biodegradable” to the extent that it means to break down. (Stewart, Tr. 2586).

Response to Finding No. 1315:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1316. Americans have a shared understanding that the amount of time required for biodegradation depends on characteristics like type of material and environment. (Stewart, Tr. 2586).

Response to Finding No. 1316:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1317. Americans do not hold a shared belief as to the amount of time a biodegradable substance takes to biodegrade. (Stewart, Tr. 2586).

Response to Finding No. 1317:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1318. No significant minority of Americans define “biodegradation” to mean that a product will completely biodegrade into elements in nature within one year after customary disposal. (Stewart, Tr. 2586).

Response to Finding No. 1318:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1319. Dr. Stewart's survey is highly reliable. (Stewart, Tr. 2587).

Response to Finding No. 1319:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1320. Dr. Stewart's survey was designed in a fashion that is very consistent with accepted standards and best practices in the design of survey research. (Stewart, Tr. 2587).

Response to Finding No. 1321:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1321. Dr. Stewart's survey has a representative sample on key demographic characteristics. (Stewart, Tr. 1587).

Response to Finding No. 1321:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1322. Because 98% of the respondents to Dr. Stewart's survey believe that the amount of time something takes to decompose varies, even if the survey's demographics are wrong by some percent, the vast majority of Americans still share the belief that the amount of time it takes for something to biodegrade varies based on the material, size, and context in which biodegradation occurs. (Stewart, Tr. 2587).

Response to Finding No. 1322:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1323. Dr. Stewart conducted a pilot survey of manufacturers of plastic. (Stewart, Tr. 2587).

Response to Finding No. 1323:

Complaint Counsel has no specific response.

1324. For the manufacturers' survey, ECM provided a customer list to Dr. Stewart that included names and telephone numbers of individuals that were identified as most

knowledgeable about the manufacture of plastics and the components that would be acquired for that process. (Stewart, Tr. 2588).

Response to Finding No. 1324:

Complaint Counsel has no specific response.

1325. California Survey Research Services implemented the pilot survey of manufacturers of plastic by using a telephone survey with professional interviews using a CATI system. (Stewart, Tr. 2588–89).

Response to Finding No. 1325:

Complaint Counsel has no specific response.

1326. The pilot survey had a limit of 20 hours of calling. (Stewart, Tr. 2588).

Response to Finding No. 1326:

Complaint Counsel has no specific response.

1327. In those 20 hours, California Survey Research Services was able to complete surveys with 10 companies. (Stewart, Tr. 2588).

Response to Finding No. 1327:

Complaint Counsel has no specific response.

1328. The pilot survey indicated that there is variability in perceptions of biodegradation even amongst the sophisticated ECM purchasers. (Stewart, Tr. 2588).

Response to Finding No. 1328:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1329. The pilot survey was conducted in accordance with the principles necessary for a sound survey. (Stewart, Tr. 2589–90).

Response to Finding No. 1329:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1330. The pilot survey indicated that the respondents appear to be more knowledgeable of particular standards or of the Green Guides than the typical consumer. (Stewart, Tr. 2590).

Response to Finding No. 1330:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1331. Dr. Stewart's survey first concluded that while consumers do have a conceptual understanding of what biodegradability is, that understanding is not material to any sizable minority of consumers. (RX 856 (Stewart, Rep. at 24)).

Response to Finding No. 1331:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1332. Dr. Stewart's survey also concluded that 68% of the respondents recognize differences in the rate of decomposition depending on the type of material or the context. (RX 856 (Stewart, Rep. at 25)).

Response to Finding No. 1332:

Complaint Counsel has no specific response.

1333. The results also made very clear that the vast majority of consumers have an understanding that the process of biodegradability is highly varied and that it is not often a rapid process. (Stewart, Tr. 2814; RX 856 (Stewart, Rep. at 25–26)).

Response to Finding No. 1333:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1334. Ninety-eight percent of respondents to Dr. Stewart's survey believe that different types of products take different amounts of time to biodegrade, decompose, or decay. (Stewart, Tr. 2577; RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1334:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1335. Such differences, according to the respondents, include the type or size of the material, the context, or the environment. (Stewart, Tr. 2577–78; RX-856 (Stewart, Rep. at 26)).

Response to Finding No. 1335:

The Court should disregard this finding to the extent it merely provides an opinion of Respondent's expert and does not state any fact.

1336. Consumers recognize significant time variances in decomposition, and that there is little evidence that their understanding of the term biodegradability is restricted to decomposition processes that occur within one year or less. (RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1336:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1337. As for the questions in Dr. Stewart's survey which incorporated ECM's claims made to industrial purchasers, Dr. Stewart found that a common response included a lack of understanding, expressions of confusion, expressions of skepticism or disbelief, or a simple restatement of the claim. (RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1337:

Complaint Counsel has no specific response.

1338. Dr. Stewart concluded that "this lack of understanding, confusion, and skepticism make it highly unlikely that [ECM's] claims would be material" to an end use consumer, even if these claims were directed right at the end use consumer. (RX 856 (Stewart, Rep. at 26)).

Response to Finding No. 1338:

Complaint Counsel has no specific response.

1339. Dr. Stewart's further concluded that two of three criteria required for a finding of deception, a false belief attributable to actions of the marketer and that the claim be material to consumers, are not present in ECM's alleged advertising. (RX 856 (Stewart, Rep. at 27)).

Response to Finding No. 1339:

Complaint Counsel has no specific response.

1340. Dr. Stewart also conducted a limited Manufacturers Pilot Survey in an attempt to ascertain whether more knowledgeable purchasers have a more common understanding of biodegradability. (Stewart, Tr. 2578; RX 56 (Stewart, Rep. at 27–28)).

Response to Finding No. 1340:

Complaint Counsel has no specific response.

1341. ECM provided Dr. Stewart a list of representatives from customer organizations who were involved in the purchase of materials for the manufacturer of plastics. (RX 856 (Stewart, Rep. at 27)).

Response to Finding No. 1341:

Complaint Counsel has no specific response.

1342. Representatives from 10 of ECM's customers participated in the pilot survey of manufacturers of plastic, which was also implemented by CSRS. (RX 856 (Stewart, Rep. at 26–27)).

Response to Finding No. 1342:

Complaint Counsel has no specific response.

1343. The pilot survey of manufacturers of plastics concluded that even among these more knowledgeable and sophisticated customers there is substantial variation in opinions about how quickly a biodegradable product should take to decompose. (Stewart, Tr. 2590; RX 856 (Stewart, Rep. at 27)).

Response to Finding No. 1343:

Complaint Counsel has no specific response.

1344. The reason the pilot survey of manufacturers of plastics was not developed into a full-blown study is because the respondents were people who were difficult to contact, and in 20 hours of interviewing time, CSRS was only able to conduct interviews of 10 respondents. (Stewart, Tr. 2806).

Response to Finding No. 1344:

Complaint Counsel has no specific response.

IX. ECM ACCURATELY DEFINED “BIODEGRADABILITY” IN ITS MATERIALS GIVEN TO CONSUMERS

1345. ECM issues a certificate of biodegradability to its customers once they have completed product trials and signed a letter of assurance. (Sinclair, Tr. 783).

Response to Finding No. 1345:

Complaint Counsel has no specific response.

1346. The letter of assurance states that they understand the manufacturing process of their plastics with the additive, they understand the additive must be loaded at a minimum

of one percent (1%) by weight, and that failing to meet the load rate requirement may endanger the biodegradability of their plastic. (Sinclair, Tr. 783).

Response to Finding No. 1346:

Complaint Counsel has no specific response.

1347. Every ECM certificate of biodegradability includes the ASTM definition of “biodegradability.” (Sinclair, Tr. 783–84; CCX 14).

Response to Finding No. 1347:

Complaint Counsel has no specific response.

1348. The ASTM D883-12 definition of biodegradability is:

"A degradable plastic is defined as a plastic that is designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification. A Biodegradable Plastic is defined as a degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi and algae."

(Sinclair, Tr. 785; CCX 14).

Response to Finding No. 1348:

Complaint Counsel has no specific response.

1349. ECM provides a “certificate of biodegradability” to each of its customers. (Sinclair, Tr. 783).

Response to Finding No. 1349:

Complaint Counsel has no specific response.

1350. ECM’s certificate of biodegradability defines biodegradability. (Sinclair, Tr. 784; CCX 14).

Response to Finding No. 1350:

Complaint Counsel has no specific response.

1351. ECM's certificate of biodegradability defines a degradable plastic in the same way as biodegradability is defined in ASTM D883-12. (Sinclair, Tr. 785; CCX 14).

Response to Finding No. 1351:

Complaint Counsel has no specific response.

1352. ECM's certificate of biodegradability defines a degradable plastic "as a plastic that is designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification. A Biodegradable plastic is defined as a degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi, and algae." (Sinclair, Tr. 785; CCX 14).

Response to Finding No. 1352:

Complaint Counsel has no specific response.

X. DR. MCCARTHY IS BIASED, INCONSISTENT, AND NOT CREDIBLE

1353. Dr. McCarthy's Ph.D. is in macromolecular science, and not polymer engineering. (McCarthy, Tr. 480–81).

Response to Finding No. 1353:

Complaint Counsel has no specific response.

1354. Dr. McCarthy does not have a graduate level degree in organic polymer chemistry. (McCarthy, Tr. 481).

Response to Finding No. 1354:

Complaint Counsel has no specific response.

1355. Dr. McCarthy is not a biochemist. (McCarthy, Tr. 481).

Response to Finding No. 1355:

Complaint Counsel has no specific response.

1356. Dr. McCarthy does not know about all biochemical interactions. (McCarthy, Tr. 482).

Response to Finding No. 1356:

Complaint Counsel has no specific response.

1357. Dr. McCarthy is not a microbiologist. (McCarthy, Tr. 482).

Response to Finding No. 1357:

Complaint Counsel has no specific response.

1358. Dr. McCarthy is not expert in the kinds of microorganisms that dwell in a landfill. (McCarthy, Tr. 482).

Response to Finding No. 1358:

Complaint Counsel has no specific response.

1359. Dr. McCarthy is not an expert in the colonization of microorganisms that form in landfills. (McCarthy, Tr. 482).

Response to Finding No. 1359:

Complaint Counsel has no specific response.

1360. Dr. McCarthy's expert report was the result of a collaborative effort between Dr. McCarthy and Complaint Counsel. (McCarthy, Tr. 482–83).

Response to Finding No. 1360:

Complaint Counsel has no specific response.

1361. When Dr. McCarthy was asked “can you identify for me the content in footnote 1 that you yourself drafted?” He stated “probably the scientific definition part of it.” (McCarthy, Tr. 487).

Response to Finding No. 1362:

Complaint Counsel has no specific response.

1362. When asked if he drafted “any other part of [footnote 1]?” Dr. McCarthy said “no.” (McCarthy, Tr. 487).

Response to Finding No. 1362:

Complaint Counsel has no specific response.

1363. In his expert report, Dr. McCarthy defines “biodegradable” as “mean[ing] that the entire treated plastic will completely break down and return to nature (i.e., decompose into elements found in nature) within one year after customary disposal (i.e., incinerator, landfill or recycling.” (McCarthy, Tr. 484–86; CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 1363:

Complaint Counsel has no specific response.

1364. When asked if “Complaint Counsel asked [him] to use this definition?” Dr. McCarthy replied “Yeah. With regard to the marketing claim.” (McCarthy, Tr. 485).

Response to Finding No. 1364:

Complaint Counsel has no specific response.

1365. When asked “is it true that you take the position that this is a scientific definition, that is, the definition in footnote 1?” Dr. McCarthy replied “they’re equivalent.” (McCarthy, Tr. 486).

Response to Finding No. 1365:

Complaint Counsel has no specific response.

1366. When asked if the “definition in footnote 1 is interchangeable with the scientific definition of ‘biodegradable,’” Dr. McCarthy responded “yeah.” (McCarthy, Tr. 487; CCX 891 (McCarthy, Rep. at 5 n. 1)).

Response to Finding No. 1367:

Complaint Counsel has no specific response.

1367. When asked if “under [his] expert report footnote 1 definition of the term ‘biodegradable,’ if 365 days after customary disposal, 99 percent of a treated plastic has completely broken down and returned to nature... but 1 percent remains, the treated plastic is not biodegradable, is it?” Dr. McCarthy replied “for that unqualified marketing claim.” (McCarthy, Tr. 495-96).

Response to Finding No. 1367:

Complaint Counsel has no specific response.

1368. When further asked “but you said it’s interchangeable with the scientific definition, right?” Dr. McCarthy stated “**actually, I believe I would like to change that.**” (McCarthy, Tr. 496) (emphasis added).

Response to Finding No. 1368:

Complaint Counsel has no specific response.

1369. Dr. McCarthy explained this desire to change his footnote 1 definition: “Yeah. Because it would – it was – ‘interchangeable’ I think is a bit strong.” (McCarthy, Tr. 496).

Response to Finding No. 1369:

Complaint Counsel has no specific response.

1370. Dr. McCarthy then stated that the footnote 1 definition was “just for one of the claims. That was just the first one of the claims.” (McCarthy, Tr. 497).

Response to Finding No. 1370:

Complaint Counsel has no specific response.

1371. When asked “but isn’t it the case that in footnote 1 you indicate that that’s the definition that you’re going to abide by in your expert report?” Dr. McCarthy admits “that’s what it says, yeah.” (McCarthy, Tr. 497).

Response to Finding No. 1371:

Complaint Counsel has no specific response.

1372. Dr. McCarthy has defined the term “biodegradable” or “biodegradation” in articles he has authored. (McCarthy, Tr. 487–88).

Response to Finding No. 1372:

Complaint Counsel has no specific response.

1373. When Dr. McCarthy has defined the “biodegradable” or “biodegradation” in articles he has authored, that definition has always been different than the definition he used in his expert report. (McCarthy, Tr. 488).

Response to Finding No. 1373:

Complaint Counsel has no specific response.

1374. Dr. McCarthy authored a chapter entitled “Biodegradable Polymers” in the text entitled “Plastics and the Environment.” (McCarthy, Tr. 489; RX 924).

Response to Finding No. 1374:

Complaint Counsel has no specific response.

1375. In his chapter entitled “Biodegradable Polymers,” Dr. McCarthy stated that “[t]he definition of biodegradable polymer varies greatly among scientists, manufacturers, and consumers.” (McCarthy, Tr. 489–90; RX 924).

Response to Finding No. 1375:

Complaint Counsel has no specific response.

1376. No definition Dr. McCarthy has ever used in published scientific literature included a requirement that plastic completely break down and return to nature within one year of customary disposal in a landfill. (McCarthy, Tr. 494).

Response to Finding No. 1376:

Complaint Counsel has no specific response.

1377. The ASTM does not define biodegradable to mean that there will be a complete breakdown and return to nature of the treated plastic within one year after customary disposal. (McCarthy, Tr. 494).

Response to Finding No. 1377:

Complaint Counsel has no specific response.

1378. As of 2003, the ASTM defined “biodegradable plastic” as a “plastic designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties ... in which the degradation results from the action of naturally-occurring micro-organisms such as bacteria, fungi, and algae.” (McCarthy, Tr. 494–95; RX 924).

Response to Finding No. 1378:

Complaint Counsel has no specific response.

1379. In scientific articles, Dr. McCarthy has described plastic as “biodegradable” when it biodegraded, in Dr. McCarthy’s own tests, to far less than one hundred percent. (McCarthy, Tr. 499).

Response to Finding No. 1379:

Complaint Counsel has no specific response.

1380. According to Dr. McCarthy, a banana is biodegradable. (McCarthy, Tr. 506).

Response to Finding No. 1380:

Complaint Counsel has no specific response.

1381. According to Dr. McCarthy, a tree trunk is biodegradable. (McCarthy, Tr. 508–09).

Response to Finding No. 1381:

Complaint Counsel has no specific response.

1382. Dr. McCarthy is the editor of the Journal of Polymers and the Environment, formerly the Journal of Polymer Degradation. (McCarthy, Tr. 509).

Response to Finding No. 1382:

Complaint Counsel has no specific response.

1383. Dr. McCarthy evaluates the scientific merits of articles published in the Journal of Polymers and the Environment. (McCarthy, Tr. 510).

Response to Finding No. 1383:

Complaint Counsel has no specific response.

1384. Dr. McCarthy decides which articles are published in the Journal of Polymers and the Environment. (McCarthy, Tr. 511).

Response to Finding No. 1384:

Complaint Counsel has no specific response.

1385. No article would appear in the Journal of Polymers and the Environment without Dr. McCarthy's approval. (McCarthy, Tr. 513).

Response to Finding No. 1385:

Complaint Counsel has no specific response.

1386. Dr. McCarthy edits and determines which articles are published in the Journal of Polymers and the Environment. (McCarthy, Tr. 527).

Response to Finding No. 1386:

Complaint Counsel has no specific response.

1387. Dr. McCarthy reviewed an article entitled "Biodegradable Polymers-A Review on Recent Trends and Emerging Perspectives" that was published in the Journal of Polymers and the Environment in June of 2011. (McCarthy, Tr. 511-12; RX 925).

Response to Finding No. 1387:

Complaint Counsel has no specific response.

1388. In "Biodegradable Polymers-A Review on Recent Trends and Emerging Perspectives," published in the Journal of Polymers and the Environment, the authors state that "[t]he various definitions of biodegradation depend on the field of

application of the polymers (biomedical area or natural environment). Many different definitions have officially been adopted, depending on the background of the defining standard organizations and their particular interests.” (McCarthy, Tr. 527–28; RX 925).

Response to Finding No. 1388:

Complaint Counsel has no specific response.

1389. In “Biodegradable Polymers-A Review on Recent Trends and Emerging Perspectives” the authors list a series of sources for the definition of “biodegradable” and “biodegradation” that are within the universe of biomedical and the natural environment literature. (McCarthy, Tr. 528; RX 925).

Response to Finding No. 1389:

Complaint Counsel has no specific response.

1390. Dr. McCarthy, even though he evaluated the scientific merits of “Biodegradable Polymers-A Review on Recent Trends and Emerging Perspectives” before allowing it in the Journal of Polymers and the Environment, did not ask the authors of that article to include with the definition of biodegradation the requirement that the plastic completely break down and return to nature within one year of customary disposal. (McCarthy, Tr. 529).

Response to Finding No. 1390:

Complaint Counsel has no specific response.

1391. No reviewer who reviewed “Biodegradable Polymers-A Review on Recent Trends and Emerging Perspectives” prior to publication changed the content of the article to require it to include that plastic will completely break down and return to nature within one year of customary disposal. (McCarthy, Tr. 529).

Response to Finding No. 1391:

Complaint Counsel has no specific response.

1392. During his deposition, Dr. McCarthy testified that a product that biodegraded 95 percent in 364 days would not satisfy the definition of biodegradable Dr. McCarthy uses in his expert report. (McCarthy, Tr. 525–26; RX 841 (McCarthy, Dep. at 28)).

Response to Finding No. 1392:

Complaint Counsel has no specific response.

1393. According to Dr. McCarthy, a product that biodegraded by 95 percent in 365 days, and 100 percent in 366 days is not biodegradable under the definition he uses in his expert report. (McCarthy, Tr. 526).

Response to Finding No. 1393:

Complaint Counsel has no specific response.

1394. At hearing, when asked “who makes the determination of whether [an article] is accepted for publication?” Dr. McCarthy testified: “the referees.” (McCarthy, Tr. 526).

Response to Finding No. 1394:

Complaint Counsel has no specific response.

1395. However, at deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “it would be my decision, but it would be based on reviews.” (McCarthy, Tr. 526–27; RX 841 (McCarthy, Dep. at 38)).

Response to Finding No. 1395:

Complaint Counsel has no specific response.

1396. Dr. McCarthy has accepted, on behalf of UMass, millions of dollars in funding from ECM competitors that offer bioplastics and compostable products. (CCX 891 (McCarthy, Rep. at 42–44)).

Response to Finding No. 1396:

The Court should disregard this finding because it is not supported by the citation to the record.

1397. Some polymer blends which Dr. McCarthy invented are the subject of a United States patent, patent number 5,883,199. (McCarthy, Tr. 534–35; RX 928).

Response to Finding No. 1397:

Complaint Counsel has no specific response.

1398. Dr. McCarthy has directly profited from research he performed for ECM competitors, receiving \$4,000-\$5,000 per year in royalties from a patent he invented that is licensed to Metabolix, an ECM competitor. (McCarthy, Tr. 523–24; RX 841 (McCarthy, Dep. at 60)).

Response to Finding No. 1398:

Complaint Counsel has no specific response.

1399. UMass is patent number 5,883,199's assignee. (RX 761; RX 757).

Response to Finding No. 1399:

Complaint Counsel has no specific response.

1400. Dr. McCarthy directly profits from compostable plastic resin patent royalties paid to UMass. (McCarthy, Tr. 524).

Response to Finding No. 1400:

Complaint Counsel has no specific response.

1401. Metabolix Corporation is the exclusive licensee of a patented biodegradable polymer that Dr. McCarthy invented. (McCarthy, Tr. 523;RX 209; RX 928).

Response to Finding No. 1401:

Complaint Counsel has no specific response.

1402. Metabolix's potential royalties from licensing UMass patents surpass \$100,000 per year. (RX 209).

Response to Finding No. 1402:

Complaint Counsel has no specific response.

1403. Dr. McCarthy receives royalties from the patent he invented for which Metabolix Corporation is the exclusive licensee. (McCarthy, Tr. 524).

Response to Finding No. 1403:

Complaint Counsel has no specific response.

1404. As of the date of the hearing, Dr. McCarthy had received about \$28,000.00 in royalties as a result of the patent he invented for which Metabolix Corporation is the exclusive licensee. (McCarthy, Tr. 524, 612).

Response to Finding No. 1404:

Complaint Counsel has no specific response.

1405. To the extent Metabolix's sales increase based on incursions into ECM's market, royalties from the patent will increase and Dr. McCarthy's income from those royalties will increase as well. (McCarthy, Tr. 524; RX 841 (McCarthy, Dep. at 51–52, 55–61)).

Response to Finding No. 1405:

Complaint Counsel has no specific response.

1406. Dr. McCarthy has appeared as an expert for Metabolix Corporation twice. (McCarthy, Tr. 523-24).

Response to Finding No. 1406:

Complaint Counsel has no specific response.

1407. UMass-Lowell has boasted of Dr. McCarthy's income earning potential, noting in 2012 that Dr. McCarthy "has obtained nearly \$9 million in externally sponsored research grant and contracts, plus nearly \$33 million in intellectual property donations to UMass Lowell." (Aguirre, "Plastics Engineering Educator Praised for Research, Service" (Sep. 21, 2012), *available at* <http://www.uml.edu/News/stories/2011-12/University-Professor-reception.aspx>). (McCarthy, Tr. 530-532).

Response to Finding No. 1407:

Complaint Counsel has no specific response.

1408. Under an agreement with the University and in accordance with UMass policy, Dr. McCarthy assigned his patent rights in a compostable plastic resin he invented to UMass. (McCarthy, Tr. 523-24; RX 841 (McCarthy, Dep. at 57)).

Response to Finding No. 1408:

Complaint Counsel has no specific response.

1409. In exchange, Dr. McCarthy receives a 10% profit share of the royalty stream. (McCarthy, Tr. 523-24, 535; RX 841 (McCarthy, Dep. at 59)).

Response to Finding No. 1409:

Complaint Counsel has no specific response.

1410. The intention of patent number 5,883,199 is to produce compostable products. (McCarthy, Tr. 536).

Response to Finding No. 1410:

Complaint Counsel has no specific response.

1411. The companies which Metabolix Corporation sublicense patent number 5,883,199 to, such as BASF and NatureWorks, produce resin that is used in compostable products. (McCarthy, Tr. 536).

Response to Finding No. 1411:

Complaint Counsel has no specific response.

1412. Dr. McCarthy acknowledged that Metabolix's products compete directly with ECM's technology for market share. (McCarthy, Tr. 538–408; RX 841 (McCarthy, Dep. 64–66)).

Response to Finding No. 1412:

Complaint Counsel has no specific response.

1413. For years ECM's competitors, such as Metabolix, have directly lobbied FTC attorneys to pursue enforcement action against additive companies, including ECM. (RX 211).

Response to Finding No. 1413:

This finding does not cite evidence in the record, in violation of the Court's Order On Post-Trial Briefs.

1414. Since 2008, Metabolix has also been lobbying the FTC to act against ECM. (RX 211).

Response to Finding No. 1414:

This finding does not cite evidence in the record, in violation of the Court's Order On Post-Trial Briefs.

1415. Metabolix is also a member of the Biodegradable Products Institute ("BPI"), a primary ECM competitor, and sells approximately a dozen products that are "BPI certified" in direct competition with ECM. (McCarthy, Tr. 564; RX 171; RX 172).

Response to Finding No. 1415:

Complaint Counsel has no specific response.

1416. Groups like the BPI, and scientists affiliated with same, zealously lobbied the ASTM to incorporate limited language in biodegradability test standards that would (unscientifically) limit *claim language* based on test results. (RX 741).

Response to Finding No. 1416:

Complaint Counsel has no specific response.

1417. Representatives from BPI had open channels to FTC attorneys and frequently reported marketing claims by additive companies, such as ECM and ECM's customers. (RX 718–RX 733).

Response to Finding No. 1417:

Complaint Counsel has no specific response.

1418. BPI not only lobbied in favor of regulations that would hurt the biodegradable plastic additive industry, but it also told customers that ECM plastics are not truly biodegradable according to their standards of testing. (RX 124).

Response to Finding No. 1418:

Complaint Counsel has no specific response.

1419. BPI harshly and publicly criticized biodegradable additive manufacturers, naming ECM specifically. (RX 125).

Response to Finding No. 1419:

Complaint Counsel has no specific response.

1420. Many companies that have funded Dr. McCarthy's UMass Lowell Bioplastics and Medical Plastics Research Center, such as Cargill and Eastman Chemical, are members of the BPI. (McCarthy, Tr. 531; RX 169).

Response to Finding No. 1420:

Complaint Counsel has no specific response.

1421. The BPI has hired Dr. McCarthy to be a compostable product certifier. (McCarthy, Tr. 564).

Response to Finding No. 1421:

Complaint Counsel has no specific response.

1422. From 2001 through 2011, Dr. McCarthy was paid by the BPI one thousand dollars for each of about thirty certification examinations he completed. (McCarthy, Tr. 564).

Response to Finding No. 1422:

Complaint Counsel has no specific response.

1423. At the hearing and at his deposition, Dr. McCarthy testified that his determination would result in either a certification or not certified determination. (McCarthy, Tr. at 564–65; RX 841 (McCarthy, Dep. at 93)).

Response to Finding No. 1423:

Complaint Counsel has no specific response.

1424. If Dr. McCarthy certified a company as compostable, that company was then allowed to place a logo or other form of certification on its products. (McCarthy, Tr. 565–66).

Response to Finding No. 1424:

Complaint Counsel has no specific response.

1425. At the hearing, when asked what that certification or logo provides, Dr. McCarthy testified: “I don’t know.” (McCarthy, Tr. 566).

Response to Finding No. 1425:

Complaint Counsel has no specific response.

1426. However, at deposition, when asked the same question, Dr. McCarthy testified differently: “[i]t provides a certification that it meets the standards of the D6400” and that it is “compostable.” (McCarthy, Tr. 566; RX 841 (McCarthy, Dep. at 94)).

Response to Finding No. 1426:

Complaint Counsel has no specific response.

1427. Metabolix supplied grants to UMass of approximately \$2.5 million, sponsored more than 50 students for their master’s and doctorate degrees, and has made substantial equipment donations (over \$500,000) to UMass Lowell. (RX 210).

Response to Finding No. 1427:

Complaint Counsel has no specific response.

1428. Dr. McCarthy is the director of the UMass Lowell Bioplastics and Medical Plastics Research Center. (McCarthy, Tr. 529–30).

Response to Finding No. 1428:

Complaint Counsel has no specific response.

1429. Companies that have sponsored research at the UMass Lowell Bioplastics and Medical Plastics Research Center include ICI, Monsanto, National Starch, Eastman, Warner-Lambert, Bristol-Myers Squibb, Johnson & Johnson, Metabolix, BASF, and Cargill, the U.S. Army, EcoVerde, 3M Company, and Densified Solutions. (McCarthy, Tr. 531).

Response to Finding No. 1429:

Complaint Counsel has no specific response.

1430. Metabolix Corporation essentially leased storage space from UMass Lowell. (McCarthy, Tr. 599–601; RX 962).

Response to Finding No. 1430:

Complaint Counsel has no specific response.

1431. Metabolix Corporation donated an air compressor to UMass Lowell in order to offset costs incurred by the university. (McCarthy, Tr. 602–03; RX 963).

Response to Finding No. 1431:

Complaint Counsel has no specific response.

1432. If Metabolix goes out of business, Dr. McCarthy hopes that the university would license patent number 5,883,199 to another institution. (McCarthy, Tr. at 606).

Response to Finding No. 1432:

Complaint Counsel has no specific response.

1433. Metabolix has paid up to \$200,000 per year to UMass-Lowell for fee-for-service projects. (McCarthy, Tr. 612–13).

Response to Finding No. 1433:

Complaint Counsel has no specific response.

1434. Metabolix has paid the most money to the UMass Lowell Bioplastics and Medical Plastics Research Center. (McCarthy, Tr. 531).

Response to Finding No. 1434:

Complaint Counsel has no specific response.

1435. Metabolix has paid approximately one and a half million dollars in grants to Dr. McCarthy's university. (McCarthy, Tr. 531–32).

Response to Finding No. 1435:

Complaint Counsel has no specific response.

1436. Metabolix has also reimbursed UMass Lowell for equipment purchased by UMass Lowell which Metabolix wanted to use. (McCarthy, Tr. 532).

Response to Finding No. 1436:

Complaint Counsel has no specific response.

1437. Metabolix employees have worked alongside Dr. McCarthy and his students at the UMass Lowell Bioplastics and Medical Plastics Research Center. (McCarthy, Tr. 532, 608–09).

Response to Finding No. 1437:

Complaint Counsel has no specific response.

1438. Dr. McCarthy’s students are available to Metabolix to work for Metabolix as requested by Metabolix to Dr. McCarthy’s secretary. (McCarthy, Tr. 532, 608–09).

Response to Finding No. 1438:

Complaint Counsel has no specific response.

1439. When Dr. McCarthy’s students are working for Metabolix, Metabolix has an employee that oversees Dr. McCarthy’s students to ensure that the conditions of the work being performed by Dr. McCarthy’s students are the conditions that Metabolix wants. (McCarthy, Tr. 533).

Response to Finding No. 1439:

Complaint Counsel has no specific response.

1440. The Metabolix employees take notes and give advice to Dr. McCarthy’s students while Dr. McCarthy’s students perform the work required by Metabolix. (McCarthy, Tr. 533).

Response to Finding No. 1440:

Complaint Counsel has no specific response.

1441. When Dr. McCarthy’s students are performing the work requested by Metabolix, Dr. McCarthy’s students are being paid indirectly by Metabolix. (McCarthy, Tr. 533–34).

Response to Finding No. 1441:

Complaint Counsel has no specific response.

1442. Students at UMass Lowell use UMass Lowell equipment for services for Metabolix. (McCarthy, Tr. 604).

Response to Finding No. 1442:

Complaint Counsel has no specific response.

1443. At the hearing, when asked whether “the products made under the ‘199 patent that are on the market are plastic compost bags, right?” Dr. McCarthy testified: “I’m not sure.” (McCarthy, Tr. 536).

Response to Finding No. 1443:

Complaint Counsel has no specific response.

1444. At deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “mainly compostable–compost bags.” (McCarthy, Tr. 537; RX 841 (McCarthy, Dep. at 63–64)).

Response to Finding No. 1444:

Complaint Counsel has no specific response.

1445. According to Dr. McCarthy, compostable bags are in competition with compostable biodegradable bags. (McCarthy, Tr. 538).

Response to Finding No. 1445:

Complaint Counsel has no specific response.

1446. According to Dr. McCarthy, NatureWorks’ product, produced under patent number 5,883,199, is in competition with other compostable and biodegradable products in the market. (McCarthy, Tr. 538–39; RX 841 (McCarthy Dep. at 65–66)).

Response to Finding No. 1446:

Complaint Counsel has no specific response.

1447. According to Dr. McCarthy, NatureWorks’ product exists in a competitive marketplace. (McCarthy, Tr. 539–40; RX 841 (McCarthy Dep. at 65–66)).

Response to Finding No. 1447:

Complaint Counsel has no specific response.

1448. Dr. McCarthy admitted that the patent he invented is used by Metabolix which competes with ECM for business in the biodegradable plastic bag market. (McCarthy, Tr. 537-540).

Response to Finding No. 1448:

This finding mischaracterizes Dr. McCarthy’s testimony. Dr. McCarthy testified that the Metabolix product competes with other biodegradable compostable products in the marketplace. (McCarthy, Tr. 538-540).

1449. In patent number 5,883,199, the test Dr. McCarthy used to demonstrate biodegradation of the polymer blends he invented was not an ASTM standard. (McCarthy, Tr. 540–41; RX 928).

Response to Finding No. 1449:

Complaint Counsel has no specific response.

1450. In Dr. McCarthy’s expert report, he states that biodegradation may only be shown based on satisfaction of either an ASTM standard specification test or a positive ¹⁴C radiolabeling test. (CCX 891 (McCarthy, Rep. at 23-4)).

Response to Finding No. 1450:

Complaint Counsel has no specific response.

1451. In patent number 5,883,199, the test Dr. McCarthy used to demonstrate biodegradation of the polymer blends he invented was a method used at UMass Lowell which is not an ASTM method. (McCarthy, Tr. 541; RX 928).

Response to Finding No. 1451:

Complaint Counsel has no specific response.

1452. In Dr. McCarthy’s expert report, he states that the only definitive test of biodegradation, other than an ASTM standard specification test, is a ¹⁴C radiolabeling test. (CCX 891 (McCarthy, Rep. at 24)).

Response to Finding No. 1452:

Complaint Counsel has no specific response.

1453. In patent number 5,883,199, the test Dr. McCarthy used to demonstrate biodegradation of the polymer blends he invented did not use any ¹⁴C radiolabeling. (McCarthy, Tr. 541–43; RX 928; RX 841 (McCarthy, Dep. at 75)).

Response to Finding No. 1453:

Complaint Counsel has no specific response.

1454. Patent number 5,883,199 does not contain a requirement that polymer blends biodegrade 100%. (McCarthy, Tr. 543; RX 928).

Response to Finding No. 1454:

Complaint Counsel has no specific response.

1455. In Dr. McCarthy’s expert report, he states that a claim of biodegradation for a plastic may only be made if the plastic biodegrades 100% within one year: “the entire treated plastic will completely break down and return to nature (i.e., decompose into elements found in nature) within one year after customary disposal (i.e., incinerator, landfill, or recycling).” (CCX 891 (McCarthy, Rep. at 5)).

Response to Finding No. 1455:

Complaint Counsel has no specific response.

1456. However, at hearing, when asked “nowhere in the patent do you establish that any of the five plastic resins you invented completely break down and return to nature, that is, decompose into elements found in nature within one year after customary disposal?” Dr. McCarthy states “yeah, that’s correct.” (McCarthy, Tr. 544; RX 928).

Response to Finding No. 1456:

Complaint Counsel has no specific response.

1457. In Dr. McCarthy’s expert report, he defines biodegradation in footnote 1 of the report as “the entire treated plastic will completely break down and return to nature (i.e., decompose into elements found in nature) within one year after customary disposal (i.e., incinerator, landfill, or recycling).” (CCX 891 (McCarthy, Rep. at 5)).

Response to Finding No. 1457:

Complaint Counsel has no specific response.

1458. Dr. McCarthy did not test the polymer blends in patent number 5,883,199 to establish that they would biodegrade completely within one year after customary disposal. (McCarthy, Tr. 545–46; RX 841 (McCarthy, Dep. at 76–77)).

Response to Finding No. 1458:

Complaint Counsel has no specific response.

1459. Patent number 5,883,199 is not limited to the five polymer blends tested in patent number 5,883,199. (McCarthy, Tr. 547; RX 928).

Response to Finding No. 1459:

Complaint Counsel has no specific response.

1460. In Dr. McCarthy’s expert report, he states that it is scientifically invalid to extrapolate from plastics that are the subject of ASTM tests to those that were not subject to the tests: “Such extrapolation is scientifically invalid because biodegradation is not linear and typically slows down due to recalcitrance.” (CCX 891 (McCarthy, Rep. at 27)).

Response to Finding No. 1460:

Complaint Counsel has no specific response.

1461. However, Dr. McCarthy extrapolated from the five blends tested in patent number 5,883,199 to classify additional blends not tested as biodegradable. (McCarthy, Tr. 549–50; RX 928).

Response to Finding No. 1461:

Complaint Counsel has no specific response.

1462. In Dr. McCarthy’s expert report, he states that a plastic may not be deemed “biodegradable” unless it biodegrades by 100%. (CCX 891 (McCarthy, Rep. at 5)).

Response to Finding No. 1462:

Complaint Counsel has no specific response.

1463. However, at trial, when asked whether the “‘polylactic acid degraded by only 14 percent by loss in weight;’ right?” Dr. McCarthy replied “that would be after 45 days in soil. Yeah.” (McCarthy, Tr. 547–48; RX 928).

Response to Finding No. 1463:

Complaint Counsel has no specific response.

1464. Although patent number 5,883,199 tested only five blends, the patent applies to many more blends. (McCarthy, Tr. 548; RX 928).

Response to Finding No. 1464:

Complaint Counsel has no specific response.

1465. Dr. McCarthy reviewed each specification in patent number 5,883,199 and signed a declaration affirming the validity of each specification before submitting patent number 5,883,199 to the United States Patent and Trademark Office. (McCarthy, Tr. 548).

Response to Finding No. 1465:

Complaint Counsel has no specific response.

1466. Dr. McCarthy extrapolated from the five blends tested in patent number 5,883,199 to classify additional blends not tested as biodegradable. (McCarthy, Tr. 549–50; RX 928).

Response to Finding No. 1466:

Complaint Counsel has no specific response.

1467. In patent number 5,883,199 Dr. McCarthy ran test method UML-7645 for 45 days to determine the biodegradability of polymer blends. (McCarthy, Tr. 554; RX 928).

Response to Finding No. 1467:

Complaint Counsel has no specific response.

1468. In patent number 5,883,199 Dr. McCarthy claims that PET mixed with PLA is biodegradable. (McCarthy, Tr. 555; RX 928).

Response to Finding No. 1468:

Complaint Counsel has no specific response.

1469. According to Dr. McCarthy, PET is not biodegradable. (McCarthy, Tr. 557).

Response to Finding No. 1469:

Complaint Counsel has no specific response.

1470. In his expert report, Dr. McCarthy wrote that a study to determine whether something is biodegradable “must last long enough for the sample to reach at least 60 percent biodegradation.” (McCarthy, Tr. 558; CCX 891 (McCarthy, Rep. at 15)).

Response to Finding No. 1470:

Complaint Counsel has no specific response.

1471. However, the studies Dr. McCarthy conducted in patent number 5,883,199 did not last long enough for blends to reach at least 60 percent biodegradation, even though Dr. McCarthy identified those blends as biodegradable. (RX 928).

Response to Finding No. 1471:

Complaint Counsel has no specific response.

1472. In his expert report, Dr. McCarthy wrote that a study to determine whether something is biodegradable must have a negative control. (McCarthy, Tr. 559; CCX 891 (McCarthy, Rep. at 16)).

Response to Finding No. 1472:

Complaint Counsel has no specific response.

1473. At hearing, Dr. McCarthy testified, in response to the question of whether he specifies a negative control anywhere in patent number 5,888,139, that “[a]gain that wasn’t to prove that it’s biodegradable.” (McCarthy, Tr. 559).

Response to Finding No. 1473:

Complaint Counsel has no specific response.

1474. However, at deposition, in response to the same question, Dr. McCarthy testified to the contrary, stating: “I don’t believe there’s a negative control mentioned in the patent.” (McCarthy, Tr. 560; RX 928; RX 841 (McCarthy, Dep. at 85)).

Response to Finding No. 1474:

Complaint Counsel has no specific response.

1475. In his expert report, Dr. McCarthy argues that extrapolation from a short test to the conclusion that a polymer is biodegradable in the environment is improper. (McCarthy, Tr. 560–61; CCX 891 (McCarthy, Rep. at 22)).

Response to Finding No. 1475:

Complaint Counsel has no specific response.

1476. However, the only test Dr. McCarthy reported in patent number 5,883,199 is a 45 day test used to determine that certain polymer blends are biodegradable. (McCarthy, Tr. 561; RX 928).

Response to Finding No. 1476:

Complaint Counsel has no specific response.

1477. Dr. McCarthy’s position, at least as outlined in his expert report, is that “absent an approved ASTM specification, it is [his] opinion that to scientifically prove a claim that the plastic—not merely the additive and inoculum—is biodegrading, the claimant must support its claim with at least one test with positive results from 14C labeling of the conventional plastic.” (McCarthy, Tr. 562; CCX 891 (McCarthy, Rep. at 24)).

Response to Finding No. 1477:

Complaint Counsel has no specific response.

1478. However, Dr. McCarthy does not reference any 14C radio labeling testing in patent number 5,888,139. (McCarthy, Tr. 562–63; RX 928).

Response to Finding No. 1478:

Complaint Counsel has no specific response.

1479. Dr. McCarthy has never performed any ¹⁴C radio labeling testing in any biodegradation experiments he has performed at UMass Lowell. (McCarthy, Tr. 563).

Response to Finding No. 1479:

Complaint Counsel has no specific response.

1480. Dr. McCarthy has not informed the United State Patent and Trademark Office of the definition of “biodegradation” or “biodegradable” that is in footnote 1 of his expert report that he identifies as interchangeable with the scientific definition. (McCarthy, Tr. 563–64).

Response to Finding No. 1480:

Complaint Counsel has no specific response.

1481. Dr. McCarthy criticizes ECM testing materials for allegedly conflating the concepts of disintegration or degradation with biodegradation. (McCarthy, Tr. 566–68).

Response to Finding No. 1481:

Complaint Counsel has no specific response.

1482. However, when asked “is it possible for the two processes, that is, degradation and biodegradation, to be inextricably intertwined?” Dr. McCarthy said, “I mean, they’re separate processes. You mean if they occur at similar times or...” (McCarthy, Tr. 567).

Response to Finding No. 1482:

Complaint Counsel has no specific response.

1483. McCarthy then admitted that he “know[s] of some instances like the biodegradation of polylactic acid” where the processes of degradation and biodegradation are inextricably intertwined. (McCarthy, Tr. 568).

Response to Finding No. 1483:

Complaint Counsel has no specific response.

1484. Dr. McCarthy states that it is possible that a first stage process of biodegradation would be depolymerization of the macromolecules into shorter chains that are then made biodegradable. (McCarthy, Tr. 568).

Response to Finding No. 1484:

Complaint Counsel has no specific response.

1485. Furthermore, according to Dr. McCarthy extracellular enzymes and/or coenzymes and abiotic reactions are responsible for polymeric chain cleavage. (McCarthy, Tr. 569).

Response to Finding No. 1485:

Complaint Counsel has no specific response.

1486. Dr. McCarthy did not provide any specific citations in support of his opinions in paragraphs 25 and 27 of his expert report. (McCarthy, Tr. 569–70; RX 841 (McCarthy, Dep. at 106); CCX 891 (McCarthy, Rep. at 9)).

Response to Finding No. 1486:

Complaint Counsel has no specific response.

1487. Dr. McCarthy cites to no source at all for the proposition stated in his expert report that there is “overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal.” (CCX 891 (McCarthy, Rep. at 13)).

Response to Finding No. 1487:

Complaint Counsel has no specific response.

1488. At deposition, Dr. McCarthy referred to RX 924 as peer reviewed support for the proposition that there is “overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal.” (McCarthy, Tr. 570; RX 841 (McCarthy, Dep. at 112–13)).

Response to Finding No. 1488:

Complaint Counsel has no specific response.

1489. At hearing, however, when asked whether RX 924 was peer reviewed, Dr. McCarthy testified to the contrary, stating: “Right. It wasn’t officially peer-reviewed.” (McCarthy, Tr. 571–73).

Response to Finding No. 1489:

Complaint Counsel has no specific response.

1490. At hearing, when asked “you are familiar with peer-reviewed scientific publications that conclude that indeed conventional plastics are biodegradable, right?” Dr. McCarthy testified: “I’m not sure.” (McCarthy, Tr. 573–74).

Response to Finding No. 1490:

Complaint Counsel has no specific response.

1491. However, at deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “[t]here are publications concerning polyethylene ... [and] there are some on polypropylene ... [and] one on PET.” (McCarthy, Tr. 574–75; RX 841 (McCarthy, Dep. at 115)).

Response to Finding No. 1491:

Complaint Counsel has no specific response.

1492. Despite being aware of peer-reviewed publications that conclude that conventional plastics can biodegrade, Dr. McCarthy failed to provide any qualification in his expert report regarding his statement that there is “overwhelming scientific consensus that conventional plastics are not biodegradable after customary disposal.” (McCarthy, Tr. 575–76; CCX 891 (McCarthy, Rep. at 13)).

Response to Finding No. 1492:

Complaint Counsel has no specific response.

1493. Dr. McCarthy admits that there is a particular strain of fungi that biodegrades petroleum-based plastic. (McCarthy, Tr. 577; CCX 891 (McCarthy, Rep. at 29 n. 20)).

Response to Finding No. 1493:

Complaint Counsel has no specific response.

1494. In footnote 20 to his expert report, Dr. McCarthy stated without citation to a source that there was no evidence that a fungi that biodegrades petroleum-based plastic existed in the United States. (CCX 891 (McCarthy, Rep. at 29)).

Response to Finding No. 1494:

Complaint Counsel has no specific response.

1495. At hearing, however, Dr. McCarthy admitted that he knows of no peer-reviewed article concluding that the strain of fungi that biodegrades petroleum-based plastic does not exist in the United States. (McCarthy, Tr. 577).

Response to Finding No. 1495:

Complaint Counsel has no specific response.

1496. Dr. McCarthy authored an article entitled “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends.” (McCarthy, Tr. 577–78; RX 940).

Response to Finding No. 1496:

Complaint Counsel has no specific response.

1497. In “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends, Dr. McCarthy measured the biodegradability with the Proteinase K,” Dr. McCarthy explains testing on the soil and the composting for the blends which are the basis for patent number 5,883,199. (McCarthy, Tr. 578; RX 940).

Response to Finding No. 1497:

Complaint Counsel has no specific response.

1498. In measuring biodegradability of polymer blends in “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends,” Dr. McCarthy did not use ¹⁴C radiolabeling testing. (McCarthy, Tr. 578–79; RX 940).

Response to Finding No. 1498:

Complaint Counsel has no specific response.

1499. In measuring biodegradability of polymer blends in “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends,” Dr. McCarthy did not rely on an ASTM standard testing method. (McCarthy, Tr. 579; RX 940).

Response to Finding No. 1499:

Complaint Counsel has no specific response.

1500. In measuring biodegradability of polymer blends in “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends,” Dr. McCarthy used his university’s own testing method. (McCarthy, Tr. 579; RX 940).

Response to Finding No. 1500:

Complaint Counsel has no specific response.

1501. In “Advances in Properties and Biodegradability of Co-Continuous, Immiscible, Biodegradable, Polymer Blends,” Dr. McCarthy concluded that certain test samples

were biodegradable without proving that the samples completely biodegraded within one year after customary disposal. (McCarthy, Tr. 582; RX 940).

Response to Finding No. 1501:

Complaint Counsel has no specific response.

1502. Dr. McCarthy authored an article entitled “Biodegradable Polymer Blends of Poly(lactic acid) and Poly(ethylene glycol).” (McCarthy, Tr. 583; RX 941).

Response to Finding No. 1502:

Complaint Counsel has no specific response.

1503. In “Biodegradable Polymer Blends of Poly(lactic acid) and Poly(ethylene glycol),” Dr. McCarthy measured enzymatic degradation based solely on a weight loss calculation. (McCarthy, Tr. 583–84).

Response to Finding No. 1503:

Complaint Counsel has no specific response.

1504. In “Biodegradable Polymer Blends of Poly(lactic acid) and Poly(ethylene glycol),” Dr. McCarthy measured enzymatic biodegradation without using an ASTM standard. (McCarthy, Tr. 584).

Response to Finding No. 1504:

Complaint Counsel has no specific response.

1505. In “Biodegradable Polymer Blends of Poly(lactic acid) and Poly(ethylene glycol),” Dr. McCarthy measured enzymatic biodegradation without using any ¹⁴C radiolabeling testing. (McCarthy, Tr. 584).

Response to Finding No. 1505:

Complaint Counsel has no specific response.

1506. Dr. McCarthy co-authored an article entitled “Degradation Ranking of Plastics in a Landfill Environment.” (McCarthy, Tr. 585; RX 942).

Response to Finding No. 1506:

Complaint Counsel has no specific response.

1507. In “Degradation Ranking of Plastics in a Landfill Environment,” Dr. McCarthy did not use ¹⁴C radiolabeling testing. (McCarthy, Tr. 858; RX 942).

Response to Finding No. 1507:

Complaint Counsel has no specific response.

1508. In “Degradation Ranking of Plastics in a Landfill Environment,” Dr. McCarthy used weight loss to measure degradability. (McCarthy, Tr. 858; RX 942).

Response to Finding No. 1508:

Complaint Counsel has no specific response.

1509. In “Degradation Ranking of Plastics in a Landfill Environment,” Dr. McCarthy did not use any ASTM method to determine degradability. (McCarthy, Tr. 858; RX 942).

Response to Finding No. 1509:

Complaint Counsel has no specific response.

1510. In “Degradation Ranking of Plastics in a Landfill Environment,” Dr. McCarthy evaluated the appearance of samples to determine if they looked weathered. (McCarthy, Tr. 858; RX 942).

Response to Finding No. 1510:

Complaint Counsel has no specific response.

1511. Dr. McCarthy authored an article entitled “Biodegradable Blends of Bacterial Polyesters with Polyethylene and Polystyrene.” (McCarthy, Tr. 586; RX 945).

Response to Finding No. 1511:

Complaint Counsel has no specific response.

1512. No author of “Biodegradable Blends of Bacterial Polyesters with Polyethylene and Polystyrene” established that the polyethylene and polystyrene blends tested completely break down and return to nature within one year after customary disposal. (McCarthy, Tr. 586; RX 945).

Response to Finding No. 1512:

Complaint Counsel has no specific response.

1513. Dr. McCarthy co-authored an article entitled “The Effect of Hyperbranched Polymers on Processing and Thermal Stability of Biodegradable Polyesters.” (McCarthy, Tr. 587; RX 946).

Response to Finding No. 1513:

Complaint Counsel has no specific response.

1514. In “The Effect of Hyperbranched Polymers on Processing and Thermal Stability of Biodegradable Polyesters,” Dr. McCarthy characterized polyhydroxybutyrate as wholly biodegradable. (McCarthy, Tr. 587; RX 946).

Response to Finding No. 1514:

Complaint Counsel has no specific response.

1515. At hearing, when asked if the authors of “The Effect of Hyperbranched Polymers on Processing and Thermal Stability of Biodegradable Polyesters” established that polyhydroxybutyrate completely decomposed into elements found in nature within one year after customary disposal, Dr. McCarthy testified: “I believe that was demonstrated.” (McCarthy, Tr. 587).

Response to Finding No. 1515:

Complaint Counsel has no specific response.

1516. However, at deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “No.” (McCarthy, Tr. 589; RX 841 (McCarthy, Dep. at 180)).

Response to Finding No. 1516:

Complaint Counsel has no specific response.

1517. Dr. McCarthy co-authored an article entitled “Microwave-Assisted Solvent-Free or Aqueous-Based Synthesis of Biodegradable Polymers.” (McCarthy, Tr. 591–92; RX 948).

Response to Finding No. 1517:

Complaint Counsel has no specific response.

1518. At hearing, when asked “does the article [“Microwave-Assisted Solvent-Free or Aqueous-Based Synthesis of Biodegradable Polymers”] establish that the polymers would biodegrade such that they would break down and return to nature, decomposing into elements found in nature within one year after customary disposal?” Dr. McCarthy testified: “Yes.” (McCarthy, Tr. 590).

Response to Finding No. 1518:

Complaint Counsel has no specific response.

1519. However, at deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “No.” (McCarthy Tr. 592; RX 841 (McCarthy, Dep. at 185)).

Response to Finding No. 1519:

Complaint Counsel has no specific response.

1520. At hearing, when asked “does all paper completely break down and return to nature, that is, decompose into elements found in nature within one year of customary disposal?” Dr. McCarthy testified: “Yeah. I think so.” (McCarthy, Tr. 592–93).

Response to Finding No. 1520:

Complaint Counsel has no specific response.

1521. However, at deposition, when asked the same question, Dr. McCarthy testified to the contrary, stating: “No.” (McCarthy, Tr. 593; RX 841 (McCarthy, Dep. at 185)).

Response to Finding No. 1521:

Complaint Counsel has no specific response.

1522. According to Dr. McCarthy, a tree trunk is biodegradable if it does not completely return to elements found in nature within one year after customary disposal. (McCarthy, Tr. 594).

Response to Finding No. 1522:

Complaint Counsel has no specific response.

1523. According to Dr. McCarthy, an orange peel is biodegradable if it does not return to elements in nature within one year after customary disposal. (McCarthy, Tr. 594).

Response to Finding No. 1523:

Complaint Counsel has no specific response.

1524. Dr. McCarthy cannot name each species of microbial life that dwell in a landfill. (McCarthy, Tr. 594).

Response to Finding No. 1524:

Complaint Counsel has no specific response.

1525. Dr. McCarthy cannot explain the life cycle of all species of microbial life that dwell in a landfill. (McCarthy, Tr. 594).

Response to Finding No. 1525:

Complaint Counsel has no specific response.

1526. Dr. McCarthy cannot identify all the stimuli that cause microbial life forms to produce enzymes. (McCarthy, Tr. 594).

Response to Finding No. 1526:

Complaint Counsel has no specific response.

1527. There is a Fee-for-Service Agreement between UMass Lowell and Metabolix. (McCarthy, Tr. 595; RX 961).

Response to Finding No. 1527:

Complaint Counsel has no specific response.

1528. The Fee-for-Service Agreement between UMass Lowell and Metabolix lists Dr. McCarthy as the principal investigator. (McCarthy Tr. 595–96; RX 961).

Response to Finding No. 1528:

Complaint Counsel has no specific response.

1529. According to Dr. McCarthy, it is not necessary from a scientific perspective that “biodegradation” means only that substances break down into single elements. (McCarthy, Tr. 597).

Response to Finding No. 1529:

Complaint Counsel has no specific response.

1530. According to Dr. McCarthy, PET is a homopolymer. (McCarthy, Tr. 597–98).

Response to Finding No. 1530:

Complaint Counsel has no specific response.

1531. Patent number 5,883,199 allows a blend of a homopolymer to be biodegradable. (McCarthy, Tr. 598; RX 928).

Response to Finding No. 1531:

Complaint Counsel has no specific response.

1532. Dr. McCarthy tailored his opinion in this matter to meet Complaint Counsel’s needs, even accepting the fundamental definition of what “biodegradation” means from Complaint Counsel, despite contrary representations in his own scientific articles and in his own patent. (McCarthy, Tr. 485–87, 488, 494).

Response to Finding No. 1532:

Complaint Counsel has no specific response.

1533. Dr. McCarthy testified that he prepared his expert report as a “collaborative effort between [himself] and complaint counsel.” (McCarthy, Tr. 487; RX 841 (McCarthy, Dep. at 20)).

Response to Finding No. 1533:

Complaint Counsel has no specific response.

1534. Email correspondence from Complaint Counsel to ECM in July 2013 mirrored the content in Dr. McCarthy’s expert report. (RX 593; CCX 891 (McCarthy, Expert Report)).

Response to Finding No. 1534:

Complaint Counsel has no specific response.

1535. Dr. McCarthy’s expert report stated that radiological marker ¹⁴C testing is the only test that can dispositively prove that ECM’s additive causes biodegradation of plastics, but he himself has relied on extrapolation and other tests (that neither adhere to an ASTM standard nor involve radiological markers), such as one he used at UMass., UML-7645, and measures of weight loss, to prove biodegradability of polymer products. (McCarthy, Tr. 540–42; RX 841 (McCarthy, Dep. 74–75, 148–149, 165–172)).

Response to Finding No. 1535:

Complaint Counsel has no specific response.

1536. In other materials, Dr. McCarthy was silent on the need for a product to biodegrade within a year to be biodegradable, and yet, for ECM’s additive, Dr. McCarthy is adhering to the one year rule contained in FTC’s Revised Green Guides in collaboration with Complaint Counsel. (McCarthy, Tr. 544–45; RX 841 (McCarthy, Dep. at 19–42)).

Response to Finding No. 1536:

Complaint Counsel has no specific response.

1537. Dr. McCarthy did not adhere to the “One-Year Rule” in his ‘199 patent when defining biodegradable. (McCarthy, Tr. 544–45; RX 841 (McCarthy, Dep. at 69–76); RX 928).

Response to Finding No. 1537:

Complaint Counsel has no specific response.

1538. Dr. McCarthy selectively applies the “One-Year Rule,” opining that a banana peel, tree trunk, and orange peel are biodegradable despite the fact that they may not fully biodegrade within a year. (McCarthy, Tr. 503–04, 506, 508; RX 841 (McCarthy, Dep. at 185–87)).

Response to Finding No. 1538:

Complaint Counsel has no specific response.

1539. Dr. McCarthy’s report states that “evidence that a substance is biodegradable is not ‘competent and reliable’ unless the tested sample reaches ‘at least 60% biodegradation,’ and there is both a ‘negative control’ and a ‘positive control.’” (McCarthy, Tr. 558–59; RX 891 (McCarthy, Rep. at 15)).

Response to Finding No. 1539:

Complaint Counsel has no specific response.

1540. Dr. McCarthy asserts that extrapolation is prohibited under the current ASTM standards, thus 100% biodegradation in the laboratory would be required. (McCarthy, Tr. 477–78).

Response to Finding No. 1540:

Complaint Counsel has no specific response.

1541. Dr. McCarthy further asserts that he is unaware of any circumstances where extrapolation would be appropriate when assessing the biodegradability of a product. (McCarthy, Tr. 478).

Response to Finding No. 1541:

Complaint Counsel has no specific response.

1542. However, McCarthy’s ‘199 patent made biodegradable claims even though the rate of biodegradation was lower than 60%, reaching only 14% in 45 days, and where he did not use a negative control. (McCarthy, Tr. 558–560; RX 928).

Response to Finding No. 1542:

Complaint Counsel has no specific response.

1543. Dr. McCarthy’s prior research on biodegradable plastics did not meet the same 60% threshold that he now requires of ECM’s additive. (RX 928). There is no consensus in the peer-reviewed literature, or any requirement whatsoever, that a gas evolution

should produce 60 percent biodegradation before a test article can be deemed biodegradable. (Sahu, Tr. 1793).

Response to Finding No. 1543:

Complaint Counsel has no specific response.

1544. Complaint Counsel's experts have provided no literature or documentary evidence showing that scientists in the field require 60 percent or greater biodegradation before a product can be deemed biodegradable. (McCarthy, Tr. 359-680).

Response to Finding No. 1544:

Complaint Counsel has no specific response.

1545. Complaint Counsel's rebuttal expert, Dr. Michel, unambiguously testified that a "material that only biodegrades 44 percent to elements found in nature is biodegradable." (Michel, Tr. 2961).

Response to Finding No. 1545:

Complaint Counsel has no specific response.

1546. The fact that a plateau formed in testing conditions before the biodegradation reached sixty percent did not prevent Dr. Michel from declaring the product still biodegradable. (Michel, Tr. 2961). Although Dr. McCarthy's test data showed much less than 60% biodegradation, he extrapolated his gas evolution test data, and used it to say that the test material was fully biodegradable. (Sahu, Tr. 1894; RX 756 at 8-12).

Response to Finding No. 1546:

Complaint Counsel has no specific response.

1547. Dr. McCarthy has labeled a substrate "biodegradable" after observing just fourteen (14%) percent biodegradation in 45 days. (Sahu, Tr. 1894; RX 756 at 11).

Response to Finding No. 1547:

Complaint Counsel has no specific response.

1548. Dr. McCarthy has said that polylactic acid (PLA) is "biodegradable." According to Dr. McCarthy, "polylactic acid is a biodegradable polymer..." (RX 756 at 2; McCarthy, Tr. 376).

Response to Finding No. 1548:

Complaint Counsel has no specific response.

1549. Although Dr. McCarthy has repeatedly acknowledged that PLA is biodegradable (RX 756 at 2; McCarthy, Tr. 376), his testing revealed that PLA biodegraded only 14% after 45 days of biodegradation testing. (RX 756 at 11 (example 3)).

Response to Finding No. 1549:

Complaint Counsel has no specific response.

1550. In another of Dr. McCarthy's own composting tests, PLA degraded only 3% in 20 days. (RX 756 at 11 (example 4)).

Response to Finding No. 1550:

Complaint Counsel has no specific response.

1551. Dr. McCarthy takes the position that for any given polymer that the amorphous regions will biodegrade faster than the crystalline regions. (McCarthy, Tr. 613).

Response to Finding No. 1551:

Complaint Counsel has no specific response.

1552. Dr. McCarthy does not know whether it is possible for an amorphous polymer with extremely high molecular weight and relatively low surface area to biodegrade slower than a crystalline polymer of relatively low molecular weight and with a relatively high surface area. (McCarthy, Tr. 616–17).

Response to Finding No. 1552:

Complaint Counsel has no specific response.

1553. Dr. McCarthy's expert report makes no explicit reference to amorphous and crystalline regions of a polymer. (McCarthy, Tr. 625–26).

Response to Finding No. 1553:

Complaint Counsel has no specific response.

1554. Dr. McCarthy makes no statement whatsoever as to what percentage of a polymer is comprised of amorphous regions and what percentage of a polymer is comprised of crystalline regions. (McCarthy, Tr. 358–689; CCX 891 (McCarthy, Rep.); CCX 892 (McCarthy, Rebuttal Rep.)).

Response to Finding No. 1554:

Complaint Counsel has no specific response.

1555. Polyethylene, polypropylene, polyvinyl chloride, and polystyrene are all thermoplastics (RX 855 at 31), which have an “overall structure that is generally amorphous” (RX 855, at 15 (quoting Lampman, S., Characterization and Failure Analysis of Plastics, ASM International, 2003, p.7)).

Response to Finding No. 1555:

Complaint Counsel has no specific response.

1556. Dr. McCarthy believes that “one of the most serious flaws in the conclusion of [ECM’s] experts is that once biodegradation is established, it will continue to completion.” (McCarthy, Tr. 629; CCX 892 (McCarthy, Rebuttal Rep. at 9)).

Response to Finding No. 1556:

Complaint Counsel has no specific response.

1557. However, in patent number 5,883,199, Dr. McCarthy concluded that a substance that biodegraded by 25% in 45 days was biodegradable. (McCarthy, Tr. 630–34; RX 928).

Response to Finding No. 1557:

Complaint Counsel has no specific response.

1558. Dr. McCarthy co-authored an article entitled “The Influence of Injection Molding Conditions on Biodegradable Polymers.” (McCarthy, Tr. 634; RX 969).

Response to Finding No. 1558:

Complaint Counsel has no specific response.

1559. In “The Influence of Injection Molding Conditions on Biodegradable Polymers,” Dr. McCarthy analyzed certain polymers for their rates of biodegradation. (McCarthy, Tr. 635–36; RX 969).

Response to Finding No. 1559:

Complaint Counsel has no specific response.

1560. Dr. McCarthy believes that a biodegradation study must last long enough for the same to reach at least 60 percent biodegradation. (McCarthy, Tr. 637; RX 891 (McCarthy, Rep. at 15)).

Response to Finding No. 1560:

Complaint Counsel has no specific response.

1561. Dr. McCarthy agrees that ordinarily 60 percent biodegradation of a sample is not something that can occur in just a few minutes. (McCarthy, Tr. 637–38).

Response to Finding No. 1561:

Complaint Counsel has no specific response.

1562. In “The Influence of Injection Molding Conditions on Biodegradable Polymers,” Dr. McCarthy measured rates of degradation by conducting a test that lasted five minutes. (McCarthy, Tr. 638; RX 969).

Response to Finding No. 1562:

Complaint Counsel has no specific response.

1563. Dr. McCarthy relied on the tests he reported in “The Influence of Injection Molding Conditions on Biodegradable Polymers” to draw conclusions about the biodegradability of polymers. (McCarthy, Tr. 638–39; RX 969).

Response to Finding No. 1563:

Complaint Counsel has no specific response.

1564. The testing reported in “The Influence of Injection Molding Conditions on Biodegradable Polymers” fails to demonstrate 60 percent biodegradation. (McCarthy, Tr. 639; RX 969).

Response to Finding No. 1564:

Complaint Counsel has no specific response.

1565. Dr. McCarthy believes the photodegradation is not a form of biodegradation because photodegradation is abiotic. (McCarthy, Tr. 646–47).

Response to Finding No. 1565:

Complaint Counsel has no specific response.

1566. However, in “A Review on Recent Trends and Emerging Perspectives,” published in the Journal of Polymers and the Environment that Dr. McCarthy edits, the authors include abiotic degradation within a diagrammatic representation of the chemistry of biodegradation. (McCarthy, Tr. 647; RX 925).

Response to Finding No. 1566:

Complaint Counsel has no specific response.

1567. Dr. McCarthy failed, in patent number 5,883,199, to provide any data demonstrating that the addition of an aliphatic chain segment to PET would make the PET biodegradable. (McCarthy, Tr. 653–54; RX 928).

Response to Finding No. 1567:

Complaint Counsel has no specific response.

1568. Dr. McCarthy did not run any statistics for any D5511 studies on ECM plastic. (McCarthy, Tr. at 654).

Response to Finding No. 1568:

Complaint Counsel has no specific response.

1569. At hearing, Dr. McCarthy testified that if a polymer loses a chlorine ion, the polymer's overall molecular weight "will decrease... by like 1 percent." (McCarthy, Tr. 661).

Response to Finding No. 1569:

Complaint Counsel has no specific response.

1570. Then, when asked at hearing "so the molecular weight of a repeat unit of PVC is 62?" Dr. McCarthy testified: "Yeah.". (McCarthy, Tr. 663).

Response to Finding No. 1570:

Complaint Counsel has no specific response.

1571. When asked "and what is the molecular weight of a repeat unit of PVC after a loss of chlorine, Dr. McCarthy testified: "27." (McCarthy, Tr. 663).

Response to Finding No. 1571:

Complaint Counsel has no specific response.

1572. The difference between 62 and 27 is not one percent. (McCarthy, Tr. 664).

Response to Finding No. 1572:

Complaint Counsel has no specific response.

1573. Since 2003, Dr. McCarthy has not conducted any surveys of scientists, manufacturers, or consumers concerning their understanding of the meaning of "biodegradation." (McCarthy, Tr. 666).

Response to Finding No. 1573:

Complaint Counsel has no specific response.

1574. Dr. McCarthy testified that the only way to make PE biodegradable is by adding a pro-oxidant to the PE or by having the PE achieve a molecular weight of 500. (McCarthy, Tr. 666).

Response to Finding No. 1574:

Complaint Counsel has no specific response.

1575. However, in “A Review on Recent Trends and Emerging Perspectives,” published in the Journal of Polymers and the Environment that Dr. McCarthy edits, the authors state that the insertion of weak links into polymers can cause biodegradation. (McCarthy, Tr. 670–71; RX 925).

Response to Finding No. 1575:

Complaint Counsel has no specific response.

1576. Furthermore, in “A Review on Recent Trends and Emerging Perspectives,” published in the Journal of Polymers and the Environment that Dr. McCarthy edits, the authors state that compounding polymers with photosensitizers can cause biodegradation. (McCarthy, Tr. 672; RX 925).

Response to Finding No. 1576:

Complaint Counsel has no specific response.

1577. In “A Review on Recent Trends and Emerging Perspectives,” published in the Journal of Polymers and the Environment that Dr. McCarthy edits, the authors state “the most frequently adopted approach to degradability design of [Low Density Polyethylene] LDPE has been to introduce pro-degradant additives such as starch and cellulose into synthetic polymers.” (McCarthy, Tr. 673–74; RX 925).

Response to Finding No. 1577:

Complaint Counsel has no specific response.

1578. Dr. McCarthy failed to inform the authors of “A Review on Recent Trends and Emerging Perspectives” that they had no basis for the claim that one can blend a biodegradable additive into an otherwise nonbiodegradable polymer and cause the nonbiodegradable polymer to become biodegradable. (McCarthy, Tr. 674),

Response to Finding No. 1578:

Complaint Counsel has no specific response.

1579. Dr. McCarthy has never performed any tests on ECM amended plastic. (McCarthy, Tr. 678).

Response to Finding No. 1579:

Complaint Counsel has no specific response.

1580. Dr. McCarthy did not provide any specific scientific citation to support his statement that all of the ECM additive buried in crystalline phases would become instantly inaccessible for biodegradation. (McCarthy, Tr. 678).

Response to Finding No. 1580:

Complaint Counsel has no specific response.

XI. COMPLAINT COUNSEL HAS NOT SHOWN THAT ECM'S BIODEGRADABILITY CLAIM IS FALSE

A. Complaint Counsel Provided No Evidence Concerning What Competent and Reliable Scientific Evidence Can Show the Rate that a Product will Biodegrade in a Landfill

1581. Complaint Counsel provided no testimony or evidence concerning what competent and reliable scientific evidence would be required to prove the rate that a product will biodegrade in an MSW landfill. (Tolaymat, Tr. 218-220; McCarthy, Tr. 359-480).

Response to Finding No. 1581:

This finding mischaracterizes the evidentiary record. The expert reports of Dr. Tolaymat and Dr. McCarthy discuss the types of evidence that could be reliable to substantiate the claims in this case. CCX-893, ¶¶ 49-54; CCX-891, ¶¶ 43-60.

1582. There is no record evidence showing which tests, if any, are competent and reliable to establish the rate of biodegradation in the highly variable landfill environment. (Tolaymat, Tr. 112-212, 213-358; McCarthy, Tr. 359-480, 523-680).

Response to Finding No. 1582:

Complaint Counsel has no specific response.

1583. When questioned repeatedly concerning which tests, if any, can be used by a company to prove the rate of biodegradation in an MSW landfill, Dr. Tolaymat had not test to recommend. (Tolaymat, Tr. 219-21; 222-24).

Response to Finding No. 1583:

Complaint Counsel has no specific response.

1584. Dr. Tolaymat has never seen any company use an in-situ study to determine biodegradability. (Tolaymat, Tr. 224).

Response to Finding No. 1584:

Complaint Counsel has no specific response.

1585. Dr. Tolaymat never encountered any in-situ landfill experiment that tested a specific product for biodegradability, as opposed to waste generally. (Tolaymat, Tr. 224).

Response to Finding No. 1585:

Complaint Counsel has no specific response.

1586. Dr. Tolaymat testified that no one test could support a rate of biodegradation in landfills, and that the rate of biodegradation is a matter of scientific judgment. (Tolaymat, Tr. 261-62).

Response to Finding No. 1586:

Complaint Counsel has no specific response.

1587. Dr. McCarthy testified at length concerning types of scientific studies that might be used to assess biodegradability of polymers generally. (McCarthy, Tr. 359-480).

Response to Finding No. 1587:

Complaint Counsel has no specific response.

1588. Dr. McCarthy did not, however, provide any testimony concerning the specific type of testing required to demonstrate the rate of biodegradation in an MSW landfill. (McCarthy, Tr. 359-480).

Response to Finding No. 1588:

Complaint Counsel has no specific response.

1589. Dr. Barlaz testified that there is no uniformly used method to extrapolate rate data from laboratory scale testing to field-scale landfills. (Barlaz, Tr. 2282).

Response to Finding No. 1589:

Complaint Counsel has no specific response.

1590. Dr. Barlaz explained that “it’s very, very difficult to measure rates at either – at field scale either for individual components or for bulk waste, so all we have is the lab.” (Barlaz, Tr. 2282).

Response to Finding No. 1590:

Complaint Counsel has no specific response.

1591. Dr. Barlaz explained that he would never use a BMP test to establish rate data. (Barlaz, Tr. 2231).

Response to Finding No. 1591:

Complaint Counsel has no specific response.

1592. Dr. Barlaz has published a proposed theory that suggests an extrapolation method from the lab to the landfill, but that method has not been generally accepted and is not generally used. (Barlaz, Tr. 2281-82).

Response to Finding No. 1592:

Complaint Counsel has no specific response.

1593. With respect to the rate of biodegradation, Dr. Barlaz wrote in his report that because the residence of waste in a landfill is essentially infinite, if a material is biodegradable, then it is not clear that it matters whether it biodegrades with a decay rate of 0.02 or 0.2. (RX 853 at 12).

Response to Finding No. 1593:

Complaint Counsel has no specific response.

1594. Dr. Barlaz testified that if a material is disposed in a landfill, then for the purpose of whether it biodegrades, it does not matter whether it degrades in two, ten, or twenty years. (Barlaz, Tr. 2283-84).

Response to Finding No. 1594:

Complaint Counsel has no specific response.

1595. Dr. Barlaz testified that a material which degrades slowly in a landfill is more environmentally beneficial than a product that biodegrades rapidly. (Barlaz, Tr. 2284-85).

Response to Finding No. 1595:

Complaint Counsel has no specific response.

1596. Methane is a greenhouse gas that contributes to climate change. (Barlaz, Tr. 2285).

Response to Finding No. 1596:

Complaint Counsel has no specific response.

1597. As methane gas increases in the atmosphere, it contributes to warming of the atmosphere, which the preponderance of scientists would suggest is damaging to the planet. (Barlaz, Tr. 2286).

Response to Finding No. 1597:

Complaint Counsel has no specific response.

1598. EPA regulations do not require landfill owners to install gas collection systems until five years after waste burial. (Barlaz, Tr. 2285).

Response to Finding No. 1598:

Complaint Counsel has no specific response.

1599. In a typical case, a landfill owner begins collecting gas in about two years after waste burial. (Barlaz, Tr. 2285).

Response to Finding No. 1599:

Complaint Counsel has no specific response.

1600. If a product biodegrades rapidly within two years (or five years), it will not take up space in a landfill, but the methane produced will not be captured and that will have less desirous environmental consequences than the simple storage of a product in a landfill for a longer period of time. (Barlaz, Tr. 2285-86).

Response to Finding No. 1600:

Complaint Counsel has no specific response.

1601. Dr. Barlaz has mapped (RX 853 at 26 (figure 8)) the global warming potential, which measures a system's contribution to greenhouse gases. (Barlaz, Tr. 2286-87).

Response to Finding No. 1601:

Complaint Counsel has no specific response.

1602. Dr. Barlaz testified, and wrote in peer reviewed publications, that based on decay rate the slower a product biodegrades in a landfill environment, the better that product is for the environment after disposal. (Barlaz, Tr. 2287-88).

Response to Finding No. 1602:

Complaint Counsel has no specific response.

1603. Stated differently, Dr. Barlaz explained that:

The reason we make products is for people to use them, not to throw them in a landfill... What we're trying to do here is ask, given the fact that waste exists and waste is generated, what's the best thing to do with it and what's the best way to design a product, without impeding its functionality, to minimize environmental impact."

(Barlaz, Tr. 2288).

Response to Finding No. 1603:

Complaint Counsel has no specific response.

1604. A plastic product that completely biodegrades in a landfill within one year after customary disposal would be a net contributor to global methane emissions at a typical landfill. (Barlaz, Tr. 2289-90).

Response to Finding No. 1604:

Complaint Counsel has no specific response.

1605. For the typical landfill that does not collect gas for years after disposal, a product that biodegraded completely within one year after disposal would be a net emitter of methane to the environment and therefore have negative environmental impact over a more slowly degrading substance. (Barlaz, Tr. 2289-90).

Response to Finding No. 1605:

Complaint Counsel has no specific response.

B. Experts Agree that Gas Evolution Tests Are Competent and Reliable Evidence to Prove that a Product is "Biodegradable"

1606. Numerous gas evolution tests have shown that plastics manufactured with ECM's additive, which otherwise do not biodegrade, have biodegraded to a degree that is substantially more than biodegradation that could have been sourced solely by the ECM additive. (Barlaz, Tr. 2175; Sahu, Tr. 1934-37; RX 248; RX 254; RX 263; RX 265; RX 266; RX 268; RX 273; RX 276; RX 392; RX 393; RX 394; RX 395; RX 396; RX 398; RX 399; RX 401; RX 403; RX 402; RX 405; RX 465; RX 467; RX 468; RX 836; RX 838; RX 839; CCX 534; CCX 546; CCX 547; CCX 548; CCX 952).

Response to Finding No. 1606:

None of the tests in this case support ECM's claims. CCX-891, ¶¶ 68-72; CCX-891, ¶¶ 75-88; (McCarthy, Tr. 453-455); (McCarthy, Tr. 465-470); CCX-164 (Ohio State

University); CCX-174-CCX-176 (Stevens Ecology); CCX-173 (Advance Materials Center); CCX-156; CCX-157; CCX-163; CCX-169-CCX-171 (O.W.S.); CCX-590; CCX-946; CCX-947; CCX-951; CCX-952; CCX-954.

1607. Other studies, including qualitative tests and data, support the conclusions drawn from gas evolution testing, to wit, that plastics manufactured with the ECM additive render the otherwise non-biodegradable plastic biodegradable. (RX 254; RX 269; RX 271; RX 274; RX 275; RX 278; RX 277; RX 388-91).

Response to Finding No. 1607:

None of the tests in this case support ECM's claims. CCX-891, ¶¶ 68-72; CCX-891, ¶¶ 75-88; (McCarthy, Tr. 453-455); (McCarthy, Tr. 465-470); CCX-164 (Ohio State University); CCX-174-CCX-176 (Stevens Ecology); CCX-173 (Advance Materials Center); CCX-156; CCX-157; CCX-163; CCX-169-CCX-171 (O.W.S.); CCX-590; CCX-946; CCX-947; CCX-951; CCX-952; CCX-954.

1608. Industry has relied on several test models to prove biodegradability, but all experts in this case agree that "gas evolution" data is competent and reliable evidence to prove biodegradability, and it is the most practical and widely used measure of biodegradation (both aerobic and anaerobic) in the scientific field. (RX 853 at 7-8).

Response to Finding No. 1608:

Complaint Counsel has no specific response.

1609. Dr. Tolaymat testified that gas evolution tests are reliable evidence to show biodegradation in landfills. (Tolaymat, Tr. 171).

Response to Finding No. 1609:

Complaint Counsel has no specific response.

1610. Dr. McCarthy testified that gas evolution or "respirometric" testing is used by scientists to assess biodegradability. (McCarthy, Tr. 413-14).

Response to Finding No. 1610:

Complaint Counsel has no specific response.

1611. In fact, Dr. McCarthy himself relied on gas evolution data when assessing whether plastic polymers that he designed were biodegradable under anaerobic conditions. (McCarthy, Tr. 547-48; RX 756 at column 11).

Response to Finding No. 1611:

Complaint Counsel has no specific response.

1612. Dr. McCarthy has never himself conducted carbon-14 radiolabeled testing on plastic polymers to demonstrate biodegradability. (McCarthy, Tr. 359-680).

Response to Finding No. 1612:

Complaint Counsel has no specific response.

1613. Dr. Sahu testified that gas evolution testing was generally relied upon by scientists to show the biodegradability of materials. (Sahu, Tr. 1792).

Response to Finding No. 1613:

Complaint Counsel has no specific response.

1614. Dr. Barlaz testified that data from gas evolution testing was competent and reliable evidence of biodegradability, and that scientists in the field generally rely on same. (Barlaz, Tr. 2245-46).

Response to Finding No. 1614:

Complaint Counsel has no specific response.

1615. Dr. Burnette testified that gas evolution tests, like the D5511 test, are useful for predicting some baseline performance in landfill settings, albeit not optimal. (Burnette, Tr. 2435-39).

Response to Finding No. 1615:

Complaint Counsel has no specific response.

1616. When assessing whether plastic materials were anaerobically biodegradable, Dr. Michel relied on ASTM D5511 gas evolution testing. (Michel, Tr. 2904-05).

Response to Finding No. 1616:

Complaint Counsel has no specific response.

1617. Dr. Michel has never performed a radiolabeled test to measure biodegradation of plastic polymers or products. (Michel, Tr. 2906).

Response to Finding No. 1617:

Complaint Counsel has no specific response.

1618. There are no practical tests that precisely simulate or replicate all landfill conditions, and Complaint Counsel has offered no such method through its experts, but tests showing that one or more common bacteria in a closed test environment do

biodegrade plastic are generally accepted as predictive of biodegradation in landfills where many multiple kinds of biodegrading bacteria and fungi are present. (RX-756 at 6–12; RX-853 at 7–9; RX-865 at 41–47).

Response to Finding No. 1618:

Complaint Counsel has no specific response.

1619. Dr. Tolaymat was unable to give an example of a practical laboratory test that would simulate landfill conditions, but also be accelerated so that testing would not be required to continue for decades. (Tolaymat, Tr. 247-50).

Response to Finding No. 1619:

Complaint Counsel has no specific response.

1620. Dr. Sahu testified that accelerated testing was reasonably required to produce results within a reasonable time frame, and that accelerated testing is commonly done in many scientific fields. (Sahu, Tr. 1924).

Response to Finding No. 1620:

Complaint Counsel has no specific response.

1621. Dr. Sahu explained that accelerated biodegradation testing, which may not mimic every aspect of the landfill, remains competent and reliable to demonstrate intrinsic biodegradability. (Sahu, Tr. 1924-26).

Response to Finding No. 1621:

Complaint Counsel has no specific response.

1622. Dr. Barlaz explained that attempting to truly “simulate” a landfill environment might require testing that spans 100 years. (Barlaz, Tr. 2212).

Response to Finding No. 1622:

Complaint Counsel has no specific response.

1623. Dr. Barlaz explained that “it’s not practical to try to simulate that kind of ecosystem at the time scale in the laboratory.” (Barlaz, Tr. 2212).

Response to Finding No. 1623:

Complaint Counsel has no specific response.

1624. Dr. Barlaz explained that the biodegradability (or anaerobic biodegradability) nature of a product is a characteristic of the material generally. (Barlaz, Tr. 2217-18).

Response to Finding No. 1624:

Complaint Counsel has no specific response.

1625. The biodegradability of a product describes a property of the material, much like its color or weight or density. (Barlaz, Tr. 2218).

Response to Finding No. 1625:

Complaint Counsel has no specific response.

1626. That property will not change regardless of where the material is placed. (Barlaz, Tr. 2218).

Response to Finding No. 1626:

Complaint Counsel has no specific response.

1627. Tests like the ASTM D5511, and well-designed gas evolution tests, are competent and reliable to assess the intrinsic biodegradability of a test material. (Barlaz, Tr. 2219).

Response to Finding No. 1627:

Complaint Counsel has no specific response.

1628. A product that is “biodegradable” will biodegrade at various rates and to various extents based on the external environmental conditions, but will remain “biodegradable” regardless. (Barlaz, Tr. 2218-19).

Response to Finding No. 1628:

Complaint Counsel has no specific response.

XII. DR. RANAJIT SAHU’S TESTIMONY

A. Dr. Sahu Testified that Plastic Containing the ECM Additive is Biodegradable

1629. Plastics manufactured using the ECM additive technology are shown to be biodegradable under conditions of customary disposal, including landfills. (Sahu, Tr. 1752).

Response to Finding No. 1629:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1630. Plastics containing the ECM additive are expected to biodegrade at a rate faster than corresponding plastics without such additives. (Sahu, Tr. 1753-54).

Response to Finding No. 1630:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1631. Dr. Sahu testified that a plastic containing the ECM additive would fully biodegrade under customary disposal conditions over time. (Sahu, Tr. 1754).

Response to Finding No. 1631:

Complaint Counsel has no specific response.

1632. Dr. Sahu based his opinion on a thorough literature review of peer-reviewed literature published since the 1950s, as well as between 30-40 different tests collected during this case. (Sahu, Tr. 1754-56).

Response to Finding No. 1632:

Complaint Counsel has no specific response.

1633. He reviewed several hundred peer-reviewed articles. (Sahu, Tr. 1791).

Response to Finding No. 1633:

Complaint Counsel has no specific response.

1634. Dr. Sahu's report includes many of the citations to, and discussions of, the literature that he relied on. (Sahu, Tr. 1791; RX 855).

Response to Finding No. 1634:

Complaint Counsel has no specific response.

1635. Conventional plastics are those made from petroleum feedstocks or natural gas, as opposed to those manufactured from biological materials like starches. (Sahu, Tr. 1758).

Response to Finding No. 1635:

Complaint Counsel has no specific response.

1636. It is commonly accepted that conventional plastics last very long in the environment, perhaps tens of thousands of years. (Sahu, Tr. 1758-59; CCX 891 at ¶ 17).

Response to Finding No. 1636:

Complaint Counsel has no specific response.

1637. Polyethylene can be considered a conventional plastic in the sense that it is ordinarily derived from feedstocks like petroleum or natural gas. (Sahu, Tr. 1784).

Response to Finding No. 1637:

Complaint Counsel has no specific response.

1638. Conventional plastics have only existed in modern manufacturing for about ninety to one hundred years. (Sahu, Tr. 1879).

Response to Finding No. 1638:

Complaint Counsel has no specific response.

1639. Biodegrading a substance into elements found in nature means to reduce the item from complex molecules into smaller molecules that may be broken down. (Sahu, Tr. 1763-64).

Response to Finding No. 1639:

Complaint Counsel has no specific response.

1640. Biodegradation processes are highly variable in the heterogeneous landfill environment, where you have different microenvironments throughout the landfill. (Sahu, Tr. 1768-69).

Response to Finding No. 1640:

Complaint Counsel has no specific response.

1641. A landfill, by its nature, is different from a controlled laboratory reactor; in the latter scientists attempt to control the environment to eliminate variables. (Sahu, Tr. 1769).

Response to Finding No. 1641:

Complaint Counsel has no specific response.

1642. A landfill cannot be standardized or homogenized. (Sahu, Tr. 1769-70).

Response to Finding No. 1642:

Complaint Counsel has no specific response.

1643. That means the level of biodegradation and activity will be variable in the landfill environment. (Sahu, Tr. 1769-70).

Response to Finding No. 1643:

Complaint Counsel has no specific response.

1644. The differing pockets of activity and varying conditions in a landfill will have an effect on the rate of biodegradation. (Sahu, Tr. 1770-71).

Response to Finding No. 1644:

Complaint Counsel has no specific response.

1645. There are methods to degrade plastics that involve chemical agents, or even incineration. (Sahu, Tr. 1771-72).

Response to Finding No. 1645:

Complaint Counsel has no specific response.

1646. Biodegradation of materials is a different concept than chemical degradation. (Sahu, Tr. 1771-72).

Response to Finding No. 1646:

Complaint Counsel has no specific response.

1647. There are many different grades of plastics in the commercial stream. (Sahu, Tr. 1785).

Response to Finding No. 1647:

Complaint Counsel has no specific response.

1648. For instance, polyethylene has at least ten different commercial grades. (Sahu, Tr. 1788).

Response to Finding No. 1648:

Complaint Counsel has no specific response.

1649. In general, because the end application of ECM plastics is not demanding (e.g., plastics made for carrying groceries vs. medical devices), the grade of polymer used in manufacturing ECM plastics is not high. (Sahu, Tr. 1877-78).

Response to Finding No. 1649:

Complaint Counsel has no specific response.

1650. Plastics that are intended for garbage bags or packaging materials can be made of lesser grade than plastics intended for more specific uses. (Sahu, Tr. 1878).

Response to Finding No. 1650:

Complaint Counsel has no specific response.

1651. Lesser grade plastics are more likely to contain impurities and inconsistencies that promote biodegradation. (Sahu, Tr. 1878-79).

Response to Finding No. 1651:

Complaint Counsel has no specific response.

1652. Polyethylene is comprised of the monomer ethylene, which is a repeating unit in the polyethylene polymer. (Sahu, Tr. 1788).

Response to Finding No. 1652:

Complaint Counsel has no specific response.

1653. Although scientists in the field ordinarily rely on gas evolution data to measure biodegradation in laboratory environments, they also rely on a range of test batteries for supporting data. (Sahu, Tr. 1792-93).

Response to Finding No. 1653:

Complaint Counsel has no specific response.

1654. Tests of all durations can be useful in assessing biodegradability, including shorter term testing. (Sahu, Tr. 1795).

Response to Finding No. 1654:

Complaint Counsel has no specific response.

1655. Dr. Sahu evaluated different polymers, including polyethylene, polypropylene, and polystyrene. (Sahu, Tr. 1800-01).

Response to Finding No. 1655:

Complaint Counsel has no specific response.

1656. He focused on certain polymers because the vast majority of ECM plastics manufactured by customers (about three quarters) are polyethylene-based products. (Sahu, Tr. 1801; RX 471).

Response to Finding No. 1656:

Complaint Counsel has no specific response.

1657. Conventional plastics like polyethylene have been proven to be biodegradable in the peer reviewed literature. (Sahu, Tr. 1848-53).

Response to Finding No. 1657:

Complaint Counsel has no specific response.

1658. Inclusion of the ECM additive, a biodegradable substance and attractant for microbiological growth, contributes to an acceleration of biodegradation. (Sahu, Tr. 1853-55).

Response to Finding No. 1658:

Complaint Counsel has no specific response.

1659. Dr. Sahu's opinion is consistent with the peer reviewed literature. (RX 855).

Response to Finding No. 1659:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1660. Tokiwa, Y., et al. explained in the International Journal of Molecular Sciences (2009) that "the adherence of microorganisms on the surface of plastics followed by the colonization of the exposed surface is the major mechanisms involved in the microbial degradation of plastics." (RX 582; RX 855 at 28).

Response to Finding No. 1660:

Complaint Counsel has no specific response.

1661. Tokiwa, et al., further explained that many factors, including the polymer morphology, chemical and physical properties of the plastics, the surface conditions (e.g., surface area, hydrophilic and hydrophobic properties), the molecular weight and molecular weight distribution, glass transition temperature, melting temperature, and crystallinity are just some of the many factors that can affect the rate of biodegradability of plastics. (RX 855 at 28; RX 582).

Response to Finding No. 1661:

Complaint Counsel has no specific response.

1662. Molecular weight is a basic concept in chemistry, and molecular weights are generally consistent. (Sahu, Tr. 1804-05).

Response to Finding No. 1662:

Complaint Counsel has no specific response.

1663. For instance, the molecular weight of carbon dioxide is 44, no matter where it exists because it contains one carbon and two oxygen atoms. (Sahu, Tr. 1804-05).

Response to Finding No. 1663:

Complaint Counsel has no specific response.

1664. However, polymers are different because they are not specifically defined molecules. (Sahu, Tr. 1805).

Response to Finding No. 1664:

Complaint Counsel has no specific response.

1665. A polyethylene product does not have the same number of repeating monomer units in each strain. (Sahu, Tr. 1805).

Response to Finding No. 1665:

Complaint Counsel has no specific response.

1666. Because polymer chains have varying lengths within a product, the strains have different molecular weights, and that creates a molecular weight distribution. (Sahu, Tr. 1805).

Response to Finding No. 1666:

Complaint Counsel has no specific response.

1667. There is no way to manufacture a polymer and ensure that all the lengths of the individual chains in the same polyethylene product melt have the same molecular weight. (Sahu, Tr. 1807-08).

Response to Finding No. 1667:

Complaint Counsel has no specific response.

1668. Molecular weight distribution will affect product characteristics such as tensile strength. (Sahu, Tr. 1808-09).

Response to Finding No. 1668:

Complaint Counsel has no specific response.

1669. The ECM additive affects molecular weight as a system-wide “MasterBatch” additive that enters the structure of the plastic. (Sahu, Tr. 1809-10).

Response to Finding No. 1669:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1670. The ECM additive thus alters the plastic matrix, the polymer chains, and adds an attractant that permits microorganisms to take root at the surface and within the plastic. (Sahu, Tr. 1810-11).

Response to Finding No. 1670:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

B. Dr. Sahu Testified to the Manufacturing Process of Plastic Containing the ECM Additive

1671. The ECM additive is introduced to the plastic as a pellet, which is melted together with the plastic resin to form a film or packaging material. (Sahu, Tr. 1813).

Response to Finding No. 1671:

Complaint Counsel has no specific response.

1672. The melted compound is usually extruded or blown and then cooled. (Sahu, Tr. 1813).

Response to Finding No. 1672:

Complaint Counsel has no specific response.

1673. ECM plastics are also manufactured using injection molding. (Sahu, Tr. 1816-17).

Response to Finding No. 1673:

Complaint Counsel has no specific response.

1674. When the ECM additive is melt-compounded into the final plastic, the goal is to disperse the additive evenly throughout the plastic, like a colorant (color additive). (Sahu, Tr. 1814-15).

Response to Finding No. 1674:

Complaint Counsel has no specific response.

1675. High temperatures or scorching during the manufacturing process render the ECM additive ineffective. (Sahu, Tr. 1815).

Response to Finding No. 1675:

Complaint Counsel has no specific response.

1676. If the additive was overheated or scorched, it may not be apparent or obvious to the plastic manufacturer. (Sahu, Tr. 1815).

Response to Finding No. 1676:

Complaint Counsel has no specific response.

1677. Companies may leave the additive “on the screw” while manufacturing, which cooks the additive. (Sinclair, Tr. 762).

Response to Finding No. 1677:

Complaint Counsel has no specific response.

1678. ECM customers frequently run test samples through a battery of performance testing to ensure proper manufacturing. (Sinclair, Tr. 761-62).

Response to Finding No. 1678:

Complaint Counsel has no specific response.

1679. Companies become customers of ECM’s additive technology only after months, sometimes years, of negotiation and product testing. (Sinclair, Tr. 761-64).

Response to Finding No. 1679:

Complaint Counsel has no specific response.

1680. ECM has to work with customers to get the manufacturing process right, so that customers do not scorch the material or manufacture it improperly. (Sinclair, Tr. 762).

Response to Finding No. 1680:

Complaint Counsel has no specific response.

1681. Because of the lengthy testing and verification processes, it takes on average approximately six months to a year (and in some cases several years) for ECM to acquire a customer account. (Sinclair, Tr. 767).

Response to Finding No. 1681:

Complaint Counsel has no specific response.

1682. The temperatures used in manufacturing ECM plastics depend on the materials' glass transition and melting temperatures. (Sahu, Tr. 1817).

Response to Finding No. 1682:

Complaint Counsel has no specific response.

1683. The temperature will depend on how the manufacturer would like the viscosity properties of the plastic to be during manufacturing, and how they intend to handle the melt after heating. (Sahu, Tr. 1817).

Response to Finding No. 1683:

Complaint Counsel has no specific response.

1684. The ECM additive is introduced into the main plastic resin just like any other additive, such as a colorant. (Sahu, Tr. 1818).

Response to Finding No. 1684:

Complaint Counsel has no specific response.

1685. Color additives are sometimes not properly mixed with the plastic, and the appearance of the final product clearly shows the inconsistent colors. (Sahu, Tr. 1818).

Response to Finding No. 1685:

Complaint Counsel has no specific response.

1686. The "dwell time" during manufacturing refers to the residence time, or how long the additive is exposed to temperatures during manufacturing. (Sahu, Tr. 1836-37).

Response to Finding No. 1686:

Complaint Counsel has no specific response.

1687. Because ECM plastics are melt-compounded, longer dwell times can cause the plastic or additive to denature during manufacturing, which must be carefully avoided to ensure additive efficacy. (Sahu, Tr. 1837).

Response to Finding No. 1687:

Complaint Counsel has no specific response.

1688. The “load rate” of the ECM additive is the mass or percent of the additive that manufacturers add to a melt. (Sahu, Tr. 1819).

Response to Finding No. 1688:

Complaint Counsel has no specific response.

1689. The customary load ratings for color additives are anywhere from 0.5 percent to 2 or 3 percent. (Sahu, Tr. 1819-20).

Response to Finding No. 1689:

Complaint Counsel has no specific response.

1690. Plastics made with the ECM additive are manufactured differently than bioplastics. (Sahu, Tr. 1821). Bioplastics are more delicate. (Sahu, Tr. 1821).

Response to Finding No. 1690:

Complaint Counsel has no specific response.

1691. The physical properties of a bioplastic also differ in material respects from plastics manufactured with the ECM additive. (Sahu, Tr. 1821).

Response to Finding No. 1691:

Complaint Counsel has no specific response.

1692. The crystallinity of the bioplastic differs from the ECM additive. (Sahu, Tr. 1821).

Response to Finding No. 1692:

Complaint Counsel has no specific response.

1693. Because bioplastics are designed to rapidly degrade, they are attractive for some uses but unattractive for many other uses. (Sahu, Tr. 1821).

Response to Finding No. 1693:

Complaint Counsel has no specific response.

1694. A primary concern when manufacturing plastics is to make the product function for its intended use during the product’s lifespan. (Sahu, Tr. 1822).

Response to Finding No. 1694:

Complaint Counsel has no specific response.

1695. A “biodegradable” plastic must still function as a consumer good during its ordinary use, effecting a biodegradable property after disposal. (Sahu, Tr. 1822).

Response to Finding No. 1695:

Complaint Counsel has no specific response.

1696. Bioplastics may not be appropriate for all consumer uses where, for instance, shelf-life is important, or where product use is intended for environments that could promote biodegradation early. (Sahu, Tr. 1822-23).

Response to Finding No. 1696:

Complaint Counsel has no specific response.

1697. One of the advantages of using the ECM additive is that, at a 1% load rating (like a color additive), the additive should not substantially affect the fundamental properties of the plastic product. (Sahu, Tr. 1823).

Response to Finding No. 1697:

Complaint Counsel has no specific response.

1698. The ECM additive gives manufacturers the benefit of usability of the article along with biodegradation. (Sahu, Tr. 1823).

Response to Finding No. 1698:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

C. Dr. Sahu Testified that Many Factors Can Affect the Biodegradable Feature of Plastic Containing the ECM Additive

1699. Many factors affect the ability of a plastic to biodegrade. (Sahu, Tr. 1828).

Response to Finding No. 1699:

Complaint Counsel has no specific response.

1700. The inclusion of impurities and other additives in a plastic polymer can influence the ultimate biodegradability of the plastic. (Sahu, Tr. 1828).

Response to Finding No. 1700:

Complaint Counsel has no specific response.

1701. Some plastic additives (e.g., colorants) may include components that have an antimicrobial effect. (Sahu, Tr. 1828-29).

Response to Finding No. 1701:

Complaint Counsel has no specific response.

1702. Impurities are included in the final plastic unintentionally. (Sahu, Tr. 1829-30).

Response to Finding No. 1702:

Complaint Counsel has no specific response.

1703. Impurities may include byproducts from manufacturing. (Sahu, Tr. 1830).

Response to Finding No. 1703:

Complaint Counsel has no specific response.

1704. Impurities affect the biodegradability of plastics by providing attack points in the polymer chains. (Sahu, Tr. 1830).

Response to Finding No. 1704:

Complaint Counsel has no specific response.

1705. Those impurities become spots where the plastic is weaker than it would be without the impurities, and those weaknesses facilitate microbial attack. (Sahu, Tr. 1831).

Response to Finding No. 1705:

Complaint Counsel has no specific response.

1706. Additives are intentionally added to plastics, but they similarly create heterogeneity in the polymer, and create opportunities for biological attack. (Sahu, Tr. 1831).

Response to Finding No. 1706:

Complaint Counsel has no specific response.

1707. Additives may include articles like plasticizers, lubricants, impact modifiers, fillers, pigments, flame retardants, stabilizers, and antimicrobial agents. (Sahu, Tr. 1832-33).

Response to Finding No. 1707:

Complaint Counsel has no specific response.

1708. There are additives that can have antimicrobial properties but are not specifically introduced to the plastic for antimicrobial purposes. (Sahu, Tr. 1835).

Response to Finding No. 1708:

Complaint Counsel has no specific response.

1709. There are some catalysts, including copper- or zinc- or silver-based components that have antimicrobial properties but are not included intentionally as antimicrobials. (Sahu, Tr. 1835).

Response to Finding No. 1709:

Complaint Counsel has no specific response.

1710. An antimicrobial additive or impurity would likely reduce or negate biodegradation. (Sahu, Tr. 1836).

Response to Finding No. 1710:

Complaint Counsel has no specific response.

1711. Virtually all plastic articles have additives. (Sahu, Tr. 1836).

Response to Finding No. 1711:

Complaint Counsel has no specific response.

1712. In all practical applications, many additives are typically present in the final plastic. (Sahu, Tr. 1836).

Response to Finding No. 1712:

Complaint Counsel has no specific response.

1713. MSW landfills contain widely variable temperature conditions. (Sahu, Tr. 1842-44).

Response to Finding No. 1713:

Complaint Counsel has no specific response.

1714. At a fundamental level, there is no difference in the way thermophilic bacteria metabolize waste versus the way mesophilic bacteria metabolize waste (Sahu, Tr. 1844).

Response to Finding No. 1714:

Complaint Counsel has no specific response.

1715. The particular enzymes involved, however, are different, as is the rate of biodegradation. (Sahu, Tr. 1843-44).

Response to Finding No. 1715:

Complaint Counsel has no specific response.

1716. All MSW landfills have the potential to produce gases, and those gases are a signature of biological activity. (Sahu, Tr. 1846).

Response to Finding No. 1716:

Complaint Counsel has no specific response.

1717. The gases generated from MSW landfills show that there are biological reactions occurring, and so the gases are indicative of underlying biological activity in the landfill. (Sahu, Tr. 1847).

Response to Finding No. 1717:

Complaint Counsel has no specific response.

1718. In context with landfill or test gases, there can be no methane without anaerobic biodegradation. (Sahu, Tr. 1848).

Response to Finding No. 1718:

Complaint Counsel has no specific response.

1719. Dr. Sahu examined the “threshold question” of whether plastics or polymers are capable of biodegrading. (Sahu, Tr. 1848).

Response to Finding No. 1719:

Complaint Counsel has no specific response.

1720. He performed an extensive literature search. (Sahu, Tr. 1848-49).

Response to Finding No. 1720:

Complaint Counsel has no specific response.

1721. Dr. Sahu’s research was memorialized in his expert report. (Sahu, Tr. 1849; RX 855 at 24-40).

Response to Finding No. 1721:

Complaint Counsel has no specific response.

1722. Dr. Sahu has described the mechanism of action by which the ECM additive accelerates biodegradation of plastics. (Sahu, Tr. 1857-58).

Response to Finding No. 1722:

Complaint Counsel has no specific response.

1723. The rate of biodegradation of plastic polymers depends on many variables, including the various properties of the base plastic, the presence and types of amounts of biological organisms in the vicinity of the plastic material, and the properties of the local physical environment. (RX 855 at 27).

Response to Finding No. 1723:

Complaint Counsel has no specific response.

1724. The ECM additive helps to set in motion the attraction/migration of microbes and biological agents to the plastic, and to the areas of the plastic where weaknesses or hydrophilic defects exist. (RX 855 at 27; Sahu, Tr. 1865-67).

Response to Finding No. 1724:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1725. The formation of biofilms near the additive sites promotes the development and growth of bacteria, which spreads to other areas of the plastic. (RX 855 at 27).

Response to Finding No. 1725:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1726. Depending on the linear chains and branches within a polymer, biological activity typically begins at the weak points and endings of a polymer chain, and works into the remaining portions of the polymer. (Sahu, Tr. 1866-67).

Response to Finding No. 1726:

Complaint Counsel has no specific response.

1727. Microbes secrete enzymes and chemicals that degrade plastic where the biofilms are present, beginning with the weak links in plastic. (RX 855 at 27).

Response to Finding No. 1727:

Complaint Counsel has no specific response.

1728. Dr. Sahu relied on peer reviewed literature to demonstrate that plastic polymers biodegrade, including crystalline regions therein. (RX 855 at 24-40).

Response to Finding No. 1728:

Complaint Counsel has no specific response.

1729. Dr. Sahu reviewed hundreds of papers in preparation of his expert report, including the eleven that he quoted and relied upon in the text of his report. (RX 855 at 24-40).

Response to Finding No. 1729:

Complaint Counsel has no specific response.

1730. Those include: (1) Tokiwa, Y., et al., Biodegradability of Plastics, *Int. J. Mol. Sci.* 2009, 10, 3722-3742; (2) Tilstra, L., et al., The Biodegradation of Blends of Polycaprolactone and Polyethylene Exposed to a Defined Consortium of Fungi, *Journal of Environmental Polymer Degradation*, Vol. 1, No. 4, 1993; (3) Zheng, Y., et al., A Review of Plastic Waste Biodegradation, *Critical Reviews in Biotechnology*, 25:243–250, 2005; (4) Bhardwaj H, Gupta R, Tiwari A (2012) Microbial Population Associated With Plastic Degradation. 1: 272. doi:10.4172/scientificreports; (5) Arutchelvi, J., et. al., Biodegradation of polyethylene and polypropylene, *Indian Journal of Biotechnology*, Vol. 7, January 2008, p. 9-22; (6) Mueller, R-J., Biological degradation of synthetic polyesters—Enzymes as potential catalysts for polyester recycling, *Process Biochemistry*, Volume 41, Issue 10, October 2006, p. 2124–2128; (7) Van der Zee, M., Analytical Methods for Monitoring Biodegradation Processes of Environmentally Degradable Polymers, Section 11.4.2; (8) Shah, A.A., et. al., Biological degradation of plastics: A comprehensive review, *Biotechnology Advances* Vol. 26, 2008, p. 246–265; (9) Pramila, R., et. al., Biodegradation of Low Density Polyethylene (LDPE) by Fungi Isolated from Municipal Landfill Area, *J. Microbiol. Biotech. Res.*, 2011, 1 (4):131-136; (10) Albertsson, A-C., Biodegradation of synthetic polymers. II. A limited microbial conversion of ¹⁴C in polyethylene to ¹⁴CO₂ by some soil fungi, *Journal of Applied Polymer Science*, Volume 22, Issue 12, p. 3419–3433, December 1978; and (11) Albertsson, A-C., et. al., Biodegradation of synthetic polymers. III. The liberation of ¹⁴CO₂ by molds like *fusarium redolens* from ¹⁴C labeled pulverized high-density polyethylene, *Journal of Applied Polymer Science*, Volume 22, Issue 12, p. 3435–3447, December 1978.

Response to Finding No. 1730:

Complaint Counsel has no specific response.

1731. Based on his experience and research, Dr. Sahu determined that peer reviewed literature demonstrated that beyond aerobic biodegradation, anaerobic processes are capable of biodegrading conventional plastics. (Sahu, Tr. 1858-59).

Response to Finding No. 1731:

Complaint Counsel has no specific response.

1732. The biodegradation of plastic polymers involves, *inter alia*, hydrolytic cleavage of polymer bonds. (Sahu, Tr. 1859-60).

Response to Finding No. 1732:

Complaint Counsel has no specific response. Complaint Counsel agrees that this is Dr. Sahu's testimony, but it is directly contradicted by Drs. McCarthy and Michel's testimony that polyethylene is not capable of undergoing hydrolytic cleavage without pre-treatment. (RX-841 (McCarthy, Dep. Tr. 132-133).

1733. The hydroxyl radical (OH radical) is capable of facilitating hydrolytic reactions. (Sahu, Tr. 1860).

Response to Finding No. 1733:

Complaint Counsel has no specific response.

1734. Oxidative reactions involve electron transfer. (Sahu, Tr. 1860).

Response to Finding No. 1734:

Complaint Counsel has no specific response.

1735. Oxidative reactions need not occur in the presence of oxygen. (Sahu, Tr. 1861).

Response to Finding No. 1735:

Complaint Counsel has no specific response.

1736. Oxidative reactions occur in anaerobic systems. (Sahu, Tr. 1862).

Response to Finding No. 1736:

Complaint Counsel has no specific response.

1737. Pro-oxidants can facilitate biodegradation, but they are not the only mechanisms that work to degrade polymers. (Sahu, Tr. 1870-73).

Response to Finding No. 1737:

Complaint Counsel has no specific response.

1738. Many forms of polymer biodegradation have been documented in the peer reviewed literature. (Sahu, Tr. 1875).

Response to Finding No. 1738:

Complaint Counsel has no specific response.

1739. Blending biodegradable and non-biodegradable polymers is one of the means documented in the peer reviewed literature by which polymers can be rendered biodegradable. (Sahu, Tr. 1876; RX 925 at 647).

Response to Finding No. 1739:

Complaint Counsel has no specific response.

1740. The scientific literature shows that polymer chains with molecular weights as high as 10,000 can be biodegraded. (Sahu, Tr. 1872-73).

Response to Finding No. 1740:

Complaint Counsel has no specific response.

1741. As molecular weights decrease through microbial biodegradation, the susceptibility of polymers to further biodegradation increases. (Sahu, Tr. 1873).

Response to Finding No. 1741:

Complaint Counsel has no specific response.

1742. Because the ECM additive is uniformly dispersed throughout an ECM plastic, the additive's effect is not limited to a surface effect. (Sahu, Tr. 1863-64).

Response to Finding No. 1742:

Complaint Counsel has no specific response.

1743. Because the ECM additive is uniformly dispersed throughout an ECM plastic, the additive provides a continued food source for microbial growth through plastic degradation. (Sahu, Tr. 1863-64).

Response to Finding No. 1743:

Complaint Counsel has no specific response.

1744. The presence of the ECM additive throughout the plastic provides for continued and complete biodegradation of the conventional plastic. (Tr. 1864-65).

Response to Finding No. 1744:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

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1745. MSW landfills contain bacteria, fungi, and other microorganisms that secrete enzymes capable of completing the biodegrading processes that Dr. Sahu identified in his expert report. (Sahu, Tr. 1865-66).

Response to Finding No. 1745:

Complaint Counsel has no specific response.

1746. Those microorganisms have evolved over time, and can evolve quickly, to adapt for plastics biodegradation. (Sahu, Tr. 1880-81).

Response to Finding No. 1746:

Complaint Counsel has no specific response.

1747. Scientists in the field have published information concerning the types of bacteria and microorganisms that are found in nature (including MSW landfills), which have also been shown to biodegrade conventional plastics. (Sahu, Tr. 1867-68; RX 855 at 34).

Response to Finding No. 1747:

Complaint Counsel has no specific response.

1748. Those microorganisms are found in landfills, sewage treatment plants, digesters, and compost piles. (Sahu, Tr. 1869).

Response to Finding No. 1748:

Complaint Counsel has no specific response.

1749. Plastic polymers can have amorphous and crystalline regions. (Sahu, Tr. 1883-84). Crystalline portions of the polymer can be biodegraded just as the amorphous regions can, but perhaps at a different rate. (Sahu, Tr. 1884-85).

Response to Finding No. 1749:

Complaint Counsel has no specific response.

1750. Crystalline portions of polymers are still fundamentally composed of the same chains. (Sahu, Tr. 1884).

Response to Finding No. 1750:

Complaint Counsel has no specific response.

1751. Those polymer regions are actually semi-crystalline. (Sahu, Tr. 1884).

Response to Finding No. 1751:

Complaint Counsel has no specific response.

1752. Scientists have examined the biodegradability of crystalline portions of polymers and found that they do in fact biodegrade. (Sahu, Tr. 1885).

Response to Finding No. 1752:

Complaint Counsel has no specific response.

1753. Literature in the peer review has discussed the loss of crystallinity or decreases in crystallinity, or loss of the lamellae that are the crystalline subcomponents as indicators that degradation has occurred in the crystalline portions of plastics. (Sahu, Tr. 1885).

Response to Finding No. 1753:

Complaint Counsel has no specific response.

1754. In the article titled, Arutchelvi, J., et. al., Biodegradation of polyethylene and polypropylene, Indian Journal of Biotechnology, Vol. 7, January 2008, p. 9-22, the authors focused on polyethylene and polypropylene. (Sahu, Tr. 1885-85; RX 855 at 35; RX 586).

Response to Finding No. 1754:

Complaint Counsel has no specific response.

1755. The article included discussion and citations to other literature wherein scientists have observed loss of crystallinity in conventional plastics. (Sahu, Tr. 1885-86; RX 586; RX 855 at 35).

Response to Finding No. 1755:

Complaint Counsel has no specific response.

1756. Scientists have posited that biodegradation begins in amorphous regions of the polymers. (RX 586 at 13).

Response to Finding No. 1756:

Complaint Counsel has no specific response.

1757. However, the peer reviewed literature also supports that crystalline regions will biodegrade. (RX 855 at 28, 41 n. 62).

Response to Finding No. 1757:

Complaint Counsel has no specific response.

1758. The amorphous regions of a polymer are more susceptible to degradation, but while the crystalline sections of a polymer are “more resistant than the amorphous region,” they will also degrade in kind. (RX 855 at 28 (quoting Tokiwa, Y., et al., Biodegradability of Plastics, Int. J. Mol. Sci. 2009, 10, 3722-3742; RX 582).

Response to Finding No. 1758:

Complaint Counsel has no specific response.

1759. For example, Tokiwa, Y., et al. (RX 582) have explained that certain enzymes have been shown to biodegrade “both the amorphous and crystalline” portions of plastics. (RX 582 at 3732 (discussing the lipase enzymatic degradation of PCL)).

Response to Finding No. 1759:

Complaint Counsel has no specific response.

1760. The degree of crystallinity is merely one of many factors that can influence the biodegradability of plastics. (RX 582 at 3722).

Response to Finding No. 1760:

Complaint Counsel has no specific response.

1761. Even plastics with high degrees of crystallinity can be more biodegradable than others with lesser degrees of crystallinity if other factors promote biodegradability, such as surface area, molecular weight distribution, melting point, etc. (Sahu, Tr. 1886; RX 582 at 3722).

Response to Finding No. 1761:

Complaint Counsel has no specific response.

1762. It is a scientific error to use the crystallinity of a polymer as the only factor or variable that governs whether a plastic will biodegrade. (Sahu, Tr. 1887).

Response to Finding No. 1762:

Complaint Counsel has no specific response.

1763. “Thermoplastics are invariably composed of long, individual molecules that are bonded to each other by secondary chemical bonds, which are much weaker than the primary covalent bonds that hold the molecules together.” (RX 855 at 15 (quoting Lampman, S., Characterization and Failure Analysis of Plastics, ASM International, 2003, p.7)).

Response to Finding No. 1763:

Complaint Counsel has no specific response.

1764. Thermoplastics “**overall structure is generally amorphous**, but some thermoplastics can become partly crystalline.” (RX 855 at 15 (quoting Lampman, S., Characterization and Failure Analysis of Plastics, ASM International, 2003, p.7)) (emphasis added).

Response to Finding No. 1764:

Complaint Counsel has no specific response.

1765. Polyethylene, polypropylene, polyvinyl chloride, and polystyrene are all thermoplastics (RX 855 at 31), which have an “overall structure that is generally amorphous” (RX 855 at 15 (quoting Lampman, S., Characterization and Failure Analysis of Plastics, ASM International, 2003, p.7)).

Response to Finding No. 1765:

Complaint Counsel has no specific response.

XIII. GAS EVOLUTION TESTS ARE COMPETENT AND RELIABLE EVIDENCE, AND RADIOLABELED TESTING IS NOT REQUIRED

1766. Dr. McCarthy’s use of gas evolution tests similar to the D5511 protocol to establish proof or biodegradability in his own technologies is in direct conflict with his testimony offered in this case, wherein he claims that such tests are only screening mechanisms. (Sahu, Tr. 1894-95).

Response to Finding No. 1766:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1767. Dr. McCarthy has not used radiolabeled testing to establish proof of biodegradability. (Sahu, Tr. 1895).

Response to Finding No. 1767:

Complaint Counsel has no specific response.

1768. Dr. Sahu explained that gas evolution tests are competent and reliable scientific evidence to prove biodegradability. (Sahu, Tr. 1895-96).

Response to Finding No. 1768:

Complaint Counsel has no specific response.

1769. Other methods of testing can help to provide supporting evidence, including, for instance, weight loss or gravimetric testing. (Sahu, Tr. 1895-96).

Response to Finding No. 1769:

Complaint Counsel has no specific response.

1770. There is no indication in the scientific literature or from scientists in the field that radiolabeled testing is necessary to establish proof of biodegradability. (Sahu, Tr. 1896).

Response to Finding No. 1770:

Complaint Counsel has no specific response.

1771. When questioned about the type of evidence required to support biodegradability, Dr. Tolaymat did not mention radiolabeled testing. (Tolaymat, Tr. 112-347).

Response to Finding No. 1771:

Complaint Counsel has no specific response.

1772. When assessing the biodegradability of plastic products, Dr. Michel chose to perform several gas evolution tests, but he did not perform radiolabeled testing. (Michel, Tr. 2906).

Response to Finding No. 1772:

Complaint Counsel has no specific response.

1773. Dr. Michel has never tested a plastic polymer using radiolabeled testing. (Michel, Tr. 2906).

Response to Finding No. 1773:

Complaint Counsel has no specific response.

1774. At his deposition, Dr. Tolaymat explained that radiolabeled testing “could be as expensive as doing it in a landfill – as doing the study in a landfill environment” and that “it’s not used frequently.” (RX 851 (Tolaymat, Dep. at 256)).

Response to Finding No. 1774:

Complaint Counsel has no specific response.

1775. Dr. Michel testified that respirometric testing, like the D5511 test, is generally recognized in the field as competent and reliable evidence to show biodegradation. (Michel, Tr. 2907).

Response to Finding No. 1775:

Complaint Counsel has no specific response.

1776. Dr. Sahu found no evidence that radiolabeled testing is generally accepted as a requirement to biodegradability testing for polymers. (Sahu, Tr. 1794-95).

Response to Finding No. 1776:

Complaint Counsel has no specific response.

1777. In the pre-complaint phase of this case, Dr. Sahu searched for a commercial laboratory that could perform radiolabeled testing for ECM. (Sahu, Tr. 1897-98).

Response to Finding No. 1777:

Complaint Counsel has no specific response.

1778. Dr. Sahu could not find any company able to radiolabel the polymer or create the radiolabeled polymer that would then be subject to further laboratory testing. (Sahu, Tr. 1897).

Response to Finding No. 1778:

Complaint Counsel has no specific response.

1779. Many companies could offer radiolabeled pharmaceutical ingredients, but not polymers, which required a different manufacturing process. (Sahu, Tr. 1898-99).

Response to Finding No. 1779:

Complaint Counsel has no specific response.

1780. Pharmaceutical ingredients are tested in minute quantities. (Sahu, Tr. 1899).

Response to Finding No. 1780:

Complaint Counsel has no specific response.

1781. Radiolabeled testing starts when a laboratory receives a radiolabeled substance which is barium salt. (Sahu, Tr. 1900).

Response to Finding No. 1781:

Complaint Counsel has no specific response.

1782. That barium salt is derived from research reactors. (Sahu, Tr. 1900). Only a few research facilities in the world can provide the radioactive source materials. (Sahu, Tr. 1900).

Response to Finding No. 1782:

Complaint Counsel has no specific response.

1783. Carbon-14 is evolved from the salt in carbon dioxide. (Sahu, Tr. 1900).

Response to Finding No. 1783:

Complaint Counsel has no specific response.

1784. Carbon-14 is then synthesized, and the laboratory will have minute quantities of radiolabeled carbon. (Sahu, Tr. 1900).

Response to Finding No. 1784:

Complaint Counsel has no specific response.

1785. In plastics testing, a laboratory must then synthesize monomers with the radiolabeled carbon, then polymerize those monomers into a polymer chain that contains the radiolabeled carbon. (Sahu, Tr. 1900-01).

Response to Finding No. 1785:

Complaint Counsel has no specific response.

1786. Most polymers, like polyethylene, are sourced by large scale facilities which derive the feedstock material from petrochemicals. (Sahu, Tr. 1901).

Response to Finding No. 1786:

Complaint Counsel has no specific response.

1787. When a source plastic like polyethylene is radiolabeled, the entire source plastic can be radiolabeled. (Sahu, Tr. 1901).

Response to Finding No. 1787:

Complaint Counsel has no specific response.

1788. That means both the amorphous and crystalline regions are radiolabeled. (Sahu, Tr. 1901).

Response to Finding No. 1788:

Complaint Counsel has no specific response.

1789. The manufacturer must then make the test plastic as it would appear in commerce, but with the radiolabeled base polymer. (Sahu, Tr. 1901).

Response to Finding No. 1789:

Complaint Counsel has no specific response.

1790. Once the radiolabeled test plastic is assembled, it must still be tested in a standard biodegradation test. (Sahu, Tr. 1901).

Response to Finding No. 1790:

Complaint Counsel has no specific response.

1791. That testing is the same gas evolution testing that would otherwise be done without the radiolabeled polymer. (Sahu, Tr. 1906).

Response to Finding No. 1791:

Complaint Counsel has no specific response.

1792. The company that manufactures the radiolabeled polymer is not the same company that would perform the biodegradation testing. (Sahu, Tr. 1902).

Response to Finding No. 1792:

Complaint Counsel has no specific response.

1793. There are difficulties associated with handling radioactive carbon. (Sahu, Tr. 1903).

Response to Finding No. 1793:

Complaint Counsel has no specific response.

1794. Aside from the regulatory issues, the laboratory must be capable and prepared to handle the radioactive material and ensuing decontamination. (Sahu, Tr. 1903).

Response to Finding No. 1794:

Complaint Counsel has no specific response.

1795. A testing laboratory would require a considerable amount of carbon-14 to test plastics for biodegradation because the manufacturer must create a commercial-scale product for testing. (Sahu, Tr. 1903).

Response to Finding No. 1795:

Complaint Counsel has no specific response.

1796. That amount is much more than pharmaceutical companies would use in a test of an active pharmaceutical ingredient. (Sahu, Tr. 1903-04).

Response to Finding No. 1796:

Complaint Counsel has no specific response.

1797. Even assuming that Dr. McCarthy's concerns over recalcitrant crystalline sections of the polymers was valid, carbon-14 testing would not address his points. (Sahu, Tr. 1904).

Response to Finding No. 1797:

Complaint Counsel has no specific response.

1798. A radiolabeled test would need to have carbon-14 radiolabeled throughout the amorphous and crystalline sections. (Sahu, Tr. 1904-05).

Response to Finding No. 1798:

Complaint Counsel has no specific response.

1799. Complaint Counsel's experts provided no testimony or evidence as to how, if at all, a company would radiolabel specifically the crystalline sections but not amorphous sections of a polymer. (McCarthy, Tr. 359-689).

Response to Finding No. 1799:

Complaint Counsel has no specific response.

1800. Dr. Sahu testified that it would be impossible to radiolabel only the crystalline sections of a polymer. (Sahu, Tr. 1906).

Response to Finding No. 1800:

Complaint Counsel has no specific response.

1801. There is no evidence in the market or in the peer reviewed literature that carbon-14 radiolabeled testing is an industry standard. (Sahu, Tr. 1905).

Response to Finding No. 1801:

Complaint Counsel has no specific response.

1802. In-situ landfill studies generally cannot be conducted as gas evolution tests. (Sahu, Tr. 1909).

Response to Finding No. 1802:

Complaint Counsel has no specific response.

1803. A landfill test can measure changes to physical properties, but not gas evolution. (Sahu, Tr. 1909).

Response to Finding No. 1803:

Complaint Counsel has no specific response.

1804. “Accelerated testing” is scientifically acceptable when trying to mimic a slow natural process in the lab; practicalities require that results come faster than would normally occur in nature. (Sahu, Tr. 1924).

Response to Finding No. 1804:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1805. Accelerated testing is done in engineering, biology, drug testing, and many other scientific fields. (Sahu, Tr. 1924).

Response to Finding No. 1805:

Complaint Counsel has no specific response.

1806. In engineering studies, for example, abbreviated tests are designed to test against stresses that would be experienced over a lifetime of use. (Sahu, Tr. 1925).

Response to Finding No. 1806:

Complaint Counsel has no specific response.

1807. Accelerated testing is appropriate for biodegradation studies because the results under normal time would otherwise require substantially extended test periods. (Sahu, Tr. 1924).

Response to Finding No. 1807:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1808. Accelerated laboratory testing is a competent and reliable means to assess intrinsic biodegradability of materials. (Sahu, Tr. 1926-27).

Response to Finding No. 1808:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1809. Based on the totality of the scientific evidence, Dr. Sahu testified that conventional plastic containing the ECM additive render the plastic "biodegradable in a landfill." (Sahu, Tr. 1943-44).

Response to Finding No. 1809:

Complaint Counsel has no specific response.

XIV. DR. MORTON BARLAZ'S TESTIMONY

A. Dr. Barlaz Testified that Biodegradation Occurs in MSW Landfills

1810. Dr. Morton Barlaz testified that significant anaerobic biodegradation occurs in Dr. Morton Barlaz testified that significant anaerobic biodegradation occurs in municipal solid waste landfills, and the prime evidence for that is the production of methane in those landfills. (Barlaz, Tr. 2174).

Response to Finding No. 1810:

Complaint Counsel has no specific response.

1811. There are about 2,000 municipal waste landfills in the U.S., and commercial quantities of methane are recovered from at least 600, which evidences the significant anaerobic biodegradation occurring in the landfills. (Barlaz, Tr. 2174).

Response to Finding No. 1811:

Complaint Counsel has no specific response.

1812. There is a significant amount of methane emissions that come from municipal solid waste. (Barlaz, Tr. 2174-75).

Response to Finding No. 1812:

Complaint Counsel has no specific response.

1813. Methane is the end product of biodegradation in landfills. (Barlaz, Tr. 2174).

Response to Finding No. 1813:

Complaint Counsel has no specific response.

1814. Dr. Barlaz testified that, based on his review of laboratory reports relevant to this case, there were numerous examples where specific ECM amended plastics were shown to anaerobically biodegrade to methane. (Barlaz, Tr. 2175).

Response to Finding No. 1814:

Complaint Counsel has no specific response.

1815. Municipal solid waste is highly heterogeneous. (Barlaz, Tr. 2175).

Response to Finding No. 1815:

Complaint Counsel has no specific response.

1816. Estimates of waste composition should be understood to be rough estimates. (Barlaz, Tr. 2175-76).

Response to Finding No. 1816:

Complaint Counsel has no specific response.

1817. EPA's estimates of waste composition should not be considered precise. (Barlaz, Tr. 2177).

Response to Finding No. 1817:

Complaint Counsel has no specific response.

1818. MSW is waste that is generated in the residential, commercial, and institutional sectors. (Barlaz, Tr. 2177).

Response to Finding No. 1818:

Complaint Counsel has no specific response.

1819. Landfilling is really the only disposal alternative. (Barlaz, Tr. 2178).

Response to Finding No. 1819:

Complaint Counsel has no specific response.

1820. Burning or incinerating is not a waste disposal alternative, it is waste treatment. (Barlaz, Tr. 2178).

Response to Finding No. 1820:

Complaint Counsel has no specific response.

1821. Combustion and landfilling are the only two viable disposal alternatives. (Barlaz, Tr. 2179).

Response to Finding No. 1821:

Complaint Counsel has no specific response.

1822. Some part of the waste stream is recycled, and some is treated biologically either in composting or in a few cases anaerobic digestion. (Barlaz, Tr. 2179).

Response to Finding No. 1822:

Complaint Counsel has no specific response.

1823. However, composting is largely confined to yard waste, grass, leaves, and branches, and there are very few communities in the U.S. that separate out compostable waste. (Barlaz, Tr. 2179).

Response to Finding No. 1823:

Complaint Counsel has no specific response.

1824. Over the last five to ten years, many residential recycling programs have expanded to accept more materials. (Barlaz, Tr. 2179-80).

Response to Finding No. 1824:

Complaint Counsel has no specific response.

1825. Because paper is the largest component of municipal solid waste, the more paper that comes out of the waste stream for disposal means that the waste stream is enriched with other components, like food waste. (Barlaz, Tr. 2180).

Response to Finding No. 1825:

Complaint Counsel has no specific response.

1826. Dr. Barlaz has summarized waste sort data from ten states in his published research. (Barlaz, Tr. 2181-82).

Response to Finding No. 1826:

Complaint Counsel has no specific response.

1827. Paper still comprises about 20 percent of the total MSW composition, roughly 20 percent is food waste, plastics comprise about 10 percent, and 3 to 5 percent is glass. (Barlaz, Tr. 2181).

Response to Finding No. 1827:

Complaint Counsel has no specific response.

1828. Because consumers and commercial entities sort and recycle waste, the composition of waste generated will differ from the composition of waste disposed. (Barlaz, Tr. 2182).

Response to Finding No. 1828:

Complaint Counsel has no specific response.

1829. Municipal solid waste contains chemical compounds that have methane potential. (Barlaz, Tr. 2183).

Response to Finding No. 1829:

Complaint Counsel has no specific response.

1830. Anaerobically biodegradable materials have the potential to generate methane. (Barlaz, Tr. 2183-84).

Response to Finding No. 1830:

Complaint Counsel has no specific response.

1831. Stoichiometry is the relationship between the chemical composition of reactants of an equation (those materials on the left side), and the end products (the materials on the right side). (Barlaz, Tr. 2185).

Response to Finding No. 1831:

Complaint Counsel has no specific response.

1832. Principles of stoichiometry deal with conservation of mass, and are applicable to the conversion of substrates to methane during anaerobic biodegradation. (Barlaz, Tr. 2185-86).

Response to Finding No. 1832:

Complaint Counsel has no specific response.

1833. To microorganisms, municipal solid waste represents a source of food or energy, so if there is energy to be gained by consuming or attacking a substrate, they will do it. (Barlaz, Tr. 2186).

Response to Finding No. 1833:

Complaint Counsel has no specific response.

1834. In general, the process of anaerobic biodegradation involves hydrolysis reactions that eventually produce products such as butyric acid, acetic acid, hydrogen, and carbon dioxide. (Barlaz, Tr. 2186).

Response to Finding No. 1834:

Complaint Counsel has no specific response.

1835. Butyric acid is then attacked by microorganisms referred to as acetogenic, which convert the butyric acid to acetic acid and carbon dioxide. (Barlaz, Tr. 2187).

Response to Finding No. 1835:

Complaint Counsel has no specific response.

1836. Methanogenic archaea use either the acetic acid or hydrogen plus carbon dioxide and convert either of those substances to methane. (Barlaz, Tr. 2187).

Response to Finding No. 1836:

Complaint Counsel has no specific response.

1837. The concerted activity of at least four trophic groups of microorganisms enable the conversion of materials to methane and carbon dioxide. (Barlaz, Tr. 2187).

Response to Finding No. 1837:

Complaint Counsel has no specific response.

1838. Microbes may secrete some waste products of metabolism to the environment as a product of biodegradation. (Barlaz, Tr. 2188).

Response to Finding No. 1838:

Complaint Counsel has no specific response.

1839. Cell mass is also a product of biodegradation, meaning that carbon extracted from waste may consume the carbon for growth rather than convert carbon to methane or gas. (Barlaz, Tr. 2188).

Response to Finding No. 1839:

Complaint Counsel has no specific response.

1840. Methane is only produced in a system that is strictly anaerobic. (Barlaz, Tr. 2188).

Response to Finding No. 1840:

Complaint Counsel has no specific response.

1841. In an anaerobic test system, the ratio of methane gas to carbon dioxide is usually in the range of 1:1, but may appear more like 60% methane and 40% carbon dioxide because carbon dioxide can dissolve into the liquid phase. (Barlaz, Tr. 2189).

Response to Finding No. 1841:

Complaint Counsel has no specific response.

1842. There is oxygen in landfills, to the extent that it comes from waste materials, water, and other chemicals. (Barlaz, Tr. 2189-90).

Response to Finding No. 1842:

Complaint Counsel has no specific response.

1843. For example, there is oxygen in cellulose. (Barlaz, Tr. 2190).

Response to Finding No. 1843:

Complaint Counsel has no specific response.

1844. Every reaction in which a microbe gains energy or has a source of energy is an oxidative reaction. (Barlaz, Tr. 2190).

Response to Finding No. 1844:

Complaint Counsel has no specific response.

1845. Oxidative reactions need not involve oxygen, and they occur in anaerobic systems. (Barlaz, Tr. 2191-92).

Response to Finding No. 1845:

Complaint Counsel has no specific response.

1846. Landfills can produce substantial amounts of methane gas emissions. (Barlaz, Tr. 2192-93).

Response to Finding No. 1846:

Complaint Counsel has no specific response.

1847. Dr. Barlaz has seen landfills that make 250 to 500 cubic feet of landfill gas (at 50% methane) per minute. (Barlaz, Tr. 2192).

Response to Finding No. 1847:

Complaint Counsel has no specific response.

1848. The EPA's Landfill Methane Outreach Program (LMOP) runs a voluntary database of landfills for recovering methane. (Barlaz, Tr. 2193-94).

Response to Finding No. 1848:

Complaint Counsel has no specific response.

1849. Dr. Barlaz has been to landfills making eight to ten thousand cubic feet of landfill gas per minute. (Barlaz, Tr. 2193).

Response to Finding No. 1849:

Complaint Counsel has no specific response.

1850. The volume of gas depends on the mass of waste disposed annually and other factors like the moisture content and waste composition. (Barlaz, Tr. 2193).

Response to Finding No. 1850:

Complaint Counsel has no specific response.

1851. Dr. Barlaz explained that it is very, very difficult to describe a “typical” landfill. (Barlaz, Tr. 2193).

Response to Finding No. 1851:

Complaint Counsel has no specific response.

1852. Dr. Barlaz explained that Dr. Tolaymat’s opinion was misleading because Dr. Tolaymat suggested that biodegradation only occurs in bioreactor landfills, and Dr. Tolaymat also adopted a very narrow definition of bioreactor landfill. (Barlaz, Tr. 2196).

Response to Finding No. 1852:

Complaint Counsel has no specific response.

1853. The EPA’s definition of a bioreactor landfill is very narrow, and it is a misleading definition because Dr. Barlaz has been to many landfills that do not describe themselves as “bioreactors” but still produce substantial methane generation. (Barlaz, Tr. 2196-97).

Response to Finding No. 1853:

Complaint Counsel has no specific response.

1854. Dr. Barlaz explained that the simplest analysis is that there are “620 landfills that are generating enough methane for people to make million-dollar investments in equipment to convert that methane to electrical energy or some other beneficial use. And that, to [Dr. Barlaz], contrasts considerably with this notion that there are only 40 landfills with significant biodegradation occurring.” (Barlaz, Tr. 2197).

Response to Finding No. 1854:

Complaint Counsel has no specific response.

1855. Dr. Barlaz testified that the term “dry tomb landfill” is misused because the implication of the term and the implication of Dr. Tolaymat’s report was that if a landfill is not actively adding moisture to a landfill, then it is a dry tomb landfill, which is false. (Barlaz, Tr. 2198).

Response to Finding No. 1855:

Complaint Counsel has no specific response.

1856. Dr. Barlaz had been to many landfills that are not actively adding leachate or external liquids to the landfill, and yet by virtue of infiltration of rainwater alone the landfills have considerable moisture, and they are making considerable methane. (Barlaz, Tr. 2198).

Response to Finding No. 1856:

Complaint Counsel has no specific response.

1857. The EPA Subtitle D regulations do not specify the hydraulic conductivity of the soil that is used to cover the landfill waste daily or weekly or even annually. (Barlaz, Tr. 2199).

Response to Finding No. 1857:

Complaint Counsel has no specific response.

1858. The EPA Subtitle D regulations only specify hydraulic conductivity of the soil that used as a final cover on the landfill. (Barlaz, Tr. 2199).

Response to Finding No. 1858:

Complaint Counsel has no specific response.

1859. The hydraulic conductivity is a measure of how much water infiltrates. (Barlaz, Tr. 2199).

Response to Finding No. 1859:

Complaint Counsel has no specific response.

1860. There are thus many landfills that by virtue of infiltration alone are not “dry tomb” landfills. (Barlaz, Tr. 2199).

Response to Finding No. 1860:

The Court should disregard this finding because it merely provides an opinion of Respondent’s expert and does not state any fact.

1861. The implication that those landfills are not making methane is misleading and not correct. (Barlaz, Tr. 2199).

Response to Finding No. 1861:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

1862. More and more landfills are now recirculating leachate or taking in commercial liquids from other sources and adding it to waste. (Barlaz, Tr. 2200).

Response to Finding No. 1862:

Complaint Counsel has no specific response.

1863. Those landfills are operating to enhance waste decomposition. (Barlaz, Tr. 2200).

Response to Finding No. 1863:

Complaint Counsel has no specific response.

1864. Landfills are also spraying waste with leachate as the waste goes into the landfill, which also accelerates biodegradation. (Barlaz, Tr. 2200).

Response to Finding No. 1864:

Complaint Counsel has no specific response.

1865. Dr. Barlaz recently performed a landfill gas study on more than fifteen landfills around the country. (Barlaz, Tr. 2201).

Response to Finding No. 1865:

Complaint Counsel has no specific response.

1866. He found that more than two-thirds of those landfills were spray-applying leachate to the working face of the landfill, although those landfills were not calling themselves "bioreactors." (Barlaz, Tr. 2201).

Response to Finding No. 1866:

Complaint Counsel has no specific response.

1867. Landfill operators have financial incentives to recycle leachate and increase moisture content. (Barlaz, Tr. 2202-03).

Response to Finding No. 1867:

Complaint Counsel has no specific response.

1868. The cost of landfill leachate treatment is substantial, and landfill operators can save those costs by recirculating leachate. (Barlaz, Tr. 2202-03).

Response to Finding No. 1868:

Complaint Counsel has no specific response.

1869. Wastewater treatment plants have started informing landfill operators that they will no longer accept landfill leachate, forcing landfill operators to consider alternatives like leachate recirculation. (Barlaz, Tr. 2203).

Response to Finding No. 1869:

Complaint Counsel has no specific response.

1870. Some landfill operators must transport leachate hundreds of miles for processing, which adds to operating costs. (Barlaz, Tr. 2203).

Response to Finding No. 1870:

Complaint Counsel has no specific response.

1871. Landfills contain pockets of dry and very moist areas. (Barlaz, Tr. 2205).

Response to Finding No. 1871:

Complaint Counsel has no specific response.

1872. The range of moisture content in landfills can be considerable. (Barlaz, Tr. 2206).

Response to Finding No. 1872:

Complaint Counsel has no specific response.

1873. The range of temperatures in MSW landfills is also significant. (Barlaz, Tr. 2207).

Response to Finding No. 1873:

Complaint Counsel has no specific response.

1874. Dr. Barlaz has seen landfills where steam has been emitted from landfills, while on the other side of the same landfill, the temperatures at the gas heads might be in the range of 100 degrees Fahrenheit. (Barlaz, Tr. 2208).

Response to Finding No. 1874:

Complaint Counsel has no specific response.

1875. Landfill recirculation increases overall moisture content, and also helps balance the moisture levels in the same landfill. (Barlaz, Tr. 2205).

Response to Finding No. 1875:

Complaint Counsel has no specific response.

1876. Landfill leachate is diverse, and contains carboxylic acids, humic matter, ammonia, and other chemicals. (Barlaz, Tr. 2203-04).

Response to Finding No. 1876:

Complaint Counsel has no specific response.

1877. Landfill leachate carries microorganisms. (Barlaz, Tr. 2204).

Response to Finding No. 1877:

Complaint Counsel has no specific response.

1878. Landfill leachate has nutrients in the form of dissolved ammonia and phosphate, which are major nutrients or macronutrients, and it also contains trace metals which are nutrient sources for microorganisms. (Barlaz, Tr. 2204-05).

Response to Finding No. 1878:

Complaint Counsel has no specific response.

1879. A landfill might collect around 300 gallons per acre per day of landfill leachate in a typical MSW landfill. (Barlaz, Tr. 2205-06).

Response to Finding No. 1879:

Complaint Counsel has no specific response.

1880. The 300 gallon figure is conservative. (Barlaz, Tr. 2206).

Response to Finding No. 1880:

Complaint Counsel has no specific response.

1881. Dr. Barlaz testified that ten years ago the rule was about 1,100 gallons per acre per day. (Barlaz, Tr. 2206).

Response to Finding No. 1881:

Complaint Counsel has no specific response.

1882. In the field (in actual landfills), Dr. Barlaz explained that there is no moisture level at which biodegradation would not occur. (Barlaz, Tr. 2208).

Response to Finding No. 1882:

Complaint Counsel has no specific response.

1883. Research concerning the microbiology of refuse decomposition in the laboratory is “accelerated.” (Barlaz, Tr. 2212).

Response to Finding No. 1883:

Complaint Counsel has no specific response.

1884. Without accelerated testing, lab tests for biodegradation could take anywhere from 5 to 500 years. (Barlaz, Tr. 2212).

Response to Finding No. 1884:

Complaint Counsel has no specific response.

1885. It is not practical to try to simulate the landfill ecosystem at that time scale in a laboratory. (Barlaz, Tr. 2212).

Response to Finding No. 1885:

Complaint Counsel has no specific response.

1886. In a landfill environment, the microorganisms are capable of balancing the ecosystem if it becomes too acidic or basic. (Barlaz, Tr. 2213).

Response to Finding No. 1886:

Complaint Counsel has no specific response.

1887. The average landfill accepts waste for about 35 years. (Barlaz, Tr. 2215).

Response to Finding No. 1887:

Complaint Counsel has no specific response.

1888. The landfill is then closed with a “final cover” consisting of low-permeability layers to contain gas within the waste and restrict moisture infiltration. (Barlaz, Tr. 2216).

Response to Finding No. 1888:

Complaint Counsel has no specific response.

1889. Some landfills will remain open for as long as 50 years, but the final number is site-specific. (Barlaz, Tr. 2216).

Response to Finding No. 1889:

Complaint Counsel has no specific response.

1890. Landfills continue to produce gas after closure. (Barlaz, Tr. 2217).

Response to Finding No. 1890:

Complaint Counsel has no specific response.

1891. Dr. Barlaz explained that whether and to what extent a material biodegrades can be considered to be an intrinsic property of the material. (Barlaz, Tr. 2217-18).

Response to Finding No. 1891:

Complaint Counsel has no specific response.

1892. Dr. Barlaz used the term “intrinsic anaerobic biodegradability” to describe a property of the material, much like its color or weight or density. (Barlaz, Tr. 2218).

Response to Finding No. 1892:

Complaint Counsel has no specific response.

1893. The intrinsic biodegradability of a material will not change regardless of where the material is placed. (Barlaz, Tr. 2218).

Response to Finding No. 1893:

Complaint Counsel has no specific response.

1894. Changes to environmental temperature or moisture do not change the intrinsic biodegradability of a material. (Barlaz, Tr. 2218).

Response to Finding No. 1894:

Complaint Counsel has no specific response.

1895. Dr. Barlaz used the example of a piece of paper which, while biodegradable, would not biodegrade in a courtroom if held there for hundreds of years. (Barlaz, Tr. 2218).

Response to Finding No. 1895:

Complaint Counsel has no specific response.

1896. The biodegradable nature of the paper will not change simply because it is in the courtroom setting. (Barlaz, Tr. 2218-19).

Response to Finding No. 1896:

Complaint Counsel has no specific response.

1897. The point of biodegradation testing is to put the material in an environment that is favorable for biodegradation. (Barlaz, Tr. 2219).

Response to Finding No. 1897:

Complaint Counsel has no specific response.

1898. The ASTM D5511 test method is competent and reliable to test for intrinsic biodegradability. (Barlaz, Tr. 2219).

Response to Finding No. 1898:

The Court should disregard this finding because it merely provides an opinion of Respondent's expert and does not state any fact.

B. Dr. Barlaz Testified that Gas Evolution Tests are Competent and Reliable to Prove Biodegradability

1899. Dr. Barlaz differentiates between a "BMP" test (or "biochemical methane potential") and "reactor-scale tests." (Barlaz, Tr. 2220).

Response to Finding No. 1899:

Complaint Counsel has no specific response.

1900. The BMP test is performed in a small 160 milliliter glass vial, while reactor-scale tests are larger and more dynamic environments. (Barlaz, Tr. 2220).

Response to Finding No. 1900:

Complaint Counsel has no specific response.

1901. BMP testing can be modified from lab to lab. (Barlaz, Tr. 2220-21).

Response to Finding No. 1901:

Complaint Counsel has no specific response.

1902. Some of the modifications commonly seen involve the preparation of the test sample, or screening the material by passing it through a 1mm screen. (Barlaz, Tr. 2221).

Response to Finding No. 1902:

Complaint Counsel has no specific response.

1903. Passing a material through a 1mm screen renders the material the consistency of wheat flour. (Barlaz, Tr. 2221).

Response to Finding No. 1903:

Complaint Counsel has no specific response.

1904. Other adaptations to the BMP test include changes to temperature or duration of the test. (Barlaz, Tr. 2221-22).

Response to Finding No. 1904:

Complaint Counsel has no specific response.

1905. When running a BMP test, Dr. Barlaz uses about one gram of substrate to a hundred milliliters of liquid, so the environment is essentially “pure liquid,” a “liquid phase test.” (Barlaz, Tr. 2222).

Response to Finding No. 1905:

Complaint Counsel has no specific response.

1906. The ASTM D5511 test is a laboratory-scale reactor test. (Barlaz, Tr. 2222-23).

Response to Finding No. 1906:

Complaint Counsel has no specific response.

1907. As compared to the BMP test, a laboratory-scale reactor test is performed in a “high-solids environment,” and it is “more representative of a high-solids matrix as we see in a landfill.” (Barlaz, Tr. 2224).

Response to Finding No. 1907:

Complaint Counsel has no specific response.

1908. Dr. Barlaz testified that “what we see in a reactor is representative of what’s possible in a landfill if conditions in the landfill are suitable for anaerobic biodegradation.” (Barlaz, Tr. 2224).

Response to Finding No. 1908:

Complaint Counsel has no specific response.

1909. The methodology involved in laboratory-scale reactor testing starts with a composition of “inoculum” from well-decomposed refuse or municipal waste. (Barlaz, Tr. 2224-25).

Response to Finding No. 1909:

Complaint Counsel has no specific response.

1910. Water is added to the system to achieve the requisite moisture levels. (Barlaz, Tr. 2225).

Response to Finding No. 1910:

Complaint Counsel has no specific response.

1911. The laboratory monitors the pH, and other variables in the leachate or solution. (Barlaz, Tr. 2225).

Response to Finding No. 1911:

Complaint Counsel has no specific response.

1912. The system is designed to capture gas that is generated in the vessels, including the methane and carbon dioxide in the gas, which is used to calculate the methane generation rate. (Barlaz, Tr. 2225).

Response to Finding No. 1912:

Complaint Counsel has no specific response.

1913. Controls are used with the laboratory-scale reactors, including an inoculum blank that includes nothing but the decomposed municipal solid waste so that the laboratory can measure the background methane attributable to the inoculum alone. (Barlaz, Tr. 2225-26).

Response to Finding No. 1913:

Complaint Counsel has no specific response.

1914. The laboratory “corrects” for background methane attributable solely to the inoculum by subtracting the amount of gas produced by the inoculum blank. (Barlaz, Tr. 2225-26).

Response to Finding No. 1914:

Complaint Counsel has no specific response.

1915. Theoretical methane potential is calculated simply from the chemical formula and the chemical composition of the test materials using stoichiometry. (Barlaz, Tr. 2226).

Response to Finding No. 1915:

Complaint Counsel has no specific response.

1916. The Buswell equation is used to calculate methane potential of a substrate. (Barlaz, Tr. 2227).

Response to Finding No. 1916:

Complaint Counsel has no specific response.

1917. The Buswell equation is a balanced equation that looks at how much carbon, hydrogen, oxygen, nitrogen and sulfur is in a compound, and it stoichiometrically converts those amounts to methane and carbon dioxide (and ammonia and some hydrogen sulfide). (Barlaz, Tr. 2227).

Response to Finding No. 1917:

Complaint Counsel has no specific response.

1918. “Mesophilic” refers to a class of microorganisms that have optimal temperature around 98.6 degrees Fahrenheit. (Barlaz, Tr. 2228).

Response to Finding No. 1918:

Complaint Counsel has no specific response.

1919. At temperatures above 43 to 44 degrees, mesophiles are killed off or severely inhibited. (Barlaz, Tr. 2228).

Response to Finding No. 1919:

Complaint Counsel has no specific response.

1920. “Thermophiles” have an optimal temperature closer to 60 degrees Centigrade. (Barlaz, Tr. 2228).

Response to Finding No. 1920:

Complaint Counsel has no specific response.

1921. The Buswell equation does not factor temperature. (Barlaz, Tr. 2228).

Response to Finding No. 1921:

Complaint Counsel has no specific response.

1922. Mesophilic versus thermophilic would primarily influence the rate of degradation. (Barlaz, Tr. 2228).

Response to Finding No. 1922:

Complaint Counsel has no specific response.

1923. In a laboratory-scale reactor test, the Buswell equation is used along with the actual methane observed to calculate the percentage of methane realized from the test substrate. (Barlaz, Tr. 2229).

Response to Finding No. 1923:

Complaint Counsel has no specific response.

1924. Dr. Barlaz explained that BMP tests are traditionally run for 60 days, however over the years he has come to appreciate that shorter term testing for “more slowly degradable components of the waste” is likely not appropriate. (Barlaz, Tr. 2230).

Response to Finding No. 1924:

Complaint Counsel has no specific response.

1925. By performing shorter term studies, the tests are not “in fact measure[ing] the total methane potential” of a substrate. (Barlaz, Tr. 2230).

Response to Finding No. 1925:

Complaint Counsel has no specific response.

1926. A difference between a BMP and a reactor test is the frequency of gas measurement. (Barlaz, Tr. 2230).

Response to Finding No. 1926:

Complaint Counsel has no specific response.

1927. In a laboratory-scale reactor test, the laboratory is typically measuring the gas weekly. (Barlaz, Tr. 2230).

Response to Finding No. 1927:

Complaint Counsel has no specific response.

1928. Dr. Barlaz testified that the challenge with “slowly degradable material” is understanding that it is slowly degradable in designing the test. (Barlaz, Tr. 2231).

Response to Finding No. 1928:

Complaint Counsel has no specific response.

1929. There are variables or conditions in laboratory-scale reactor tests, like system pH, that can depress the activity of microorganisms if not controlled. (Barlaz, Tr. 2231-32).

Response to Finding No. 1929:

Complaint Counsel has no specific response.

1930. Laboratories must also ensure that they have suitable inoculum that is healthy enough to initiate anaerobic biodegradation. (Barlaz, Tr. 2232).

Response to Finding No. 1930:

Complaint Counsel has no specific response.

1931. An inoculum that is over-digested before biodegradation testing would limit biodegradation because there may not be enough substrate to maintain healthy microbial populations and, so, the inoculum would not be effective for initiated tests. (Barlaz, Tr. 2232-33).

Response to Finding No. 1931:

Complaint Counsel has no specific response.

1932. The most common compounds inhibitory of microorganisms in the closed-system biodegradation test are the carboxylic intermediates (the propionate, butyrate, and acetate) which can accumulate. (Barlaz, Tr. 2234; RX 853 at 20 (figure 2)).

Response to Finding No. 1932:

Complaint Counsel has no specific response.

1933. Another class of inhibitory compounds could be a test substrate that has something inhibitory (e.g., additive or impurity) that leaches out and is a microbial inhibitor. (Barlaz, Tr. 2234; Sahu, Tr. 1836).

Response to Finding No. 1933:

Complaint Counsel has no specific response.

C. Dr. Barlaz Testified that Complaint Counsel's Theory on In Situ and Lysimeter Studies is Not Supported

1934. Dr. Barlaz "strongly disagree[d]" with Dr. Tolaymat's opinion that *in situ* landfill testing was important to document the anaerobic biodegradability of a material. (Barlaz, Tr. 2236).

Response to Finding No. 1934:

Complaint Counsel has no specific response.

1935. Dr. Barlaz testified that you cannot get quantitative information on anaerobic biodegradability out of an in situ landfill test even if it was done perfectly, and the possibility of doing it perfectly is slight at best. (Barlaz, Tr. 2236).

Response to Finding No. 1935:

Complaint Counsel has no specific response.

1936. Dr. Barlaz explained that Dr. Tolaymat had referenced lysimeter testing that Dr. Barlaz himself performed with Chris Bareither at the University of Wisconsin. (Barlaz, Tr. 2236).

Response to Finding No. 1936:

Complaint Counsel has no specific response.

1937. Dr. Tolaymat incorrectly implied that Dr. Barlaz and Chris Bareither had measured methane generation in the lysimeter test when in fact they did not measure methane generation at all. (Barlaz, Tr. 2237).

Response to Finding No. 1937:

Complaint Counsel has no specific response.

1938. According to Dr. Barlaz, “whether it is that large-scale column [lysimeter] or whether you’re burying waste in a landfill, to me, the way that you document anaerobic biodegradability is you measure methane and CO₂ production that you can attribute to that material.” (Barlaz, Tr. 2237).

Response to Finding No. 1938:

Complaint Counsel has no specific response.

1939. When a researcher buries a product in a landfill, you cannot measure methane and CO₂ emissions. (Barlaz, Tr. 2237).

Response to Finding No. 1939:

Complaint Counsel has no specific response.

1940. In *in situ* studies, “[a]ll you’re going to do is put it in the landfill and then at some point later go dig it up and say it’s either here or it’s not here or it’s here and it lost this much weight.” (Barlaz, Tr. 2237).

Response to Finding No. 1940:

Complaint Counsel has no specific response.

1941. There are many problems with the *in situ* landfill testing, including loss of product samples which frequently occurs. (Barlaz, Tr. 2237).

Response to Finding No. 1941:

Complaint Counsel has no specific response.

1942. Also, during in-situ studies, the researcher cannot determine if weight loss was specifically attributed to biodegradation. (Barlaz, Tr. 2238).

Response to Finding No. 1942:

Complaint Counsel has no specific response.

1943. Landfill in situ studies therefore allow only for qualitative information about a test sample. (Barlaz, Tr. 2238).

Response to Finding No. 1943:

Complaint Counsel has no specific response.

1944. Practical difficulties also limit the availability of landfill in situ testing. (Barlaz, Tr. 2238).

Response to Finding No. 1944:

Complaint Counsel has no specific response.

1945. Those difficulties include finding cooperative landfills that will work with researchers to maintain access to landfill sites and samples, and agree not to deposit additional waste on top of the test area. (Barlaz, Tr. 2238).

Response to Finding No. 1945:

Complaint Counsel has no specific response.

1946. According to Dr. Barlaz, “to suggest that [in situ landfill studies] are what we have to do to make – to prove a material is biodegradable to me is, number one, technically it’s not sound because you can’t measure methane and CO₂. And even if ... technically it were sound, you’re imposing this hurdle on people that’s completely unrealistic.” (Barlaz, Tr. 2238-39).

Response to Finding No. 1946:

Complaint Counsel has no specific response.

1947. There is no set definition for a “lysimeter” as used in biodegradation testing. (Barlaz, Tr. 2239).

Response to Finding No. 1947:

Complaint Counsel has no specific response.

1948. Dr. Barlaz has not performed lysimeter studies in his laboratory, although he had participated in several lysimeter projects at other sites. (Barlaz, Tr. 2240).

Response to Finding No. 1948:

Complaint Counsel has no specific response.

1949. Dr. Barlaz disagreed with Dr. Tolaymat's position that lysimeter studies should be used to test for biodegradation, and Dr. Barlaz "was surprised" that Dr. Tolaymat had used data on settlement and leachate quality to obtain data on the biodegradability of a specific material, which is not scientifically supported. (Barlaz, Tr. 2240-41).

Response to Finding No. 1949:

Complaint Counsel has no specific response.

1950. Dr. Barlaz found Dr. Tolaymat's suggested use of lysimeter studies to be unscientific because it would be extremely difficult to gather useable, representative biodegradability data from a large lysimeter design. (Barlaz, Tr. 2241-42).

Response to Finding No. 1950:

Complaint Counsel has no specific response.

1951. Assuming it was even possible to get data showing anaerobic biodegradability from a lysimeter test, Dr. Barlaz explained that you would then need to test for multiple years to gather suitable data on a slowly degrading substrate. (Barlaz, Tr. 2242-43).

Response to Finding No. 1951:

Complaint Counsel has no specific response.

D. Dr. Barlaz Testified that Complaint Counsel's Reliance on Carbon-14 Testing Is Unsupported

1952. Dr. Barlaz is familiar with carbon-14 testing for biodegradable substances. (Barlaz, Tr. 2243-44).

Response to Finding No. 1952:

Complaint Counsel has no specific response.

1953. Dr. Barlaz explained that it is important to recognize that the carbon-14 reactor test has the "exact same premise or exact same conceptual experimental design as a reactor test where you're using regular carbon that's not radiolabeled." (Barlaz, Tr. 2244).

Response to Finding No. 1953:

Complaint Counsel has no specific response.

1954. The advantage of using carbon-14 testing goes only to sensitivity of testing where the laboratory is measuring minute amounts of biodegradation. (Barlaz, Tr. 2244).

Response to Finding No. 1954:

Complaint Counsel has no specific response.

1955. Dr. Barlaz testified that, where the laboratory is measuring substantial amounts of methane and carbon dioxide, the carbon-14 test does not “buy[] you anything.” (Barlaz, Tr. 2244).

Response to Finding No. 1955:

Complaint Counsel has no specific response.

1956. Dr. Barlaz also explained that where you have a polymer that consists of more than one compound, you have to carbon-14 label the molecule precisely where you want it, and that is not easy to accomplish. (Barlaz, Tr. 2244-45).

Response to Finding No. 1956:

Complaint Counsel has no specific response.

1957. Dr. Barlaz has had people ask for carbon-14 testing, and he has not been able to direct them to a laboratory that can properly synthesize a C-14 labeled compound for plastics biodegradation testing. (Barlaz, Tr. 2245).

Response to Finding No. 1957:

Complaint Counsel has no specific response.

1958. Dr. Barlaz would be surprised if any expert had performed C-14 testing on the plastic products at issue in this case, because he testified that it would be hard to find someone who could make the properly radiolabeled plastic for testing. (Barlaz, Tr. 2245-46).

Response to Finding No. 1958:

Complaint Counsel has no specific response.

1959. In the mid-1990s, Dr. Barlaz purchased radiolabeled products from a company, American Radiolabeled Chemicals, which company Complaint Counsel suggests was capable of providing radiolabeled polymers for testing. (Barlaz, Tr. 2321-22).

Response to Finding No. 1959:

Complaint Counsel has no specific response.

1960. American Radiolabeled Chemicals incorrectly characterized the C-14 that they sold Dr. Barlaz. (Barlaz, Tr. 2322).

Response to Finding No. 1960:

Complaint Counsel has no specific response.

1961. Dr. Barlaz discovered after months of testing that the radiolabeled product supplied by American Radiolabeled Chemicals was incorrect by an order of magnitude ten different from what they told Dr. Barlaz that they had sold him. (Barlaz, Tr. 2322).

Response to Finding No. 1961:

Complaint Counsel has no specific response.

1962. Dr. Barlaz had used the C-14 radiolabeled product in a test of cellulose polymers—not plastics. (Barlaz, Tr. 2321-22).

Response to Finding No. 1962:

Complaint Counsel has no specific response.

1963. Dr. Barlaz testified that C-14 radiolabeled testing is not generally accepted in the relevant scientific community as necessary evidence to show biodegradation of materials. (Barlaz, Tr. 2246).

Response to Finding No. 1963:

Complaint Counsel has no specific response.

E. Dr. Barlaz Testified that Gas Evolution Data from ECM Biodegradation Testing Proves that Plastic Containing the ECM additive are Biodegradable

1964. In a gas evolution laboratory-scale reactor test, it is broadly accepted by the scientific community that biodegradation can be proven with data showing that the volume of methane produced in the test vessel is greater than the volume of gas produced in the inoculum. (Barlaz, Tr. 2246).

Response to Finding No. 1964:

Complaint Counsel has no specific response.

1965. Dr. Barlaz reviewed many of the gas evolution studies involving ECM amended plastics. (Barlaz, Tr. 2247).

Response to Finding No. 1965:

Complaint Counsel has no specific response.

1966. Dr. Barlaz was “surprised” that Drs. McCarthy and Tolaymat were dismissive of gas evolution testing without having examined the data. (Barlaz, Tr. 2247).

Response to Finding No. 1966:

Complaint Counsel has no specific response.

1967. Dr. Barlaz examined the raw data produced by certain laboratories, particularly the data concerning methane generation from the test substrate and methane generation from the inoculum that would be the background methane. (Barlaz, Tr. 2247-48).

Response to Finding No. 1967:

Complaint Counsel has no specific response.

1968. For those tests where Dr. Barlaz had triplicate data (e.g., raw data), he performed statistical analysis, including T-tests, to determine whether there were statistically significant differences between the methane generation in the reactor with the test substrate and the methane attributable to the inoculum alone. (Barlaz, Tr. 2248).

Response to Finding No. 1968:

Complaint Counsel has no specific response.

1969. “In many cases,” Dr. Barlaz determined from the data itself that the results were statistically significant, and that the data suggested that there was anaerobic biodegradability of the test plastic. (Barlaz, Tr. 2248).

Response to Finding No. 1969:

Complaint Counsel has no specific response.

1970. For other studies where triplicate data was not available, Dr. Barlaz examined the ratios of methane generation in the test material plus inoculum to methane generation from the inoculum only. (Barlaz, Tr. 2248).

Response to Finding No. 1970:

Complaint Counsel has no specific response.

1971. Dr. Barlaz concluded for those studies that ratios varied, but the ratios were generally significant even at the lower end. (Barlaz, Tr. 2248-49).

Response to Finding No. 1971:

Complaint Counsel has no specific response.

1972. From those ratios, Dr. Barlaz determined that the methane generation in the test vessels could be attributable to the test substrate, which suggests that the substrate was undergoing anaerobic biodegradation and conversion to methane. (Barlaz, Tr. 2249, 2260-62).

Response to Finding No. 1972:

Complaint Counsel has no specific response.

1973. Dr. Barlaz prepared a spreadsheet of his statistical calculations. (Barlaz, Tr. 2250; RX 472).

Response to Finding No. 1973:

Complaint Counsel has no specific response.

1974. Dr. Barlaz had also updated his spreadsheet to include additional calculations based on the data. (Barlaz, Tr. 2251; RX 968).

Response to Finding No. 1974:

Complaint Counsel has no specific response.

1975. To address the question of whether only the ECM additive had biodegraded, Dr. Barlaz estimated the amount of methane that could theoretically be produced by the ECM additive alone. (Barlaz, Tr. 2251-53).

Response to Finding No. 1975:

Complaint Counsel has no specific response.

1976. Dr. Barlaz made certain conservative assumptions about the ECM additive when he calculated the amount of potential methane. (Barlaz, Tr. 2252-53).

Response to Finding No. 1976:

Complaint Counsel has no specific response.

1977. Dr. Barlaz's conservative calculation was that one gram of ECM additive would produce 933 mL of methane gas. (Barlaz, Tr. 2253).

Response to Finding No. 1977:

Complaint Counsel has no specific response.

1978. Based on that calculation of 933 mL, Dr. Barlaz looked at the methane yields in the test vessels during biodegradation testing, and determined if the amount of biodegradation exceeded the amount that could potentially be sourced from the additive. (Barlaz, Tr. 2253-54).

Response to Finding No. 1978:

Complaint Counsel has no specific response.

1979. Dr. Barlaz's calculation of the potential methane yield of the ECM additive is likely conservative because of the assumptions he made. (Barlaz, Tr. 2254).

Response to Finding No. 1979:

Complaint Counsel has no specific response.

1980. Dr. Barlaz assumed the additive was 50% carbon. (Barlaz, Tr. 2254).

Response to Finding No. 1980:

Complaint Counsel has no specific response.

1981. Polyethylene, by contrast, is almost 90% carbon. (Barlaz, Tr. 2254).

Response to Finding No. 1981:

Complaint Counsel has no specific response.

1982. Dr. Barlaz also calculated the methane yield of the ECM additive based on the formula for the ECM additive that Dr. McCarthy used in his expert report at page 24, footnote 17 of his report. (Barlaz, Tr. 2254-55; CCX 891 at 24 n.17).

Response to Finding No. 1982:

Complaint Counsel has no specific response.

1983. Based on Dr. McCarthy's description of the ECM additive allegedly based on reverse engineering, Dr. Barlaz calculated a methane yield for the ECM additive of 838 mL per gram. (Barlaz, Tr. 2255; RX 968).

Response to Finding No. 1983:

Complaint Counsel has no specific response.

1984. Thus, using Dr. McCarthy's assumptions, the data produced in the gas evolution tests suggests that even **more** of the substrate plastic (not the additive) biodegraded because the ECM additive would have had a lower potential methane yield. (Barlaz, Tr. 2255-56).

Response to Finding No. 1984:

Complaint Counsel has no specific response.

1985. Using the Minigrips NE Lab study as an example (RX 838), Dr. Barlaz explained the arithmetic summarized in his spreadsheet. (Barlaz, Tr. 2256-57; RX 968).

Response to Finding No. 1985:

Complaint Counsel has no specific response.

1986. Dr. Barlaz calculates the weight of the ECM additive (in grams) by multiplying the percentage of the ECM additive load rating (in the Minigrips test, 1.5%) by the starting weight of the entire test plastic. (Barlaz, Tr. 2256-57).

Response to Finding No. 1986:

Complaint Counsel has no specific response.

1987. Because Dr. Barlaz has calculated the amount of total methane potential from one gram of ECM additive, he can then determine the total amount of methane possible in the ECM additive in each specific test by multiplying the actual weight of the ECM additive by the conservative 933 mL calculation (or 838 mL if using Dr. McCarthy's assumptions). (Barlaz, Tr. 2256-58).

Response to Finding No. 1987:

Complaint Counsel has no specific response.

1988. Dr. Barlaz also calculated the net methane for each test vessel, which he did by subtracting the mean triplicate methane data from the inoculum blanks from the test vessels. (Barlaz, Tr. 2257-58; RX 968 (Summary sheet)).

Response to Finding No. 1988:

Complaint Counsel has no specific response.

1989. For those studies where Dr. Barlaz had raw data, he calculated T-tests. (Barlaz, Tr. 2257).

Response to Finding No. 1989:

Complaint Counsel has no specific response.

1990. The T-statistic is the most common statistical test after a calculation of the average. (Barlaz, Tr. 2259).

Response to Finding No. 1990:

Complaint Counsel has no specific response.

1991. Dr. Barlaz also calculated standard deviations for tests where he had triplicate data, however the T-test is superior in that it also takes into consideration the elements of standard deviation. (Barlaz, Tr. 2264).

Response to Finding No. 1991:

Complaint Counsel has no specific response.

1992. Dr. Barlaz looked for a 95% certainty in the statistics that he ran, which would mean that the researchers are 95% “certain that you got the right answer.” (Barlaz, Tr. 2260).

Response to Finding No. 1992:

Complaint Counsel has no specific response.

1993. Dr. Barlaz’s t-statistics were generally well below the .05 that indicates statistical significance at the 95% level. (Barlaz, Tr. 2257).

Response to Finding No. 1993:

Complaint Counsel has no specific response.

1994. Dr. Barlaz’s mathematical process is explained in his testimony. (Barlaz, Tr. 2257-59).

Response to Finding No. 1994:

Complaint Counsel has no specific response.

1995. Dr. Barlaz explained that where the methane produced from the test vessel is not attributable to the inoculum, and not attributable to the ECM additive, then the biodegradation must come from the plastic substrate itself. (Barlaz, Tr. 2258).

Response to Finding No. 1995:

Complaint Counsel has no specific response.

1996. Dr. Barlaz’s calculations are also conservative because “it’s not proven” that the ECM additive would completely biodegrade on its own while locked within the plastic without also having the plastic biodegrade along with the additive. (Barlaz, Tr. 2258).

Response to Finding No. 1996:

Complaint Counsel has no specific response.

1997. Dr. Barlaz also analyzed the ratios of methane to carbon dioxide in the lab tests. (Barlaz, Tr. 2261-62).

Response to Finding No. 1997:

Complaint Counsel has no specific response.

1998. A ratio of methane to carbon dioxide that is greater than 1:1 respectively is a good indication that the anaerobic environment was behaving properly. (Barlaz, Tr. 2262-63).

Response to Finding No. 1998:

Complaint Counsel has no specific response.

1999. Gas evolution testing also does not account for carbon that may have been cleaved from the substrate but converted to cell mass instead of gas. (Barlaz, Tr. 2263-64).

Response to Finding No. 2999:

Complaint Counsel has no specific response.

2000. Therefore, the biodegradation numbers calculated by the laboratories based on gas data alone are a lower limit of the carbon conversion that was actually realized. (Barlaz, Tr. 2263-64).

Response to Finding No. 2000:

Complaint Counsel has no specific response.

2001. Based on his statistical analyses and the test data he reviewed concerning ECM amended plastics, Dr. Barlaz testified that competent and reliable scientific evidence exists to show that plastics manufactured with the ECM additive are anaerobically biodegradable. (Barlaz, Tr. 2264-65).

Response to Finding No. 2001:

Complaint Counsel has no specific response.

2002. Dr. Barlaz testified that “there are certainly many tests where there’s good scientific evidence that the material – that the material underwent anaerobic [biodegradation].” (Barlaz, Tr. 2265).

Response to Finding No. 2002:

Complaint Counsel has no specific response.

2003. Dr. Barlaz also performs commercial BMP testing in his lab for interested companies. (Barlaz, Tr. 2265).

Response to Finding No. 2003:

Complaint Counsel has no specific response.

2004. Dr. Barlaz has tested certain plastic articles that contained the ECM additive. (Barlaz, Tr. 2265).

Response to Finding No. 2004:

Complaint Counsel has no specific response.

2005. Dr. Barlaz's experience with BMP testing is primarily with cellulosic material, which means that the majority of his testing has involved municipal solid waste testing, and cellulose is a major biodegradable component of same. (Barlaz, Tr. 2266).

Response to Finding No. 2005:

Complaint Counsel has no specific response.

2006. Dr. Barlaz's "BMP" studies have been conducted mostly up to 60 days in duration. (Barlaz, Tr. 2267).

Response to Finding No. 2006:

Complaint Counsel has no specific response.

2007. Dr. Barlaz testified that, with respect to slowly degrading materials, the BMP test that Dr. Barlaz runs is likely not representative of the total biodegradation expected from the material, and that it is quite possible that the material would have continued to biodegrade after Dr. Barlaz terminated his test. (Barlaz, Tr. 2267-68).

Response to Finding No. 2007:

Complaint Counsel has no specific response.

2008. If the experimental goal of the test is to capture the maximum methane yield of a test substrate, then Dr. Barlaz testified that a 60-day test is too short to accomplish that objective. (Barlaz, Tr. 2267).

Response to Finding No. 2008:

Complaint Counsel has no specific response.

2009. Document RX 952 represents an example BMP test that Dr. Barlaz performed on an ECM amended plastic. (Barlaz, Tr. 2269-70; RX 952).

Response to Finding No. 2009:

Complaint Counsel has no specific response.

F. Dr. Barlaz Testified that the Plateau and Priming Effects are Not Bases to Reject ECM Testing

1. The Plateau Effect

2010. Dr. Barlaz has also reviewed tests in this case that were inconclusive with respect to the amount of biodegradation observed in the test environment. (Barlaz, Tr. 2272).

Response to Finding No. 2010:

Complaint Counsel has no specific response.

2011. Inconclusive tests can be the result of an inoculum that is not viable. (Barlaz, Tr. 2272-73).

Response to Finding No. 2011:

Complaint Counsel has no specific response.

2012. For slowly degrading substances, there is risk that the inoculum may not remain viable over time in a closed-system laboratory reactor test. (Barlaz, Tr. 2273-74).

Response to Finding No. 2012:

Complaint Counsel has no specific response.

2013. The inconclusive test results relevant to this case do not alter Dr. Barlaz's opinion concerning the evidence that shows plastics amended with ECM's additive were shown to biodegrade anaerobically. (Barlaz, Tr. 2274).

Response to Finding No. 2013:

Complaint Counsel has no specific response.

2014. Based on the totality of the scientific evidence, Dr. Barlaz concluded that, while there were some tests that did not conclusively show anaerobic biodegradation, "many more" did, and, so, "in totality there's evidence that the material is anaerobically biodegrading." (Barlaz, Tr. 2274).

Response to Finding No. 2014:

Complaint Counsel has no specific response.

2. The Priming Effect

2015. The scant information in the peer-reviewed literature concerning the "priming effect" of a substrate in the test environment has generally been limited to rapidly accessible or degrading substrates like glucose. (Sahu, Tr. 1888-89).

Response to Finding No. 2015:

Complaint Counsel has no specific response.

2016. There is no consensus in the literature as to what the priming effect is, and the degree to which it could be in action during biodegradation testing of plastics. (Sahu, Tr. 1889).

Response to Finding No. 2016:

Complaint Counsel has no specific response.

2017. Dr. Barlaz is familiar with Dr. McCarthy's theory on the "priming effect." (Barlaz, Tr. 2277).

Response to Finding No. 2017:

Complaint Counsel has no specific response.

2018. Dr. Barlaz testified that the priming effect theory is based on unsupported assumptions that when the ECM additive is degraded, it stimulates the inoculum and results in an increase in background methane. (Barlaz, Tr. 2277-78).

Response to Finding No. 2018:

Complaint Counsel has no specific response.

2019. Dr. Barlaz testified that the priming effect, as described by Complaint Counsel's witnesses, was "speculative," stating that it was "quite a stretch to dismiss ... data on the basis of a priming effect." (Barlaz, Tr. 2278).

Response to Finding No. 2019:

Complaint Counsel has no specific response.

2020. Dr. Barlaz testified that the "priming effect" theory was first described in the peer reviewed literature in reference to aerobic systems only, and then only with readily degradable substrates. (Barlaz, Tr. 2278).

Response to Finding No. 2020:

Complaint Counsel has no specific response.

2021. Dr. Barlaz explained that the priming effect theory described by Complaint Counsel's witnesses has not been reported in the peer-reviewed literature with respect to anaerobic systems and slowly degradable substrates like the ECM additive. (Barlaz, Tr. 2278-79).

Response to Finding No. 2021:

Complaint Counsel has no specific response.

2022. Dr. Barlaz explained that, per Dr. McCarthy's report, the ECM additive was mostly polycaprolactone (PCL), and in Dr. Barlaz's own research, the amount of degradation solely from PCL was not that significant to stimulate background methane. (Barlaz, Tr. 2279-80).

Response to Finding No. 2022:

Complaint Counsel has no specific response.

2023. Dr. Barlaz explained that, in the absence of any peer reviewed literature or evidentiary support, which Complaint Counsel’s experts did not provide, the priming effect theory was “quite speculative as a way to shoot down a test.” (Barlaz, Tr. 2280).

Response to Finding No. 2023:

Complaint Counsel has no specific response.

2024. Comparing a potential priming effect from a readily degradable substrate in an aerobic environment to a slowly degradable substrate in an anaerobic environment is not an appropriate comparison scientifically. (Barlaz, Tr. 2280-81).

Response to Finding No. 2024:

Complaint Counsel has no specific response.

2025. Dr. Barlaz also explained that the amount of biodegradation observed in the ECM tests is much higher than any reasonable interpretation of a priming effect theory and, so, the so-called “priming effect” would need to be massive to swallow the test results. (Barlaz, Tr. 2280).

Response to Finding No. 2025:

Complaint Counsel has no specific response.

2026. According to Dr. Barlaz, given the amount of biodegradation observed, “if someone is going to use [the priming effect] to throw out data, I’d like to see something more than this, what to me is [a] theoretical possibility without supporting data.” (Barlaz, Tr. 2280).

Response to Finding No. 2026:

Complaint Counsel has no specific response.

2027. Dr. Sahu also explained in his testimony that the theory of a “priming effect” presented by Complaint Counsel’s witnesses was unsupported. (Sahu, Tr. 1936-37).

Response to Finding No. 2027:

Complaint Counsel has no specific response.

2028. Dr. Sahu testified that the amount of methane and carbon dioxide gas emitted from the test vessels far exceeded that which could have been sourced by the inoculum and the ECM additive. (Sahu, Tr. 1936-37).

Response to Finding No. 2028:

Complaint Counsel has no specific response.

2029. That amount of gas *has* to come from the test plastic. (Sahu, Tr. 1936).

Response to Finding No. 2029:

Complaint Counsel has no specific response.

2030. Furthermore, as a way to check against the priming effect, Dr. McCarthy suggested that the laboratories test the ECM additive by itself to determine how much, if any, methane would be sourced from the additive alone. (McCarthy, Tr. 418, 449).

Response to Finding No. 2030:

Complaint Counsel has no specific response.

2031. In one of his BMP tests, Dr. Barlaz actually did test the ECM additive by itself. (CCX 951; Barlaz, Tr. 2312-14).

Response to Finding No. 2031:

Complaint Counsel has no specific response.

2032. In that test (CCX 951), Dr. Barlaz reported that the amount of methane produced from the ECM additive alone, under BMP testing conditions that favor biodegradation, was 151.2 mL CH₄/g. (CCX 951 at 2).

Response to Finding No. 2032:

Complaint Counsel has no specific response.

2033. Thus, the additive itself did not produce a priming effect equivalent to that which Complaint Counsel ascribes to other positive ECM tests. (CCX 951 at 2).

Response to Finding No. 2033:

Complaint Counsel has no specific response.

2034. Moreover, the additive produced methane within the range that Dr. Barlaz had calculated based on his Buswell equation memorialized in RX 968. (RX 472; RX 968).

Response to Finding No. 2034:

Complaint Counsel has no specific response.

2035. Based on Dr. McCarthy's own suggestion, therefore, the data in CCX 951 contradicts the priming effect theory. (CCX 951 at 2).

Response to Finding No. 2035:

Complaint Counsel has no specific response.

2036. Dr. McCarthy himself relied on gas evolution testing (not carbon-14 radiolabeled testing) to demonstrate that his polymer blends were biodegradable. (Sahu, Tr. 1893-94; RX 756 at 8-12).

Response to Finding No. 2036:

Complaint Counsel has no specific response.

2037. In his own biodegradation testing, Dr. McCarthy did not account for, or even mention, any biodegradation that might result from the theoretical priming effect. (RX 756).

Response to Finding No. 2037:

Complaint Counsel has no specific response.

XV. DR. RYAN BURNETTE TESTIFIED TO THE KINDS, NATURE, AND FUNCTIONS OF MICROBES THAT BIODEGRADE PLASTICS

2038. Dr. Ryan Burnette testified based on his extensive experience as a microbiologist and biochemist. (Burnette, Tr. 2360-71).

Response to Finding No. 2038:

Complaint Counsel has no specific response.

2039. Dr. Burnette researched the peer reviewed literature concerning the microbes associated with plastics biodegradation. (Burnette, Tr. 2372).

Response to Finding No. 2039:

Complaint Counsel has no specific response.

2040. Dr. Burnette testified that landfills have a wide variety of microorganisms capable of participating in biodegradation processes. (Burnette, Tr. 2372-73).

Response to Finding No. 2040:

Complaint Counsel has no specific response.

2041. Dr. Burnette also testified that, while the ASTM D5511 test environment features many conditions similar to those in MSW landfills, the test is also not necessarily representative of all conditions in landfills and, so, the D5511 test environment is not necessarily “optimal” to show the full range of biodegradation that might occur in landfills. (Burnette, Tr. 2373).

Response to Finding No. 2041:

Complaint Counsel has no specific response.

2042. Dr. Burnette testified that the D5511 or similar laboratory reactor testing is competent and reliable scientific evidence to assess biodegradability of materials in landfills. (Burnette, Tr. 2373).

Response to Finding No. 2042:

Complaint Counsel has no specific response.

2043. However, Dr. Burnette also explained that it would be difficult to maintain adequate biological life in a closed-system laboratory environment for sustained periods of time and, so, the test environments have a finite life span that may not be adequate to assess the full spectrum of biodegradation possible. (Burnette, Tr. 2374-75).

Response to Finding No. 2043:

Complaint Counsel has no specific response.

2044. Biodegradation involves microorganisms acting on substrates to break down same. (Burnette, Tr. 2376-77).

Response to Finding No. 2044:

Complaint Counsel has no specific response.

2045. Bacteria are the most proliferative, abundant form of life known. (Burnette, Tr. 2377).

Response to Finding No. 2045:

Complaint Counsel has no specific response.

2046. Bacteria can be prokaryotes or eukaryotes. (Burnette, Tr. 2377).

Response to Finding No. 2046:

Complaint Counsel has no specific response.

2047. Bacteria are very small, single-celled organisms that primarily live in colonies. (Burnette, Tr. 2378).

Response to Finding No. 2047:

Complaint Counsel has no specific response.

2048. There are bacteria that are specifically anaerobic, called obligate anaerobes, which can only proliferate in an anaerobic environment. (Burnette, Tr. 2378-79).

Response to Finding No. 2048:

Complaint Counsel has no specific response.

2049. There is a broad class of bacteria, called facultative anaerobes, which possess the tools to live, proliferate, reproduce, and feed in both oxygen and non-oxygen containing environments. (Burnette, Tr. 2379).

Response to Finding No. 2049:

Complaint Counsel has no specific response.

2050. The types of microorganisms relevant to biodegradation can be facultative anaerobes, obligate anaerobes, methanogens, and archaea bacteria. (Burnette, Tr. 2379-80).

Response to Finding No. 2050:

Complaint Counsel has no specific response.

2051. Archaea bacteria are within a subclass of bacteria that contain many types of anaerobic organisms. (Burnette, Tr. 2380).

Response to Finding No. 2051:

Complaint Counsel has no specific response.

2052. Enzymes are proteins by definition. (Burnette, Tr. 2380).

Response to Finding No. 2052:

Complaint Counsel has no specific response.

2053. Enzymes catalyze reactions or expedite reactions that may move slowly without the enzyme. (Burnette, Tr. 2380).

Response to Finding No. 2053:

Complaint Counsel has no specific response.

2054. Enzymes have active sites which structurally favor the substrate in a manner such that the reaction can be facilitated. (Burnette, Tr. 2381).

Response to Finding No. 2054:

Complaint Counsel has no specific response.

2055. Enzymes in landfills come primarily from microorganisms, bacteria and fungi. (Burnette, Tr. 2382).

Response to Finding No. 2053:

Complaint Counsel has no specific response.

2056. Enzymes in nature are not made without the presence of an organism to make them. (Burnette, Tr. 2382).

Response to Finding No. 2056:

Complaint Counsel has no specific response.

2057. In an MSW landfill, with respect to the degradation of food sources, the goal of enzymatic production is to obtain carbon for microbial metabolism. (Burnette, Tr. 2383-84).

Response to Finding No. 2057:

Complaint Counsel has no specific response.

2058. There are bacteria that secrete certain chemicals, e.g., polysaccharide in nature, acidic or basic, that would result in chemical degradation of food sources. (Burnette, Tr. 2384).

Response to Finding No. 2058:

Complaint Counsel has no specific response.

2059. Methane production is clear evidence that MSW landfills are biologically active because methane is the direct result of anaerobic metabolism. (Burnette, Tr. 2385).

Response to Finding No. 2059:

Complaint Counsel has no specific response.

2060. Microbial succession is the lifecycle of microorganisms. (Burnette, Tr. 2385).

Response to Finding No. 2060:

Complaint Counsel has no specific response.

2061. In the environment, it would be rare to find a singular species of bacteria. (Burnette, Tr. 2385).

Response to Finding No. 2061:

Complaint Counsel has no specific response.

2062. In the natural environment multiple species of bacteria coexist and each has a discrete function in the overall cycle of life. (Burnette, Tr. 2385).

Response to Finding No. 2062:

Complaint Counsel has no specific response.

2063. Microbial succession involves the lifecycle of a population of bacteria from initiation through proliferation until death. (Burnette, Tr. 2385).

Response to Finding No. 2063:

Complaint Counsel has no specific response.

2064. Dr. Burnette testified to microbial succession in landfills from the initial stages of aerobic metabolism into acetogenesis, and eventually methane production. (Burnette, Tr. 1286-87).

Response to Finding No. 2064:

Complaint Counsel has no specific response.

2065. Dr. Burnette testified that, with respect to microbial composition, it would be unreasonable to expect or identify a “one-size-fits-all” description of an MSW landfill because the diversity of potential environments presented in landfills is vast with too many variables, which, in turn, leads to proliferation of many different types of microorganisms. (Burnette, Tr. 2388).

Response to Finding No. 2065:

Complaint Counsel has no specific response.

2066. Dr. Burnette explained that it would be scientifically impractical (if not impossible) to design a perfect closed-system test that would be representative of all the potential microenvironments in an MSW landfill. (Burnette, Tr. 2388).

Response to Finding No. 2066:

Complaint Counsel has no specific response.

2067. In a laboratory closed-system reactor, the test article is not exposed to all of the conditions which it may be exposed to in an MSW landfill. (Burnette, Tr. 2389).

Response to Finding No. 2067:

Complaint Counsel has no specific response.

2068. The closed-system test is also subject to design issues that impart certain limitations. (Burnette, Tr. 2389).

Response to Finding No. 2068:

Complaint Counsel has no specific response.

2069. Limitations of the closed-system test environment are significant because, in the natural environment where those limitations are removed, the biodegradation of test substrates could be even greater. (Burnette, Tr. 2389-90).

Response to Finding No. 2069:

Complaint Counsel has no specific response.

2070. Researchers have identified many specific microorganisms that populate MSW landfills. (Burnette, Tr. 2390).

Response to Finding No. 2070:

Complaint Counsel has no specific response.

2071. Dr. Burnette summarized in his expert report the peer reviewed literature wherein scientists have used DNA sequencing to identify a non-exclusive list of many species existing in landfills which are capable of degrading plastics. (Burnette, Tr. 2390; RX 854 at 10).

Response to Finding No. 2071:

Complaint Counsel has no specific response.

2072. Landfills contain species within the phyla Proteobacteria, Firmicutes, and Thermotogae which are large families that contain many forms of individual bacteria. (Burnette, Tr. 2391-92).

Response to Finding No. 2072:

Complaint Counsel has no specific response.

2073. There are also fungi present in landfills that have been identified in the peer reviewed literature and are responsible for biodegradation. (Burnette, Tr. 2392, 2394).

Response to Finding No. 2074:

Complaint Counsel has no specific response.

2074. The diversity of species in landfills is substantial, and it is likely that many of the bacterial species present in landfills are also present in D5511 test environments, and similarly responsible for biodegradation observed therein. (Burnette, Tr. 2392).

Response to Finding No. 2074:

Complaint Counsel has no specific response.

2075. The process of biodegradation and bacterial metabolism can take several paths to access carbon in substrates, including, e.g., hydrolysis reactions, oxidative reactions, and fermentation. (Burnette, Tr. 2396-99).

Response to Finding No. 2075:

Complaint Counsel has no specific response.

2076. From a microbiological standpoint, the terms “priming effect” and “plateau effect” have very different meanings from the way in which Complaint Counsel’s experts have used them in this case. (Burnette, Tr. 2399-2400).

Response to Finding No. 2076:

Complaint Counsel has no specific response.

2077. Dr. Burnette has not seen any evidence in the peer reviewed literature or in his experience as a microbiologist that suggests the priming effect that Dr. McCarthy posited could be responsible for the biodegradation observed in ECM’s testing. (Burnette, Tr. 2400).

Response to Finding No. 2077:

Complaint Counsel has no specific response.

2078. In terms of a “plateau” effect in the laboratory environment, as that phrase is used in this case, Dr. Burnette testified that the plateau is very likely caused by the test conditions and not the biodegradability of the test plastic. (Burnette, Tr. 2401-02).

Response to Finding No. 2078:

Complaint Counsel has no specific response.

2079. No life is designed to live in a closed system for a sustained period of time. (Burnette, Tr. 2401-02).

Response to Finding No. 2079:

Complaint Counsel has no specific response.

2080. In the closed-system laboratory there is no way to release or expel the waste products created by the bacterial metabolism. (Burnette, Tr. 2402).

Response to Finding No. 2080:

Complaint Counsel has no specific response.

2081. If in a closed-system laboratory reactor the test material is slowly degrading, then you would not be expected to see prolonged biodegradation over time because the microorganisms that would act upon the substrate simply die. (Burnette, Tr. 2403).

Response to Finding No. 2081:

Complaint Counsel has no specific response.

2082. Feedback inhibition is a common mechanism by which the product of a biochemical reaction itself will loop back and negatively impact further production of the product, like an accumulation event that prevents the reaction from going forward. (Burnette, Tr. 2403-04; RX 854 at 14 (figure 5)).

Response to Finding No. 2082:

Complaint Counsel has no specific response.

2083. The buildup of inhibitory byproducts can begin to occupy binding sites of certain other enzymes. (Burnette, Tr. 2404-05).

Response to Finding No. 2083:

Complaint Counsel has no specific response.

2084. When that happens, the byproducts of the microbiological metabolic functions will compete adversely with the substrate for enzymatic binding sites. (Burnette, Tr. 2405).

Response to Finding No. 2084:

Complaint Counsel has no specific response.

2085. Virtually all microorganisms are susceptible to feedback inhibition effects. (Burnette, Tr. 2405).

Response to Finding No. 2085:

Complaint Counsel has no specific response.

2086. Although the mechanism of feedback inhibition is identical in the natural landfill environment, the difference is that, in a closed system, the inhibitory byproducts cannot be expelled or cleared from the ecosystem, while in a landfill setting the byproducts are dispersed or flushed in an open system. (Burnette, Tr. 2405-06).

Response to Finding No. 2086:

Complaint Counsel has no specific response.

2087. A biofilm is the formation of microbial colonies in a somewhat concerted manner which develop into films. (Burnette, Tr. 2406).

Response to Finding No. 2087:

Complaint Counsel has no specific response.

2088. Bacteria can adhere to plastics, in part, by secreting polysaccharides which promote bonding to the food source. (Burnette, Tr. 2407-08).

Response to Finding No. 2088:

Complaint Counsel has no specific response.

2089. The process of adhering to potential food substrates has been described as “docking and locking.” (Burnette, Tr. 2408).

Response to Finding No. 2089:

Complaint Counsel has no specific response.

2090. The surface area of a plastic has a substantial influence on the ability of a biofilm to form and adhere. (Burnette, Tr. 2409).

Response to Finding No. 2090:

Complaint Counsel has no specific response.

2091. Biofilms can contain hundreds to thousands of bacterial species. (Burnette, Tr. 2410).

Response to Finding No. 2091:

Complaint Counsel has no specific response.

2092. Closed system laboratories may restrict the types of conditions that allow certain bacteria to thrive and, thus, the test environment may unintentionally limit the biodegradation that can be observed. (Burnette, Tr. 2412-13).

Response to Finding No. 2092:

Complaint Counsel has no specific response.

2093. Dr. Burnette testified that biodegradation seen in a closed laboratory system is expected to be less overall than biodegradation in an open, natural system where the diversity of bacteria and conditions are more substantial. (Burnette, Tr. 2412-13).

Response to Finding No. 2093:

Complaint Counsel has no specific response.

2094. Enzymes can weaken or break carbon-carbon bonds in plastic polymers (and other long-chain polymers) by lowering the energy required to break the bonds. (Burnette, Tr. 2414).

Response to Finding No. 2094:

Complaint Counsel has no specific response.

2095. For instance, the increase in free chlorine ions in solution during the Environ BioPVC test was a clear indication that the carbon-carbon bonds were either broken or the bond breakage was imminent. (Burnette, Tr. 2415-16).

Response to Finding No. 2095:

Complaint Counsel has no specific response.

2096. Dr. Burnette diagrammed his analysis of the PVC degradation extemporaneously at his deposition. (Burnette, Tr. 2415-16; CCX 1081).

Response to Finding No. 2096:

Complaint Counsel has no specific response.

2097. When chlorine atoms are present in the solution of the BioPVC test, it indicates that the HCl group was cleaved from the polymer through a nucleophilic attack on the PVC molecule. (Burnette, Tr. 1415-17).

Response to Finding No. 2097:

Complaint Counsel has no specific response.

2098. The resulting PVC molecule is substantially weakened in that area, and the carbon-carbon bonds will thus break because the remaining carbon-carbon bond is subject to a hydrolysis reaction that will, in fact, cause bond breakage. (Burnette, Tr. 2417; CCX 1081).

Response to Finding No. 2098:

Complaint Counsel has no specific response.

2099. The fact that PVC becomes unstable and degraded after losing the HCl group is a textbook analysis of a nucleophilic attack; it is documented in the peer-reviewed literature, and it is “a fundamental of biochemistry.” (Burnette, Tr. 2418).

Response to Finding No. 2099:

Complaint Counsel has no specific response.

2100. “Nucleophilic attack” means that the enzyme is looking for a positively charged substance to attack. (Burnette, Tr. 2418).

Response to Finding No. 2100:

Complaint Counsel has no specific response.

2101. Depolymerases are a class of enzymes that reduce large polymers into smaller units. (Burnette, Tr. 2418-19).

Response to Finding No. 2101:

Complaint Counsel has no specific response.

2102. Depolymerases are also responsible for biodegradation of plastic polymers, and they are ubiquitous in the environment. (Burnette, Tr. 2418-21).

Response to Finding No. 2102:

Complaint Counsel has no specific response.

2103. Depolymerases use hydrolysis and nucleophilic attacks to break bonds, and they are involved in the reduction and oxidation reactions. (Burnette, Tr. 2419).

Response to Finding No. 2103:

Complaint Counsel has no specific response.

2104. Dr. Burnette’s expert report (RX 854) documented several microorganisms that have been identified for their ability to biodegrade plastic polymers. (Burnette, Tr. 2420-21).

Response to Finding No. 2104:

Complaint Counsel has no specific response.

2105. For example, *Rhodococcus rubber* uses hydrolases and enzymes called esterases to break apart polyethylene polymers into smaller subunits. (Burnette, Tr. 2421).

Response to Finding No. 2105:

Complaint Counsel has no specific response.

2106. Oxidation reactions are simply reactions that involve the addition of electrons. (Burnette, Tr. 2421).

Response to Finding No. 2106:

Complaint Counsel has no specific response.

2107. An oxidative reaction can occur in anaerobic systems. (Burnette, Tr. 2421-22).

Response to Finding No. 2107:

Complaint Counsel has no specific response.

2108. Oxidative reactions can play a role in anaerobic biodegradation of polymers. (Burnette, Tr. 2422).

Response to Finding No. 2108:

Complaint Counsel has no specific response.

2109. Anaerobic and aerobic metabolisms in microorganisms are different concepts, but they share many key similarities, including certain Bs of action used to achieve the breakdown of substrates. (Burnette, Tr. 2423-25).

Response to Finding No. 2109:

Complaint Counsel has no specific response.

2110. For example, the use of pyruvate dehydrogenase is a key ingredient and factor in both aerobic and anaerobic metabolism. (Burnette, Tr. 2424-25).

Response to Finding No. 2110:

Complaint Counsel has no specific response.

2111. Dr. Burnette explained that one documented pathway to polyethylene biodegradation includes a common mechanism applicable to both aerobic and anaerobic systems, including the cofactor NAD, and the oxidative reactions that occur in both environments. (Burnette, Tr. 2426).

Response to Finding No. 2111:

Complaint Counsel has no specific response.

2112. The mechanisms of aerobic biodegradation are therefore useful to interpreting anaerobic biodegradation of polymers like polyethylene. (Burnette, Tr. 2426).

Response to Finding No. 2112:

Complaint Counsel has no specific response.

2113. Dr. Burnette identified and testified to other mechanisms of enzymatic degradation of plastic polymers, including the degradation of polyethylene terephthalate, a more difficult to digest polymer, using the cutinase enzyme. (Burnette, Tr. 2428).

Response to Finding No. 2113:

Complaint Counsel has no specific response.

2114. Hydrolysis reactions are not limited to environments with high moisture contents. (Burnette, Tr. 2429).

Response to Finding No. 2114:

Complaint Counsel has no specific response.

2115. Digestion of certain polymer chains may require just a few molecules of water. (Burnette, Tr. 2429).

Response to Finding No. 2115:

Complaint Counsel has no specific response.

2116. Dr. Burnette testified that mesophilic and thermophilic bacteria function at different temperatures and pace, but they use common and universal mechanisms of action to gain access to food sources. (Burnette, Tr. 2430-31).

Response to Finding No. 2116:

Complaint Counsel has no specific response.

2117. Dr. Burnette explained that many bacteria identified in the peer reviewed literature as responsible for biodegrading plastics fall within the mesophilic range. (Burnette, Tr. 2432).

Response to Finding No. 2117:

Complaint Counsel has no specific response.

2118. Therefore, because bacteria capable of degrading plastics are mesophilic, test conditions (like the D5511) that promote only thermophilic bacteria may not provide a truly “optimal” environment for assessing total biodegradability. (Burnette, Tr. 2432-33).

Response to Finding No. 2118:

Complaint Counsel has no specific response.

2119. Certain mesophiles will die at higher temperatures, or become ineffective. (Burnette, Tr. 2432).

Response to Finding No. 2119:

Complaint Counsel has no specific response.

2120. Dr. Burnette testified that the ECM additive likely promotes biodegradation in two ways: first by serving as an attractant for microbial growth on and within plastics;

and second, by weakening or perturbing the carbon-carbon bonds through weaknesses in the chain or the addition of more weak points in the form of the additive. (Burnette, Tr. 2435-37).

Response to Finding No. 2120:

Complaint Counsel has no specific response.

2121. Dr. Burnette testified that the D5511 test is a good measure of biodegradability in an MSW landfill because the biodegradation observed in the D5511 test has occurred despite the limitations of a closed-system, ecologically limited test environment. (Burnette, Tr. 2438-39).

Response to Finding No. 2121:

Complaint Counsel has no specific response.

2122. In the open landfill environment, while biodegradation may be at varying rates, the total biodegradation should be expected to increase or, at least, continue onward absent the limitations of a closed-system test. (Burnette, Tr. 2437-40).

Response to Finding No. 2122:

Complaint Counsel has no specific response.

2123. The D5511 test represents still a subset of the conditions found in MSW landfills. (Burnette, Tr. 2439-40).

Response to Finding No. 2123:

Complaint Counsel has no specific response.

2124. Dr. Burnette testified that “negative” tests are not the same thing as “inconclusive” tests, and a test is not truly “negative” until all of the variables have been explored and you still have replicability of results. (Burnette, Tr. 2442).

Response to Finding No. 2124:

Complaint Counsel has no specific response.

2125. Dr. Burnette considers the likelihood of cell death in a closed-system laboratory test to be probable without refreshing the system with new nutrients or expelling the waste. (Burnette, Tr. 2442-43).

Response to Finding No. 2125:

Complaint Counsel has no specific response.

2126. The untimely death of the microorganisms in the closed-system laboratory test makes for an inconclusive test with respect to biodegradation testing, and not a negative outcome adverse to the test article. (Burnette, Tr. 2443).

Response to Finding No. 2126:

Complaint Counsel has no specific response.

2127. Dr. Burnette also testified that a direct comparison of the rate or extent of biodegradation in cellulose to the rate or extent of biodegradation in the test plastic is not appropriate scientifically because: (a) cellulose is degraded by an entirely different, and very ubiquitous enzyme called cellulase; and (b) cellulose is chosen as a positive control because it is rapidly degradable, while plastics with the ECM additive are comparatively slow degrading products. (Burnette, Tr. 2444-45).

Response to Finding No. 2127:

Complaint Counsel has no specific response.

2128. In context with a discussion about microbiological pathways involved in polymer biodegradation, the persistent set of positive ECM test results reveals that the additive is, in fact, enhancing the biodegradation of the plastic itself. (Burnette, Tr. 2446).

Response to Finding No. 2128:

Complaint Counsel has no specific response.

XVI. TESTING PROVES THAT PLASTIC CONTAINING THE ECM ADDITIVE IS BIODEGRADABLE

2129. Numerous gas evolution tests have shown that plastics manufactured with ECM's additive, which otherwise do not biodegrade, have biodegraded to a degree that is substantially more than biodegradation that could have been sourced solely by the ECM additive. (Barlaz, Tr. 2175).

Response to Finding No. 2129:

None of the tests in this case support ECM's claims. CCX-891, ¶¶ 68-72; CCX-891, ¶¶ 75-88; (McCarthy, Tr. 453-455); (McCarthy, Tr. 465-470); CCX-164 (Ohio State University); CCX-174-CCX-176 (Stevens Ecology); CCX-173 (Advance Materials Center); CCX-156; CCX-157; CCX-163; CCX-169-CCX-171 (O.W.S.); CCX-590; CCX-946; CCX-947; CCX-951; CCX-952; CCX-954.

A. Aerobic Testing

2130. Dr. Barlaz testified that a portion of the "biodegradation" in MSW landfills occurs through aerobic processes. (Barlaz, Tr. 2214-15).

Response to Finding No. 2130:

This mischaracterizes Dr. Barlaz's testimony which consistently rejected that aerobic testing is relevant to landfill conditions.

2131. Complaint Counsel's experts Drs. Tolaymat and McCarthy testified that conventional plastics such as polyethylene are otherwise not biodegradable without the ECM additive. (Tolaymat, Tr. 245; McCarthy, Tr. 414).

Response to Finding No. 2131:

This mischaracterizes their testimony. Both testified that conventional plastics are not biodegradable. Both also testified that the ECM Additive does not render conventional plastic biodegradable.

2132. Dr. Sahu explained that both aerobic and anaerobic studies are useful when evaluating whether the ECM additive renders conventional plastics biodegradable. (Sahu, Tr. 1917-18).

Response to Finding No. 2132:

Complaint Counsel has no specific response.

1. RX 465, 2009 SSCCP Aerobic Test

2133. In 2009, the Stazione Sperimentale Carta, Cartoni e Paste per Carta (SSCCP), or Pulp and Paper Experimental Station (an agency of the Chamber of Commerce in Milan), conducted an aerobic composting test of an ECM Plastic. (RX 465)

Response to Finding No. 2133:

Complaint Counsel agrees that the record contains a purported aerobic test of ECM Plastic conducted by SSCCP approximately in 2009, but the remaining portions of the proposed finding are not supported by any reference to the record in violation of the Court's Order on Post-Trial Briefs and mischaracterizes the evidence.

2134. The 2009 SSCCP test was performed under ISO 14855, a standard titled "Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions—Method by analysis of evolved carbon dioxide." (RX 827)

Response to Finding No. 2134:

The proposed finding of fact mischaracterizes the evidence in the record. The report identified in RX-465 reflects that it was conducted under ISO 14855-99 (RX-465 at

2). RX-827 is a copy of ISO 14855-12 . (RX-827 at 1). There is no evidence in the record regarding how these two versions of the standard differ.

2135. ISO 14855 describes a “solid-phase respirometric test system based on mature compost...” (RX 827 at v).

Response to Finding No. 2135:

Complaint Counsel agrees that the test method contains this statement but Respondent failed to include the entire text in which it appears explaining that the test is designed to measure “ultimate biodegradability” and is subject to inaccuracies due to the “priming effect”:

The main method specified in this part of ISO 14855 uses a solid-phase respirometric test system based on mature compost used as a solid bed, a source of nutrients, and an inoculum rich in thermophilic microorganisms. Mature compost is a very heterogeneous and complex material. Therefore, it can be difficult to quantify the residual polymeric material left in the bed at the end of the test, to detect possible low-molecular-mass molecules released into the solid bed by the polymeric material during degradation, and to assess the biomass. As a result, it can be difficult to perform a complete carbon balance. Another difficulty which is sometimes encountered with mature compost is a “priming effect”: the organic matter present in large amounts in the mature compost can undergo polymer-induced degradation, known as the “priming effect”, which affects the measurement of the biodegradability.

To overcome these difficulties and to improve the reliability of the method, the mature compost can be replaced by a solid mineral medium which is used as the composting bed, thus facilitating analyses. This variant can be used to measure the biodegradation in terms of CO₂ evolution, to quantify and analyse the biomass and the residues of polymeric material left in the solid bed at the end of the test, and to perform a complete carbon balance. Furthermore, the method is not significantly affected by the priming effect and can, therefore, be used to assess materials known to cause this problem with mature compost. The mineral bed can also be subjected to an ecotoxicological analysis to verify the absence of any ecotoxic activity in the bed after biodegradation.

(RX-827 at v.) The test method goes on to describe “ultimate aerobic biodegradation” as: “breakdown of an organic compound by microorganisms in the

presence of oxygen into carbon dioxide, water and mineral salts of any other elements present (mineralization) plus new biomass.” (RX-827 at Section 3.1.)

2136. The method is “designed to simulate typical aerobic composting conditions for the organic fraction of solid mixed municipal waste.” (RX 827 at 1).

Response to Finding No. 2136:

See Compl. Counsel’s response to Finding No. 2135.

2137. The test assesses biodegradation by measure of carbon dioxide emitted, adjusted for the amount of carbon dioxide produced in the “blank” vessels. (RX 827 at 9).

Response to Finding No. 2137:

Complaint Counsel has no specific response.

2138. RX 465 involved a test PVC sample, a sample PET, and a sample “orange film.” (RX 465 at 114990).

Response to Finding No. 2138:

Complaint Counsel has no specific response.

2139. Biodegradation of the test sample under aerobic conditions was recorded, including a substantial increase in biodegradation beginning, generally, after the twentieth day of the 90-day compost test. (RX 465 at 114990).

Response to Finding No. 2139:

Complaint Counsel has no specific response.

2140. The average biodegradation among the triplicate data recorded for the PVC sample over the 90 day test period was more than 50%. (RX 465 at 114989).

Response to Finding No. 2140:

Complaint Counsel has no specific response.

2141. The average biodegradation among the triplicate data recorded for the orange film sample was 4.8%. (RX 465 at 114989).

Response to Finding No. 2141:

Complaint Counsel has no specific response.

2142. The average biodegradation among the triplicate data recorded for PET sample was 4.95%. (RX 465 at 114989).

Response to Finding No. 2142:

Complaint Counsel has no specific response.

2143. The SSCCP test marked as RX 465 involved an ECM additive at a 1% load rating. (CCX 202 at 1).

Response to Finding No. 2143:

Complaint Counsel has no specific response.

2144. Dr. Tolaymat testified that PVC, without the ECM additive, is not biodegradable under either aerobic or anaerobic conditions. (Tolaymat, Tr. 288).

Response to Finding No. 2144:

Complaint Counsel has no specific response.

2. RX 467, 2012 SSCCP Aerobic Test

2145. In 2012, the Stazione Sperimentale Carta, Cartoni e Paste per Carta (SSCCP), or Pulp and Paper Experimental Station (an agency of the Chamber of Commerce in Milan), conducted another aerobic composting test of an ECM Plastic under ISO 14855 (RX 827), on behalf of Colplast Srl. (RX 467).

Response to Finding No. 2145:

.Complaint Counsel agrees that the record contains a purported aerobic test of ECM Plastic conducted by SSCCP approximately in 2012, but the remaining portions of the proposed finding are not supported by any reference to the record in violation of the Court's Order on Post-Trial Briefs and mischaracterizes the evidence. (*See* RX-466.)

2146. The test was performed on a sample marked for identification as "BR-2010." (RX 467).

Response to Finding No. 2146:

Complaint Counsel has no specific response.

2147. Test results were reported on January 8, 2013. (RX 467).

Response to Finding No. 2147:

Complaint Counsel has no specific response.

2148. The test marked RX 467 revealed average biodegradation among the triplicate data of approximately 12% over the 90-day test period. (RX 467 at 112490).

Response to Finding No. 2148:

Complaint Counsel has no specific response.

2149. The SSCCP test marked as RX 467 involved an ECM additive at a 1% load rating. (CCX-196 at 2).

Response to Finding No. 2149:

Complaint Counsel has no specific response.

3. RX 468, 2012 SSCCP Aerobic Test

2150. In 2012, the Stazione Sperimentale Carta, Cartoni e Paste per Carta (SSCCP), or Pulp and Paper Experimental Station (an agency of the Chamber of Commerce in Milan), conducted another aerobic composting test of an ECM Plastic under ISO 14855 (RX 827), on behalf of Colplast Srl. (RX 468).

Response to Finding No. 2150:

Complaint Counsel agrees that the record contains a purported aerobic test of ECM Plastic conducted by SSCCP approximately in 2012, but the remaining portions of the proposed finding are not supported by any reference to the record in violation of the Court's Order on Post-Trial Briefs and mischaracterizes the evidence. (*See* RX-469.)

2151. The test was performed on a sample marked for identification as "PR-2011." (RX 468).

Response to Finding No. 2151:

Complaint Counsel has no specific response.

2152. Test results were reported on August 1, 2013. (RX 468).

Response to Finding No. 2152:

Complaint Counsel has no specific response.

2153. The SSCCP test marked as RX 468 reflected an average biodegradation among the triplicate data of approximately 6.9% over the 90-day test period. (RX 268 at 4).

Response to Finding No. 2153:

Complaint Counsel has no specific response.

2154. The SSCCP test marked as RX 468 involved an ECM additive used at 1.1% load rating. (CCX 196 at 4).

Response to Finding No. 2154:

Complaint Counsel has no specific response.

4. RX 273, 2010 Ecologia Applicata Aerobic Test

2155. In November 2010, Ecologia Applicata Srl., a laboratory based in Milano, Italy, reported results from an aerobic test of an ECM-amended plastic artifact (a full coffee capsule). (RX 273).

Response to Finding No. 2155:

Complaint Counsel has no specific response.

2156. The test marked as RX 273 involved a polypropylene plastic with 1% ECM additive. (RX 273).

Response to Finding No. 2156:

Complaint Counsel has no specific response.

2157. The test marked as RX 273 followed the international ISO 14855 standard for aerobic compostability testing. (RX 273 at 2; RX 827 (ISO standard)).

Response to Finding No. 2157:

Complaint Counsel has no specific response.

2158. The test marked as RX 273 reported 19.3% biodegradation of the ECM amended plastic after 180 days of testing. (RX 273 at 3).

Response to Finding No. 2158:

Complaint Counsel has no specific response.

2159. The test further calculated, based on the data observed, that the ECM-amended plastic would be biodegraded to more than 77% after approximately 2 years. (RX 273 at 3).

Response to Finding No. 2159:

Complaint Counsel has no specific response.

2160. In the test marked RX 273, substantial biodegradation did not begin until after 30 days of aerobic testing. (RX 273 at 3).

Response to Finding No. 2160:

Complaint Counsel has no specific response.

2161. The rate of biodegradation, as measured through carbon dioxide emissions, revealed that at the close of testing on day 180, biodegradation was still continuing. (RX 273 at 3).

Response to Finding No. 2161:

Complaint Counsel has no specific response.

5. RX 276, 2011 Ecologia Applicata Aerobic Test

2162. In January 2012, Ecologia Applicata Srl., a laboratory based in Milano, Italy, reported results from an aerobic test of an ECM-amended plastic artifact (polyamide nylon resin with ECM additive). (RX 276).

Response to Finding No. 2162:

Complaint Counsel has no specific response.

2163. The 2011 Ecologia test marked as RX 276 involved an ECM additive at a 1% load rating. (CCX-196 at 2).

Response to Finding No. 2163:

Complaint Counsel has no specific response.

2164. The 2011 Ecologia test marked as RX 276 followed the international ISO 14855 standard for aerobic compostability testing. (RX 276; RX 827 (ISO standard)).

Response to Finding No. 2164:

Complaint Counsel has no specific response.

2165. In the test marked RX 276, substantial biodegradation did not begin until after 20 days of aerobic testing. (RX 276 at 9).

Response to Finding No. 2165:

Complaint Counsel has no specific response.

2166. The 2011 Ecologia test marked as RX 276 was conducted under 62.47% dry solids content, or about 38% moisture. (RX 276 at 4).

Response to Finding No. 2166:

Complaint Counsel has no specific response.

2167. The test marked as RX 276 reported 46.67% biodegradation of the ECM amended plastic after 180 days of aerobic testing. (RX 276 at 11).

Response to Finding No. 2167:

Complaint Counsel has no specific response.

2168. The test further calculated, based on the data observed, that the ECM-amended plastic would be biodegraded to more than 88% after approximately 900 days (or about 2.5 years). (RX 276 at 11).

Response to Finding No. 2168:

Complaint Counsel has no specific response.

6. RX 263, 1998 OWS Aerobic Test

2169. In August 1998, O.W.S. Inc. reported test results from an aerobic test involving a 5% ECM film and a 5% Natural Film (load ratings relating to the amount of ECM added by weight). (RX 263 at 1).

Response to Finding No. 2169:

Complaint Counsel has no specific response.

2170. The test was stopped at 45 days. (RX 263 at 3).

Response to Finding No. 2170:

Complaint Counsel has no specific response.

2171. The test was labeled by OWS as "OWS PFR-1," and it was an aerobic biodegradation under controlled composing conditions. (RX 263 at 1).

Response to Finding No. 2171:

Complaint Counsel has no specific response.

2172. In the test marked RX 263, the 5% ECM film showed 4.5% biodegradation, based on carbon dioxide readings, after 45 days. (RX 263 a 3).

Response to Finding No. 2172:

Complaint Counsel has no specific response.

2173. The 5% ECM Natural Film showed 2.6% biodegradation over the 45 day period. (RX 263 at 3).

Response to Finding No. 2173:

Complaint Counsel has no specific response.

2174. In the test marked RX 263, the average biodegradation of all three cellulose reactors reached only 61.1% after 45 days of testing. (RX 263 at 25).

Response to Finding No. 2174:

Complaint Counsel has no specific response.

2175. The biodegradation of the cellulose samples plateaued around the sixth day of testing, with the three cellulose vessels demonstrating no more than sixty percent biodegradation. (RX 263 at 29).

Response to Finding No. 2175:

Complaint Counsel has no specific response.

7. RX 266, 2000 OWS Aerobic Test

2176. In March 2000, O.W.S. Inc. reported test results from an aerobic test involving 40-gallon trash bags amended with the ECM additive. (RX 266 at 1).

Response to Finding No. 2176:

Complaint Counsel has no specific response.

2177. The test was stopped at 45 days. (RX 266 at 3).

Response to Finding No. 2177:

Complaint Counsel has no specific response.

2178. OWS labeled the test “PFR-5,” and it was an “aerobic biodegradation under controlled composting conditions.” (RX 266 at 1).

Response to Finding No. 2178:

Complaint Counsel has no specific response.

2179. In the test marked RX 266, the 40-gallon trash bag amended with the ECM trash bag biodegraded 5.2% in 45 days of testing. (RX 266 at 3).

Response to Finding No. 2179:

Complaint Counsel has no specific response.

B. Anaerobic Testing

1. Eden Laboratories (“ERL”) Testing Generally

2180. Eden Laboratories (“ERL”) is a laboratory in New Mexico, owned and operated by Thomas Poth. (Poth, Tr. 1440-41).

Response to Finding No. 2180:

Complaint Counsel has no specific response.

2181. Thomas Poth performs scientific studies alongside Dr. Brian Esau. (Poth, Tr. 1440-41).

Response to Finding No. 2181:

Complaint Counsel has no specific response.

2182. Dr. Esau has a master’s degree and a Ph.D. in biochemistry from the University of Illinois at Champaign-Urbana. (Poth, Tr. 1441).

Response to Finding No. 2182:

Complaint Counsel has no specific response.

2183. Dr. Brian Esau participates in daily operation of the laboratory, and performs testing of products. (Poth, Tr. 1441).

Response to Finding No. 2183:

Complaint Counsel has no specific response.

2184. ERL performs D5511 biodegradation testing for clients. (Poth, Tr. 1447-48).

Response to Finding No. 2184:

Complaint Counsel has no specific response.

2185. ERL follows the D5511 protocol, but has made adjustments to that protocol to more closely simulate a landfill. (Poth, Tr. 1449-50).

Response to Finding No. 2185:

Complaint Counsel has no specific response.

2186. ERL has increased the solids content in its D5511 test. (Poth, Tr. 1450).

Response to Finding No. 2186:

Complaint Counsel has no specific response.

2187. Other than the adjustment to solids content (or moisture content), ERL does not alter the D5511 test protocol in any substantial way. (Poth, Tr. 1450).

Response to Finding No. 2187:

Complaint Counsel has no specific response.

2188. ERL increased the solids content of its test so that its D5511 test would look more like a landfill as opposed to a digester. (Poth, Tr. 1450).

Response to Finding No. 2188:

Complaint Counsel has no specific response.

2189. ERL explained to its customers that ERL's testing is not performed at optimal moisture contents and, as a consequence, the performance of test samples in biodegradation testing are not going to be optimal. (Poth, Tr. 1451-52).

Response to Finding No. 2189:

Complaint Counsel has no specific response.

2190. ERL explained that the higher solid content involved in ERL D5511 testing would be more appropriate because the testing was more indicative of performance in a landfill. (Poth, Tr. 1452).

Response to Finding No. 2190:

Complaint Counsel has no specific response.

2191. ERL prepares its test "inoculum" with compost obtained from a local facility. (Poth, Tr. 1457-58).

Response to Finding No. 2191:

Complaint Counsel has no specific response.

2192. ERL conditions its inoculum in an incubator to climatize it to temperature and promote selection of anaerobic microbes. (Poth, Tr. 1459-60).

Response to Finding No. 2192:

Complaint Counsel has no specific response.

2193. ERL combines its compost with sewage sludge to form the final inoculum. (Poth, Tr. 1461).

Response to Finding No. 2193:

Complaint Counsel has no specific response.

2194. Sewage sludge, as used by ERL, consists of the solids that come from the digester in ERL's laboratory. (Poth, Tr. 1461).

Response to Finding No. 2194:

Complaint Counsel has no specific response.

2195. ERL determines the moisture content of its inoculum, and adjusts the liquid added to the inoculum before placing it in the incubator, which helps control the specific moisture content in the final, test-ready inoculum. (Poth, Tr. 1463).

Response to Finding No. 2195:

Complaint Counsel has no specific response.

2196. ERL reviews and controls for the carbon to nitrogen levels, the ammonia levels, and the pH. (Poth, Tr. 1463-64).

Response to Finding No. 2196:

Complaint Counsel has no specific response.

2197. ERL runs all D5511 tests in triplicate, using three separate test vessels for each of the three controls in the D5511 standard, the two additional controls that ERL relies on, and the test vessels. (Poth, Tr. 1466).

Response to Finding No. 2197:

Complaint Counsel has no specific response.

2198. ERL uses a gas chromatograph to analyze the gas emissions produced during the D5511 test. (Poth, Tr. 1468-69).

Response to Finding No. 2198:

Complaint Counsel has no specific response.

2199. ERL calibrates its gas chromatograph monthly and as appropriate. (Poth, Tr. 1469).

Response to Finding No. 2199:

Complaint Counsel has no specific response.

2200. ERL uses a graduated cylinder to record total gas volume and collect gas during the D5511 test. (Poth, Tr. 1468).

Response to Finding No. 2200:

Complaint Counsel has no specific response.

2201. ERL does not use Mylar or Kevlar bags for gas collection because ERL previously determined that those bags leaked methane, and because the bags made gas transfer difficult. (Poth, Tr. 1468).

Response to Finding No. 2201:

Complaint Counsel has no specific response.

2202. ERL calculates the percentage of biodegradation observed in a D5511 test by performing the necessary calculations of theoretical gas yields, and comparing those to the gas yield of the sample (excluding the gas produced by the inoculum blanks). (Poth, Tr. 1469-71).

Response to Finding No. 2202:

Complaint Counsel has no specific response.

2203. ERL's method of calculating the percentage of biodegradation follows the ASTM D5511 standard. (RX 356 at 4).

Response to Finding No. 2203:

Complaint Counsel has no specific response.

2204. ERL has had difficulties in testing certain plastic polymers in the laboratory reactor tests. (Poth, Tr. 1472-73).

Response to Finding No. 2204:

Complaint Counsel has no specific response.

2205. For example, with plastic foams, ERL testified that it was difficult to have decent surface area contact with the inoculum. (Poth, Tr. 1473).

Response to Finding No. 2205:

Complaint Counsel has no specific response.

2206. ERL testified that the foam products frequently consumed too much space in the test vessel. (Poth, Tr. 1473).

Response to Finding No. 2206:

Complaint Counsel has no specific response.

2207. ERL's testing protocols, which follow the D5511 test, are not suitable for plastics that have components inhibitory to microorganisms. (Poth, Tr. 1471).

Response to Finding No. 2207:

Complaint Counsel has no specific response.

2208. ERL does not refresh inoculum during D5511 tests that are run over a long duration. (Poth, Tr. 1474).

Response to Finding No. 2208:

Complaint Counsel has no specific response.

2209. ERL has seen plateaus in the biodegradation in long term tests, which last for a period of up to two months before biodegradation in the test system sometimes resumes. (Poth, Tr. 1474).

Response to Finding No. 2209:

Complaint Counsel has no specific response.

2210. ERL uses a standard format for reporting data in a D5511 test. (Poth, Tr. 1480-81).

Response to Finding No. 2210:

Complaint Counsel has no specific response.

2211. Dr. Barlaz visited Eden Laboratories in about December 2012 for a meeting. (Barlaz, Tr. 2274).

Response to Finding No. 2211:

Complaint Counsel has no specific response.

2212. His visit to ERL predated and was unrelated to his participation as an expert witness in this case. (Barlaz, Tr. 2274-75).

Response to Finding No. 2212:

Complaint Counsel has no specific response.

2213. Having reviewed ERL's biodegradation testing, Dr. Barlaz was comfortable that ERL's testing was strictly under anaerobic conditions and that Eden Labs had the appropriate capability to monitor gas volume and composition. (Barlaz, Tr. 2275).

Response to Finding No. 2213:

Complaint Counsel has no specific response.

2214. Dr. Barlaz observed ERL's test reactors. (Barlaz, Tr. 2275).

Response to Finding No. 2214:

Complaint Counsel has no specific response.

2215. Dr. Barlaz reviewed ERL's testing process with ERL's owner, Thomas Poth. (Barlaz, Tr. 2275).

Response to Finding No. 2215:

Complaint Counsel has no specific response.

2216. Dr. Barlaz was comfortable that ERL's biodegradation testing was "legitimate anaerobic testing." (Barlaz, Tr. 2275).

Response to Finding No. 2216:

Complaint Counsel has no specific response.

a. RX 248, Eden Laboratories No. 092511B

2217. In September 2011, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 248).

Response to Finding No. 2217:

Complaint Counsel has no specific response.

2218. ERL performed the test on behalf of FP International, using test samples that were provided by FP. (RX 248 at 1).

Response to Finding No. 2218:

Complaint Counsel has no specific response.

2219. The test marked RX 248 followed the ASTM D5511 protocol. (RX 248 at 1).

Response to Finding No. 2219:

Complaint Counsel has no specific response.

2220. The solid content of the test was 48.4%. (RX 248 at 1).

Response to Finding No. 2220:

Complaint Counsel has no specific response.

2221. The study authors recorded gas evolution data on a weekly basis. (RX 248 at 2-4).

Response to Finding No. 2221:

Complaint Counsel has no specific response.

2222. The study authors calculated pH volumes, volatile fatty acids, and ammonium nitrogen levels. (RX 248 at 1).

Response to Finding No. 2222:

Complaint Counsel has no specific response.

2223. The test marked RX 248, as with all ERL D5511 tests, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and two test samples, all of which were run in triplicate. (RX 248; Poth, Tr. 1466-67).

Response to Finding No. 2223:

Complaint Counsel has no specific response.

2224. The test marked RX 248 included two “test” plastic samples both amended with the ECM additive at 1% by weight. (RX 248 at 1-2).

Response to Finding No. 2224:

Complaint Counsel has no specific response.

2225. The two test samples, marked “ERL #223” and “ERL #224” in RX 248, were polyethylene “airbags.” (Blood, Dep. at 166-169)

Response to Finding No. 2225:

Complaint Counsel has no specific response.

2226. The test marked RX 248 involved a negative control that was an “airbag control,” a plastic that was not amended with the ECM additive. (RX 248).

Response to Finding No. 2226:

Complaint Counsel has no specific response.

2227. The test marked RX 248 revealed biodegradation of the two ECM amended plastics in the amount of **11.5%** for sample “223” and **15.2%** for sample “224” after 120 days of anaerobic testing. (RX 248 at 5).

Response to Finding No. 2227:

Complaint Counsel has no specific response.

2228. In the test marked RX 248, the amount of methane recorded in sample 223 was 3,884.2 mL. (RX 248 at 5).

Response to Finding No. 2228:

Complaint Counsel has no specific response.

2229. The amount of methane recorded from sample 224 was 4,761.8 mL. (RX 248 at 5).

Response to Finding No. 2229:

Complaint Counsel has no specific response.

2230. In the test marked RX 248, the total mass of the sample “223” was 20 grams. (RX 248 at 5).

Response to Finding No. 2230:

Complaint Counsel has no specific response.

2231. The ECM additive, at 1% by weight, had a mass of 0.2 grams. (RX 248).

Response to Finding No. 2231:

Complaint Counsel has no specific response.

2232. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968).

Response to Finding No. 2232:

Complaint Counsel has no specific response.

2233. At 3,884.2 mL, the amount of methane recorded from test sample “223” in RX 248 was nearly twenty times the biodegradation that could have been sourced from the ECM additive alone. (RX 248 at 5; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2233:

Complaint Counsel has no specific response.

2234. In the test marked RX 248, the total mass of the sample marked “224” was 20 grams. (RX 248).

Response to Finding No. 2234:

Complaint Counsel has no specific response.

2235. The ECM additive, at 1% by weight, had a mass of 0.2 grams. (RX 248).

Response to Finding No. 2235:

Complaint Counsel has no specific response.

2236. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from the 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968).

Response to Finding No. 2236:

Complaint Counsel has no specific response.

2237. At 4,761.8 mL, the amount of methane recorded from the test sample “224” is more than twenty five times the amount of biodegradation that could have been sourced from the ECM additive alone. (RX 248 at 5; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2237:

Complaint Counsel has no specific response.

2238. The cumulative amount of methane collected from test RX 248 represented about fifty percent of the total gas emissions. (RX 248 at 5).

Response to Finding No. 2238:

Complaint Counsel has no specific response.

2239. The study author, Eden Laboratories, reported that it was “obvious that biodegradation has occurred on the treated sample. (RX 248 at 6).

Response to Finding No. 2239:

Complaint Counsel has no specific response.

2240. Based on the data collected, the study author reported that, as if the date of the report, “the treated sample is continuing to biodegrade.” (RX 248).

Response to Finding No. 2240:

Complaint Counsel has no specific response.

b. RX 839, Eden Laboratories No. 070312C

2241. In July 2012, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 839).

Response to Finding No. 2241:

Complaint Counsel has no specific response.

2242. ERL performed the test on behalf of Shields Bag & Printing. (RX 839 at 113977).

Response to Finding No. 2242:

Complaint Counsel has no specific response.

2243. The test marked RX 839 followed the ASTM D5511 protocol. (RX 839 at 113977).
The solid content of the test was 48.4%. (RX 839 at 113977).

Response to Finding No. 2243:

Complaint Counsel has no specific response.

2244. The study authors recorded gas evolution data on a weekly basis. (RX 839 at 113978-80).

Response to Finding No. 2244:

Complaint Counsel has no specific response.

2245. The study authors calculated pH volumes, volatile fatty acids, and ammonium nitrogen levels. (RX 839 at 113977).

Response to Finding No. 2245:

Complaint Counsel has no specific response.

2246. The test marked RX 839, as with all ERL D5511 tests, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and one test sample, all of which were run in triplicate. (RX 839 at 113982; Poth, Tr. 1466-67).

Response to Finding No. 2246:

Complaint Counsel has no specific response.

2247. The test marked RX 839 included a “test” plastic sample amended with the ECM additive at 1% by weight. (RX 839 at 113978).

Response to Finding No. 2247:

Complaint Counsel has no specific response.

2248. The test sample, marked “476A” was a clear film. (RX 839 at 113982).

Response to Finding No. 2248:

Complaint Counsel has no specific response.

2249. The test marked RX 839 involved a negative control that was a “control film,” a plastic that was not amended with the ECM additive. (RX 839 at 113982).

Response to Finding No. 2249:

Complaint Counsel has no specific response.

2250. The test marked RX 839 revealed biodegradation of the ECM amended plastic in the amount of 7.9% after 22 weeks of anaerobic testing. (RX 839 at 113982).

Response to Finding No. 2250:

Complaint Counsel has no specific response.

2251. In the test marked RX 839, the amount of methane recorded in sample 476A was 2,053.2 mL. (RX 839 at 113982).

Response to Finding No. 2251:

Complaint Counsel has no specific response.

2252. In the test marked RX 839, the total mass of the sample “476A” was 20 grams. (RX 839 at 113982).

Response to Finding No. 2252:

Complaint Counsel has no specific response.

2253. The ECM additive, at 1% by weight, had a mass of 0.2 grams. (RX 839; Barlaz, Tr. 2252-58).

Response to Finding No. 2253:

Complaint Counsel has no specific response.

2254. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2254:

Complaint Counsel has no specific response.

2255. At 2,053.2 mL, the amount of methane recorded from test sample “476A” in RX 839 was eleven times the amount of biodegradation that could have been sourced from the ECM additive alone. (RX 839 at 113982; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2255:

Complaint Counsel has no specific response.

2256. The amount of methane recorded in the inoculum blanks was just 792.7 mL. (RX 839 at 113982).

Response to Finding No. 2256:

Complaint Counsel has no specific response.

2257. The study author, Eden Laboratories, reported that it was “obvious that biodegradation has occurred on the treated sample.” (RX 839 at 113982).

Response to Finding No. 2257:

Complaint Counsel has no specific response.

2258. Based on the data collected, the study author reported that, as if the date of the report, “the treated sample is continuing to biodegrade.” (RX 839 at 113982).

Response to Finding No. 2258:

Complaint Counsel has no specific response.

c. RX 403, Eden Laboratories Fellows Test

2259. In October 2012 through February 2013, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 403).

Response to Finding No. 2259:

Complaint Counsel has no specific response.

2260. ERL performed the test on behalf of Fellows. (RX 403 at 001048).

Response to Finding No. 2260:

Complaint Counsel has no specific response.

2261. The test marked RX 403 followed the ASTM D5511 protocol. (RX 403 at 001048).

Response to Finding No. 2261:

Complaint Counsel has no specific response.

2262. The test report is an ERL “update.” (RX 403).

Response to Finding No. 2262:

Complaint Counsel has no specific response.

2263. ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2263:

Complaint Counsel has no specific response.

2264. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2264:

Complaint Counsel has no specific response.

2265. The test marked RX 403, as with all ERL D5511 tests, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), two negative controls consisting of an untreated plastics, and two test samples, all of which were run in triplicate. (RX 403 at 001048; Poth, Tr. 1466-67).

Response to Finding No. 2265:

Complaint Counsel has no specific response.

2266. The test marked RX 403 included two “test” plastic samples amended with the ECM additive at 1% by weight. (RX 403 at 001048).

Response to Finding No. 2266:

Complaint Counsel has no specific response.

2267. One test sample designated “568-P1004” included a “1% ECM BioFilm Resin.” (RX 403 at 001048).

Response to Finding No. 2267:

Complaint Counsel has no specific response.

2268. One test sample designated “570-TPU” included a “1% ECM BioFilm Resin Pink.” (RX 403 at 001048).

Response to Finding No. 2268:

Complaint Counsel has no specific response.

2269. The test marked RX 403 involved negative controls that were control resins, plastics that was not amended with the ECM additive and contained “0% ECM.” (RX 403 at 001052).

Response to Finding No. 2269:

Complaint Counsel has no specific response.

2270. ERL recorded data for the test marked RX 403 through 197 days. (RX 403 at 001052).

Response to Finding No. 2270:

Complaint Counsel has no specific response.

2271. In the test marked RX 403, ERL recorded biodegradation of the ECM amended sample “568-P1004” in the amount of 71.8% after 197 days of anaerobic testing. (RX 403 at 001052).

Response to Finding No. 2271:

Complaint Counsel has no specific response.

2272. For the sample marked 568-P1004, Dr. Barlaz calculated a net methane yield of 7,548.9 mL, meaning that the test produced 7,548.9 mL more than the inoculum blanks. (RX 403; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2272:

Complaint Counsel has no specific response.

2273. The total mass of the sample “568-P1004” was 20 grams. (RX 403 at 001052).

Response to Finding No. 2273:

Complaint Counsel has no specific response.

2274. The ECM additive, at 1% by weight, had a mass of 0.2 grams. (RX 403; Barlaz, Tr. 2252-58).

Response to Finding No. 2274:

Complaint Counsel has no specific response.

2275. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2275:

Complaint Counsel has no specific response.

2276. At a net methane production of 7,548.9 mL, the amount of methane recorded from test sample “568-P1004” in RX 403 was more than forty times the amount that could have theoretically been sourced from the ECM additive. (RX 403 at 113982; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2276:

Complaint Counsel has no specific response.

2277. In the test marked RX 403, ERL recorded biodegradation of the ECM amended sample “570-TPU” in the amount of 16.1% after 197 days of anaerobic testing. (RX 403 at 001052).

Response to Finding No. 2277:

Complaint Counsel has no specific response.

2278. For the sample marked 570-TPU, Dr. Barlaz calculated a net methane yield of 2,337.5 mL, meaning that the test produced 2,337.5 mL more than the inoculum blanks. (RX 403; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2278:

Complaint Counsel has no specific response.

2279. The total mass of the sample “570-TPU” was 20 grams. (RX 403 at 001052).

Response to Finding No. 2279:

Complaint Counsel has no specific response.

2280. The ECM additive, at 1% by weight, had a mass of 0.2 grams. (RX 403; Barlaz, Tr. 2252-58).

Response to Finding No. 2280:

Complaint Counsel has no specific response.

2281. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2281:

Complaint Counsel has no specific response.

2282. At 2,337.5 mL, the amount of methane recorded from test sample “570-TPU” in RX 403 was more than twelve times the amount of biodegradation that could have been sourced from the ECM additive alone. (RX 403 at 113982; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2282:

Complaint Counsel has no specific response.

2283. The ratio of mean substrate methane to mean inoculum methane was more than 5:1, indicating that the biodegradation observed in the test environment was confidently ascribed to the test article. (RX 968; Barlaz, Tr. 2247-50).

Response to Finding No. 2283:

Complaint Counsel has no specific response.

d. RX 402, Eden Laboratories FP International Testing

2284. In October 2013 through February 2014, Eden Laboratories reported test data from an anaerobic biodegradation test in laboratory reactors. (RX 402).

Response to Finding No. 2284:

Complaint Counsel has no specific response.

2285. ERL performed the test on behalf of FP International. (RX 402 at 001046).

Response to Finding No. 2285:

Complaint Counsel has no specific response.

2286. The test marked RX 402 followed a modernized and more recent ASTM protocol. (RX 402 at 001046).

Response to Finding No. 2286:

Complaint Counsel has no specific response.

2287. The test report is an ERL “update.” (RX 402).

Response to Finding No. 2287:

Complaint Counsel has no specific response.

2288. ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2288:

Complaint Counsel has no specific response.

2289. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2289:

Complaint Counsel has no specific response.

2290. The test marked RX 402, as with ERL biodegradation tests modeled after D5511, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and two test samples, all of which were run in triplicate. (RX 402 at 001046; Poth, Tr. 1466-67).

Response to Finding No. 2290:

Complaint Counsel has no specific response.

2291. The test marked RX 402 included two “test” plastic sample amended with the ECM additive at 1% and 1.75% by weight. (RX 402 at 001046).

Response to Finding No. 2291:

Complaint Counsel has no specific response.

2292. One test sample designated “726” included a “Film with 1% ECM.” (RX 402 at 001046).

Response to Finding No. 2292:

Complaint Counsel has no specific response.

2293. One test sample designated “727” included a “Film with 1.75% ECM.” (RX 402 at 001046).

Response to Finding No. 2293:

Complaint Counsel has no specific response.

2294. The test marked RX 402 involved a negative control that was a control film containing “0% ECM.” (RX 402 at 001046).

Response to Finding No. 2294:

Complaint Counsel has no specific response.

2295. ERL recorded data for the test marked RX 402 through 290 days. (RX 402 at 001042).

Response to Finding No. 2295:

Complaint Counsel has no specific response.

2296. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2296:

Complaint Counsel has no specific response.

2297. In the test marked RX 402, ERL recorded biodegradation of the ECM amended sample “728” in the amount of 11.5% after 290 days of anaerobic testing. (RX 402 at 1042).

Response to Finding No. 2297:

Complaint Counsel has no specific response.

2298. For the sample marked 727, Dr. Barlaz calculated a net methane yield of 1,352.2 mL, meaning that the test produced 1,352.2 mL more than the inoculum blanks. (RX 402; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2298:

Complaint Counsel has no specific response.

2299. The total mass of the sample “727” was 20 grams. (RX 402 at 001042; RX 968).

Response to Finding No. 2299:

Complaint Counsel has no specific response.

2300. The ECM additive, at 1% by weight, had a mass of 0.35 grams. (RX 402; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2300:

Complaint Counsel has no specific response.

2301. Based on Dr. Barlaz’s conservative calculation, the total theoretical yield of methane from 0.35 grams of the ECM additive is 326.55 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2301:

Complaint Counsel has no specific response.

2302. At a net methane production of 1,352.2 mL, the amount of methane recorded from test sample “727” in RX 402 was more than four times the amount of biodegradation that could have theoretically been sourced from the ECM additive alone. (RX 402 at 001042; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2302:

Complaint Counsel has no specific response.

e. CCX-548, Eden Laboratories FP International Testing

2303. In October 2013 through February 2014, Eden Laboratories reported test data from an anaerobic biodegradation test in laboratory reactors. (CCX 548).

Response to Finding No. 2303:

Complaint Counsel has no specific response.

2304. ERL performed the test on behalf of FP International. (CCX 548 at 1).

Response to Finding No. 2304:

Complaint Counsel has no specific response.

2305. The test marked CCX 548 followed a modernized and more recent ASTM protocol. (CCX 548 at 1).

Response to Finding No. 2305:

Complaint Counsel has no specific response.

2306. The test report is an ERL “update.” (CCX 548).

Response to Finding No. 2306:

Complaint Counsel has no specific response.

2307. ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2307:

Complaint Counsel has no specific response.

2308. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2308:

Complaint Counsel has no specific response.

2309. The test marked CCX 548, as with other ERL biodegradation tests modeled after D5511, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and a test sample, all of which were run in triplicate. (CCX 548 at 1; Poth, Tr. 1466-67).

Response to Finding No. 2309:

Complaint Counsel has no specific response.

2310. The test marked CCX 548 included a “test” plastic amended with the ECM additive and labeled “723 – Biodegradable EPS FloPak.” (CCX 548 at 1).

Response to Finding No. 2310:

Complaint Counsel has no specific response.

2311. ERL recorded data for the test marked CCX 548 through 291 days. (CCX 548 at 1).

Response to Finding No. 2311:

Complaint Counsel has no specific response.

2312. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2312:

Complaint Counsel has no specific response.

2313. In the test marked CCX 548, ERL recorded biodegradation of the ECM amended sample “723” in the amount of 30.4% after 291 days of anaerobic testing. (CCX 548 at 1).

Response to Finding No. 2313:

Complaint Counsel has no specific response.

2314. For the sample marked 723, ERL reported 2,705.9 mL of total methane, compared to just 383.4 mL of methane in the inoculum blank. (CCX 548 at 1).

Response to Finding No. 2314:

Complaint Counsel has no specific response.

2315. The net methane is therefore 2322.5 mL in the “723” sample vessels. (CCX 548 at 1).

Response to Finding No. 2315:

Complaint Counsel has no specific response.

2316. The sample mass of the “723” test sample was 7.5 grams. (CCX 548 at 1).

Response to Finding No. 2316:

Complaint Counsel has no specific response.

2317. The amount of the ECM additive is not provided in the report marked CCX 548. (CCX 548 at 1).

Response to Finding No. 2317:

Complaint Counsel has no specific response.

2318. FP International testified at deposition that FP had manufactured a polystyrene product containing the ECM additive at 1% by weight. (RX 871 (Blood, Dep. at 57-58)).

Response to Finding No. 2318:

Complaint Counsel has no specific response.

2319. Even assuming that the ECM additive was introduced at 5% by weight, the weight of the ECM additive in the 7.5 gram “723” sample tested in CCX 548 would have been 0.375 grams. (CCX 548; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2319:

Complaint Counsel has no specific response.

2320. Based on Dr. Barlaz’s conservative calculations, the total theoretical yield of methane from 0.375 grams of the ECM additive is 349.875 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2320:

Complaint Counsel has no specific response.

2321. At a net methane production of 2322.5 mL, the amount of methane recorded from test sample “723” in CCX 548 was more than 6.5 times the amount of biodegradation that could have theoretically been sourced from the ECM additive alone. (CCX 548 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2321:

Complaint Counsel has no specific response.

f. CCX 546, Eden Laboratories FP International Testing

2322. In November 2013, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (CCX 546).

Response to Finding No. 2322:

Complaint Counsel has no specific response.

2323. ERL performed the test on behalf of FP International. (CCX 546 at 1).

Response to Finding No. 2323:

Complaint Counsel has no specific response.

2324. The test marked CCX 546 is an ERL “update.” (CCX 546).

Response to Finding No. 2324:

Complaint Counsel has no specific response.

2325. ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2325:

Complaint Counsel has no specific response.

2326. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2326:

Complaint Counsel has no specific response.

2327. The test marked CCX 546, as with other ERL biodegradation tests modeled after D5511, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and two test samples, all of which were run in triplicate. (CCX 546 at 1; Poth, Tr. 1466-67).

Response to Finding No. 2327:

Complaint Counsel has no specific response.

2328. The test marked CCX 546 included two “test” plastic containing the ECM additive, labeled “223A-TKN Green” and “224A-HOP Green.” (CCX 546 at 1).

Response to Finding No. 2328:

Complaint Counsel has no specific response.

2329. The ERL test marked CCX 546 does not report the amount of ECM additive included in the test samples. (CCX 546 at 1).

Response to Finding No. 2329:

Complaint Counsel has no specific response.

2330. James Blood, FP International, testified at deposition that the test would have involved a 1% ECM additive product. (RX 871 (Blood, Dep. at 164-65)).

Response to Finding No. 2330:

Complaint Counsel has no specific response.

2331. James Blood of FP International testified that the primary difference between the test samples marked “TKN” and “HOP” was the location or factory where the samples were manufactured. (RX 871 (Blood, Dep. at 164-65)).

Response to Finding No. 2331:

Complaint Counsel has no specific response.

2332. ERL recorded data for the test marked CCX 546 through 977 days. (CCX 546 at 1).

Response to Finding No. 2332:

Complaint Counsel has no specific response.

2333. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2333:

Complaint Counsel has no specific response.

2334. In the test marked CCX 546, ERL recorded biodegradation of the ECM amended sample “223A” in the amount of 36.7% after 977 days of anaerobic testing. (CCX 546 at 1).

Response to Finding No. 2334:

Complaint Counsel has no specific response.

2335. In the test marked CCX 546, ERL recorded biodegradation of the ECM amended sample “224A” in the amount of 39.8% after 977 days of anaerobic testing. (CCX 546 at 1).

Response to Finding No. 2335:

Complaint Counsel has no specific response.

2336. For the sample marked 223A, ERL reported 9,268.8 mL of total methane, compared to just 1,805.9 mL of methane in the inoculum blank. (CCX 546 at 1).

Response to Finding No. 2336:

Complaint Counsel has no specific response.

2337. The net methane is therefore 7,462.9 mL in the “223A” sample vessels. (CCX 546 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2337:

Complaint Counsel has no specific response.

2338. For the sample marked 224A, ERL reported 9,970.8 mL of total methane, compared to just 1,805.9 mL of methane in the inoculum blank. (CCX 546 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2338:

Complaint Counsel has no specific response.

2339. The net methane is therefore 8,164.9 mL in the “224A” sample vessels. (CCX 546 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2339:

Complaint Counsel has no specific response.

2340. The sample mass of the “223A” test sample was 20 grams. (CCX 546 at 1).

Response to Finding No. 2340:

Complaint Counsel has no specific response.

2341. The sample mass of the “224A” sample was 20 grams. (CCX 546 at 1).

Response to Finding No. 2341:

Complaint Counsel has no specific response.

2342. At 1% by weight, the sample mass of the ECM additive in the 223A and 224A samples was 0.20 grams. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2342:

Complaint Counsel has no specific response.

2343. Based on Dr. Barlaz’s conservative calculations, the total theoretical yield of methane from 0.2 grams of the ECM additive is 186.6 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2343:

Complaint Counsel has no specific response.

2344. At a net methane production of 7,462.9 mL, the amount of methane recorded from test sample “223A” in CCX 546 was about forty (40) times the amount that could have possibly been sourced from the ECM additive. (CCX 546 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2344:

Complaint Counsel has no specific response.

2345. At a net methane production of 8,164.9 mL, the amount of methane recorded from test sample “224A” in CCX 546 was about forty-four (44) times the amount of biodegradation that could have possibly been sourced from the ECM additive. (CCX 546 at 1; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2345:

Complaint Counsel has no specific response.

g. CCX 534, Eden Laboratories MicroTek Testing

2346. In May 2012 through March 2013, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (CCX 534).

Response to Finding No. 2346:

Complaint Counsel has no specific response.

2347. ERL performed the test on behalf of MicroTek. (CCX 534 at 009017).

Response to Finding No. 2347:

Complaint Counsel has no specific response.

2348. The test marked CCX 534 was performed on a polyethylene film. (CCX 534 at 009017).

Response to Finding No. 2348:

Complaint Counsel has no specific response.

2349. The test marked CCX 534 is an ERL “update.” (CCX 534). ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2349:

Complaint Counsel has no specific response.

2350. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2350:

Complaint Counsel has no specific response.

2351. The test marked CCX 534, as with other ERL biodegradation tests modeled after D5511, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), a negative control consisting of an untreated plastic, and a test sample, all of which were run in triplicate. (CCX 534 at 009017; Poth, Tr. 1466-67).

Response to Finding No. 2351:

Complaint Counsel has no specific response.

2352. The test marked CCX 534 included a “test” plastic amended with the ECM additive, labeled “BIO10115 ECM FILM.” (CCX 534 at 009017).

Response to Finding No. 2352:

Complaint Counsel has no specific response.

2353. The ERL test marked CCX 534 does not report the amount of ECM additive included in the test samples. (CCX 534 at 009017).

Response to Finding No. 2353:

Complaint Counsel has no specific response.

2354. ERL recorded data for the test marked CCX 534 through 485 days. (CCX 534 at 009017).

Response to Finding No. 2354:

Complaint Counsel has no specific response.

2355. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2355:

Complaint Counsel has no specific response.

2356. In the test marked CCX 534, ERL recorded biodegradation of the ECM amended sample “BIO10115” in the amount of 45.2% after 485 days of anaerobic testing. (CCX 534 at 009017).

Response to Finding No. 2356:

Complaint Counsel has no specific response.

2357. For the sample marked BIO10115, ERL reported 7,588.2 mL of total methane, compared to just 1,781.7 mL of methane in the inoculum blank. (CCX 534 at 009017).

Response to Finding No. 2357:

Complaint Counsel has no specific response.

2358. The net methane is therefore 5,806.5 between the test vessels and the inoculum vessels. (CCX 534 at 009017; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2358:

Complaint Counsel has no specific response.

2359. The sample mass of the “BIO10115” test sample was 13 grams. (CCX 534 at 009017).

Response to Finding No. 2359:

Complaint Counsel has no specific response.

2360. Even assuming that the ECM additive was included at 5% by weight, the sample mass of the ECM additive in the BIO10115 sample would have been 0.65 grams. (CCX 534 at 009017; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2360:

Complaint Counsel has no specific response.

2361. Based on Dr. Barlaz’s conservative calculations, the total theoretical yield of methane from 0.65 grams of the ECM additive is 606.45 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2361:

Complaint Counsel has no specific response.

2362. At a net methane production of 5,806.5 mL, the amount of methane recorded from test sample “BIO10115” in CCX 534 was about nine and one half (9.5x) times the

amount of biodegradation could have possibly been sourced from the ECM additive. (CCX 534 at 009017; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2362:

Complaint Counsel has no specific response.

h. CCX 547, Eden Laboratories EcoLab Testing

2363. In March 2013 through September 2013, Eden Laboratories reported test data from an anaerobic D5511 biodegradation test in laboratory reactors. (CCX 547).

Response to Finding No. 2363:

Complaint Counsel has no specific response.

2364. ERL performed the test on behalf of EcoLab. (CCX 547 at 009008).

Response to Finding No. 2364:

Complaint Counsel has no specific response.

2365. The test marked CCX 547 is an ERL “update.” (CCX 547).

Response to Finding No. 2365:

Complaint Counsel has no specific response.

2366. ERL produces update reports to keep customers abreast of the status of testing. (Poth, Tr. 1477).

Response to Finding No. 2366:

Complaint Counsel has no specific response.

2367. Update reports do not include all of the information relevant to the test, or all of the information included in a final report. (Poth, Tr. 1475).

Response to Finding No. 2367:

Complaint Counsel has no specific response.

2368. The test marked CCX 547, as with other ERL biodegradation tests modeled after D5511, included the use of an inoculum blank, a negative control (polyethylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (CCX 547 at 009017; Poth, Tr. 1466-67).

Response to Finding No. 2368:

Complaint Counsel has no specific response.

2369. The test marked CCX 547 included two “test” plastic containing the ECM additive, on sample labeled “538A BIO10115 ECM Film,” and another sample labeled “539A BIO10115 ECM Film.” (CCX 547 at 009008).

Response to Finding No. 2369:

Complaint Counsel has no specific response.

2370. ERL recorded data for the test marked CCX 547 through 452 days. (CCX 547 at 009004-08).

Response to Finding No. 2370:

Complaint Counsel has no specific response.

2371. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2371:

Complaint Counsel has no specific response.

2372. In the test marked CCX 547, ERL recorded biodegradation of the ECM amended sample “538A” in the amount of 19.6% after 452 days of anaerobic testing. (CCX 547 at 009008).

Response to Finding No. 2372:

Complaint Counsel has no specific response.

2373. In the test marked CCX 547, ERL recorded biodegradation of the ECM amended sample “539A” in the amount of 46.5% after 452 days of anaerobic testing. (CCX 547 at 009008).

Response to Finding No. 2373:

Complaint Counsel has no specific response.

2374. The ERL test marked CCX 547 does not report the amount of ECM additive included in the test samples. (CCX 547 at 009008).

Response to Finding No. 2374:

Complaint Counsel has no specific response.

2375. For the sample marked 538A, ERL reported 5,356.4 mL of total methane, compared to just 1093.3 mL of methane in the inoculum blank. (CCX 547 at 009008).

Response to Finding No. 2375:

Complaint Counsel has no specific response.

2376. The net methane for sample 538A is therefore 4,263.1 mL between the test vessels and the inoculum vessels. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2376:

Complaint Counsel has no specific response.

2377. For the sample marked 539A, ERL reported 9,778.7 mL of total methane, compared to 1093.3 mL of methane in the inoculum blank. (CCX 547 at 009008).

Response to Finding No. 2377:

Complaint Counsel has no specific response.

2378. The net methane for sample 539A is therefore 8,685.4 mL between the test vessels and the inoculum vessels. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2378:

Complaint Counsel has no specific response.

2379. The sample masses of the “538A” and “539A” test samples were 20 grams each. (CCX 547 at 009008).

Response to Finding No. 2379:

Complaint Counsel has no specific response.

2380. Even assuming that the ECM additive was included at 5% by weight in the 538A sample (an amount higher than the 1-2% that customers ordinarily use), the sample mass of the ECM additive in the 538A sample would have been 1 gram. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2380:

Complaint Counsel has no specific response.

2381. Even assuming that the ECM additive was included in the 539A sample at 15% (an amount substantially higher than the 1-2% that customers ordinarily use), the sample mass of the ECM additive in the 539A sample would have been 3 grams. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2381:

Complaint Counsel has no specific response.

2382. Based on Dr. Barlaz’s conservative calculations, the total theoretical yield of methane from 1 gram of the ECM additive is 933 mL of methane, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2382:

Complaint Counsel has no specific response.

2383. The total theoretical yield of methane from 3 grams of the ECM additive is 2,799 mL, calculated by multiplying the grams of ECM additive by Dr. Barlaz’s calculation of the mL of methane per gram of ECM additive in the sample. (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2383:

Complaint Counsel has no specific response.

2384. At a net methane production of 4,263.1 mL, the amount of methane recorded from test sample “538A” in CCX 547 was more than four and one half (4.5x) times the amount of biodegradation (933 mL) that could have possibly been sourced from the ECM additive assuming even a 5% load rate for same. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2384:

Complaint Counsel has no specific response.

2385. At a net methane production of 8,685.4 mL, the amount of methane recorded from test sample “539A” in CCX 547 was more than three (3x) times the amount of biodegradation (2,799 mL) that could have possibly been sourced from the ECM additive assuming even a 15% load rate for same. (CCX 547 at 009008; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2385:

Complaint Counsel has no specific response.

1. Northeast Laboratories Testing Generally

2386. Alan Johnson testified as the owner of Northeast Laboratories (“NE Labs”) in Berlin, Connecticut. (Johnson, Tr. 1554-57).

Response to Finding No. 2386:

Complaint Counsel has no specific response.

2387. Alan Johnson serves as the current laboratory director at Northeast Laboratories. (Johnson, Tr. 1554).

Response to Finding No. 2387:

Complaint Counsel has no specific response.

2388. Mr. Johnson has a bachelor's of science from the University of Connecticut where he majored in biology and minored in chemistry. (Johnson, Tr. 1555).

Response to Finding No. 2388:

Complaint Counsel has no specific response.

2389. Northeast Laboratories houses several laboratory divisions at its offices, including chemistry and microbiology labs. (Johnson, Tr. 1556-58).

Response to Finding No. 2389:

Complaint Counsel has no specific response.

2390. NE Labs environmental and chemistry laboratory divisions have been certified by several governmental bodies, including the EPA, FDA, CDC, and the State of Connecticut. (Johnson, Tr. 1558).

Response to Finding No. 2390:

Complaint Counsel has no specific response.

2391. NE Labs' biodegradation testing is a branch of NE Lab's testing services, however NE Labs relies on its other laboratory divisions, including its chemistry lab, for portions of the biodegradation testing work. (Johnson, Tr. 1560-61).

Response to Finding No. 2391:

Complaint Counsel has no specific response.

2392. With respect to its certifications, NE Labs has been inspected by governmental bodies, and NE Labs passed those inspections. (Johnson, Tr. 1559-61).

Response to Finding No. 2392:

Complaint Counsel has no specific response.

2393. NE Labs began performing biodegradation testing around 2005. (Johnson, Tr. 1560).

Response to Finding No. 2393:

Complaint Counsel has no specific response.

2394. NE Labs' biodegradation testing business was initiated and operated by Dr. William Ullmann. (Johnson, Tr. 1560).

Response to Finding No. 2394:

Complaint Counsel has no specific response.

2395. Dr. Ullmann founded NE Labs in 1977. (Johnson, Tr. 1562).

Response to Finding No. 2395:

Complaint Counsel has no specific response.

2396. He was the former director of the State of Connecticut's Public Health Laboratory. (Johnson, Tr. 1562).

Response to Finding No. 2396:

Complaint Counsel has no specific response.

2397. Dr. Ullmann had a Ph.D. in microbiology. (Johnson, Tr. 1562).

Response to Finding No. 2397:

Complaint Counsel has no specific response.

2398. Dr. Ullmann was responsible for developing NE Lab's biodegradation testing protocols, and he performed those studies until he passed away in 2011. (Johnson, Tr. 1563).

Response to Finding No. 2398:

Complaint Counsel has no specific response.

2399. NE Labs would begin biodegradation testing by obtaining test samples directly from customers, and then calculating the carbon content of same. (Johnson, Tr. 1564).

Response to Finding No. 2399:

Complaint Counsel has no specific response.

2400. NE Labs generally follows the ASTM D5511 protocol, but NE Labs uses metal canisters as reactor vessels instead of glass vessels. (Johnson, Tr. 1565).

Response to Finding No. 2400:

Complaint Counsel has no specific response.

2401. NE Labs metal canisters are specially manufactured for biodegradation testing. (Johnson, Tr. 1565).

Response to Finding No. 2401:

Complaint Counsel has no specific response.

2402. NE Labs drills into the metal canisters and threads a fitting into the can so that the test tubing is airtight and feeds directly from the reactor into the graduated cylinder, where gas volume is measured. (Johnson, Tr. 1565-1566).

Response to Finding No. 2402:

Complaint Counsel has no specific response.

2403. The ASTM D5511 method specifically calls for the use of a graduated cylinder to measure total gas volume. (RX 356, at 2 § 6.1).

Response to Finding No. 2403:

Complaint Counsel has no specific response.

2404. NE Labs uses lined paint cans to prevent corrosion. (Johnson, Tr. 1566).

Response to Finding No. 2404:

Complaint Counsel has no specific response.

2405. The issue of corrosion was never an issue in NE Lab's shorter-duration studies. (Johnson, Tr. 1565-66).

Response to Finding No. 2405:

Complaint Counsel has no specific response.

2406. In longer duration studies during the early years when NE Labs used unlined canisters, corrosion may have been an issue to the extent that NE Labs observed rust forming on the can. (Johnson, Tr. 1566).

Response to Finding No. 2406:

Complaint Counsel has no specific response.

2407. NE Labs seals its canisters with silicone caulking and then seals each container with a resin. (Johnson, Tr. 1567).

Response to Finding No. 2407:

Complaint Counsel has no specific response.

2408. NE Labs never had any indications that its test systems leaked or were not gas tight. (Johnson, Tr. 1566-67).

Response to Finding No. 2408:

Complaint Counsel has no specific response.

2409. A canister that was leaking would be quite obvious. (Johnson, Tr. 1567-68).

Response to Finding No. 2409:

Complaint Counsel has no specific response.

2410. NE Labs could determine whether its test vessels leaked or were airtight because if the canisters had leaked, then the water level in the graduated cylinder (used for gas collection) would be lowered. (Johnson, Tr. 1566-67).

Response to Finding No. 2410:

Complaint Counsel has no specific response.

2411. NE Labs could determine that the test environment was not aerobic (or gaining oxygen) because the test vessels were producing methane, and the D5511 tests used methane as a marker for biodegradation. (Johnson, Tr. 1566-67).

Response to Finding No. 2411:

Complaint Counsel has no specific response.

2412. The presence of methane means that the test environment is anaerobic. (Johnson, Tr. 1566-67, 1570).

Response to Finding No. 2412:

Complaint Counsel has no specific response.

2413. NE Labs extracted gas from the cylinder through an extraction valve in the test tubing. (Johnson, Tr. 1568-69).

Response to Finding No. 2413:

Complaint Counsel has no specific response.

2414. NE Labs uses a Quantek analyzer to analyze carbon dioxide. (Johnson, Tr. 1569).

Response to Finding No. 2414:

Complaint Counsel has no specific response.

2415. NE Labs uses an infrared (“IR”) spectrometer to measure methane content. (Johnson, Tr. 1569).

Response to Finding No. 2415:

Complaint Counsel has no specific response.

2416. The precision of the IR spectrometer varies depending on the amount of methane detected in the system. (Johnson, Tr. 1586-87).

Response to Finding No. 2416:

Complaint Counsel has no specific response.

2417. However, for the higher readings of methane that NE Labs was looking at, the precision of the instrument was probably around plus or minus 1 percent. (Johnson, Tr. 1587).

Response to Finding No. 2417:

Complaint Counsel has no specific response.

2418. Because NE Lab’s test vessels have “head space” at the top of the canisters, the canisters contain ambient gases that are not produced from the biological processes in the tests. (Johnson, Tr. 1591-92).

Response to Finding No. 2418:

Complaint Counsel has no specific response.

2419. The ambient gases in the headspace are also collected in the graduated cylinder so that the gas composition would include a percentage of ambient gas unassociated with the inoculum or biota. (Johnson, Tr. 1591-92).

Response to Finding No. 2419:

Complaint Counsel has no specific response.

2420. The biodegradation process produces carbon dioxide and methane, the presence of the latter in relatively equal proportions to the carbon dioxide is an indication that the test environment is anaerobic (as opposed to aerobic). (Johnson, Tr. 1566-67; Barlaz, Tr. 2188-89).

Response to Finding No. 2420:

Complaint Counsel has no specific response.

2421. NE Labs uses a standard format for its biodegradation test reports. (Johnson, Tr. 1571). Mr. Johnson testified that the reports in evidence from NE Labs are in the format of NE Lab's standard reports. (Johnson, Tr. 1571-72).

Response to Finding No. 2421:

Complaint Counsel has no specific response.

2422. NE Labs performed "extension" biodegradation testing for certain customers. (Johnson, Tr. 1573).

Response to Finding No. 2422:

Complaint Counsel has no specific response.

2423. For longer-term extension testing over 45 days past the planned termination date, NE Labs would assess whether the activity in the triplicate vessels had levelled off. (Johnson, Tr. 1573-74).

Response to Finding No. 2423:

Complaint Counsel has no specific response.

2424. If the activity in the test vessels had leveled, and the positive control had already been digested, NE Labs would remove the test materials and negative controls from the stale testing environment, and place those materials into a new reactor canister with fresh inoculum. (Johnson, Tr. 1573-74).

Response to Finding No. 2424:

Complaint Counsel has no specific response.

2425. To maintain anaerobic conditions during a long-term extension test, NE Labs would sparge (or flush) the new canisters with nitrogen to remove excess atmospheric gases. (Johnson, Tr. 1573-74).

Response to Finding No. 2425:

Complaint Counsel has no specific response.

2426. When using fresh canisters with fresh inoculum to extend tests, NE Labs would always use fresh inoculum blanks, and often fresh negative control vessels. (Johnson, Tr. 1574-75).

Response to Finding No. 2426:

Complaint Counsel has no specific response.

2427. There is no evidence in the record that NE Labs changed canisters during biodegradation testing of ECM amended plastics. (Johnson, Tr. 1560-1596).

Response to Finding No. 2427:

Complaint Counsel has no specific response.

2428. There is no evidence in the record that corrosion of canisters occurred in biodegradation testing of ECM amended plastics. (Johnson, Tr. 1557-96).

Response to Finding No. 2428:

Complaint Counsel has no specific response.

2429. There is no evidence in the record of leakage in the metal canisters that NE Labs used in biodegradation testing of ECM amended plastics. (Johnson, Tr. 1560-96).

Response to Finding No. 2429:

Complaint Counsel has no specific response.

2430. Dr. Barlaz reviewed NE Lab's testing protocol. (Barlaz, Tr. 2276).

Response to Finding No. 2430:

Complaint Counsel has no specific response.

2431. Dr. Barlaz testified that NE Lab's use of metal canisters in D5511 testing would not affect the validity of NE Lab's test results. (Barlaz, Tr. 2276).

Response to Finding No. 2431:

Complaint Counsel has no specific response.

2432. With respect to NE Lab's use of metal canisters, Dr. Barlaz explained that "you either have a leak in your system or you don't have a leak in your system, and if you don't have a leak in your system, then a metal can should be fine." (Barlaz, Tr. 2276).

Response to Finding No. 2432:

Complaint Counsel has no specific response.

2433. "And the fact that [NE Labs] were getting methane generation from their positive controls indicate[d] to [Dr. Barlaz] that [NE Labs] have an ability to make a gas-tight system out of a metal can." (Barlaz, Tr. 2276).

Response to Finding No. 2433:

Complaint Counsel has no specific response.

2434. The presence of methane in NE Labs testing proves that the test environment was anaerobic “because oxygen kills methanogens” responsible for producing methane. (Barlaz, Tr. 2277).

Response to Finding No. 2434:

Complaint Counsel has no specific response.

2435. Complaint Counsel presented no evidence through their experts that NE Labs use of metal canisters resulted in a methodologically flawed test. (Tolaymat, Tr. 112-213; McCarthy, Tr. 359-480).

Response to Finding No. 2435:

Complaint Counsel has no specific response.

2436. With respect to D5511 tests that showed ECM amended plastics were biodegradable, Dr. McCarthy testified in vague and general terms simply that “there are some tests that were conducted well and some tests that were conducted poorly.” (McCarthy, Tr. 452).

Response to Finding No. 2436:

Complaint Counsel has no specific response.

2437. He also testified vaguely that the tests that are problematic “are the ones that are the 5511 that were conducted at the very, very long periods of time and indicate a lot of leakage.” (McCarthy, Tr. 452).

Response to Finding No. 2437:

Complaint Counsel has no specific response.

2438. Dr. McCarthy did not identify which tests he thought exhibited any leakage. (McCarthy, Tr. 452-54).

Response to Finding No. 2438:

Complaint Counsel has no specific response.

2439. He did not identify any evidence of “leakage” in any of ECM’s supportive tests. (McCarthy, Tr. 359-480).

Response to Finding No. 2439:

Complaint Counsel has no specific response.

2440. He rejected tests outright because they were run for periods of time longer than 30 days. (McCarthy, Tr. 454-55).

Response to Finding No. 2440:

Complaint Counsel has no specific response.

2441. Dr. Tolaymat, by contrast, testified that a D5511 test could be conducted for several years while remaining viable. (Tolaymat, Tr. 251).

Response to Finding No. 2441:

Complaint Counsel has no specific response.

2442. Complaint Counsel's rebuttal expert, Dr. Michel, performed biodegradation gas evolution studies in his laboratory that exceeded 500 days. (Michel, Tr. 2899).

Response to Finding No. 2442:

Complaint Counsel has no specific response.

2443. Dr. McCarthy provided no evidence or explanation for how a small leakage in the NE Lab's system, even assuming that occurred, would affect the evidence of biodegradation observed. (McCarthy, Tr. 359-480).

Response to Finding No. 2443:

Complaint Counsel has no specific response.

2444. Dr. McCarthy did not explain whether a small leak in the NE Labs system would actually minimize the data on biodegradation, logically lowering the appearance of any observable affect. (McCarthy, Tr. 359-480).

Response to Finding No. 2444:

Complaint Counsel has no specific response.

2445. Dr. McCarthy apparently failed to understand NE Labs' display of averaged gas readings when he criticized test readings that were "exactly the same." (McCarthy, Tr. 454).

Response to Finding No. 2445:

Complaint Counsel has no specific response.

2446. NE Labs used weekly gas measurements and would report the data for individual days based on an average from the weekly readings. (RX 873 (Ullmann, Dep. at 61)).

Response to Finding No. 2446:

Complaint Counsel has no specific response.

2447. The percentage of total biodegradation is based on total gas volume, which would not be influenced by NE Labs decision to display weekly gas readings in that fashion. (RX 356).

Response to Finding No. 2447:

Complaint Counsel has no specific response.

2448. Dr. McCarthy criticized ECM studies, including NE Lab's studies, because there were no "error bars or standard deviations or standard error given" in the tests. (McCarthy, Tr. 454-55).

Response to Finding No. 2448:

Complaint Counsel has no specific response.

2449. Although NE Labs raw data was available to Dr. McCarthy, he offered no statistical assessment of the data, and made no attempt to base his testimony on a specific review of the gas evolution data generated in the tests. (McCarthy, Tr. 359-480).

Response to Finding No. 2449:

Complaint Counsel has no specific response.

2450. Dr. Sahu testified that he had no concerns with NE Lab's methodology. (Sahu, Tr. 1933-34).

Response to Finding No. 2450:

Complaint Counsel has no specific response.

2451. Dr. Sahu was not concerned with the process of reinoculating the test vessels in long-term D5511 studies. (Sahu, Tr. 1933-34).

Response to Finding No. 2451:

Complaint Counsel has no specific response.

2452. Dr. Sahu was satisfied that the amount of biogas produced in the ECM tests that was in excess of that which could come from the inoculum was sufficient to show that the plastic itself had been rendered biodegradable. (Sahu, Tr. 1934-35).

Response to Finding No. 2452:

Complaint Counsel has no specific response.

2453. With respect to NE Labs testing, or any gas evolution testing relevant to the case, Dr. McCarthy did not perform statistical analyses of the data. (McCarthy, Tr. 359-480).

Response to Finding No. 2453:

Complaint Counsel has no specific response.

2454. Although Dr. McCarthy possessed Dr. Barlaz's statistical analyses of the data, Dr. McCarthy offered no evidence or testimony concerning Dr. Barlaz's analysis of the gas evolution data. (McCarthy, Tr. 359-480).

Response to Finding No. 2454:

Complaint Counsel has no specific response.

2455. Dr. McCarthy did not even mention Dr. Barlaz's analysis of data. (McCarthy, Tr. 359-480).

Response to Finding No. 2455:

Complaint Counsel has no specific response.

a. RX 836, NE Labs N1048340 (PPC Industries, Inc.) Testing

2456. From September 2010 through November 2013, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 836).

Response to Finding No. 2456:

Complaint Counsel has no specific response.

2457. NE Labs performed the test on behalf of PPC Industries, Inc. (RX 836 at 1).

Response to Finding No. 2457:

Complaint Counsel has no specific response.

2458. The test marked RX 836 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 836; Johnson, Tr. 1571).

Response to Finding No. 2458:

Complaint Counsel has no specific response.

2459. The test marked RX 836, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 836 at 2; Johnson, Tr. 1575).

Response to Finding No. 2459:

Complaint Counsel has no specific response.

2460. The test marked RX 836 included a plastic amended with 1% ECM additive. (RX 155; RX 156; RX 157).

Response to Finding No. 2460:

Complaint Counsel has no specific response.

2461. The plastic sample was labeled “EP Flex Renew Green Poly Bags Treated,” and the test involved an untreated “Clear Poly Bag” sample as a negative control. (RX 836 at 2).

Response to Finding No. 2461:

Complaint Counsel has no specific response.

2462. NE Labs recorded data for the test marked RX 836 through 900 days. (RX 836 at 126 (10/21/2013 Report)).

Response to Finding No. 2462:

Complaint Counsel has no specific response.

2463. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2463:

Complaint Counsel has no specific response.

2464. In the test marked RX 836, NE Labs recorded biodegradation of the ECM amended sample “EP Flex Renew Green Poly Bags Treated” in the amount of 49.28% after 900 days of anaerobic testing. (RX 836 at 126 (10/21/2013 Report)).

Response to Finding No. 2464:

Complaint Counsel has no specific response.

2465. The negative control in RX 836 revealed just 0.1152% total biodegradation after 900 days of anaerobic biodegradation testing. (RX 836 at 126 (10/21/2013 Report)).

Response to Finding No. 2465:

Complaint Counsel has no specific response.

2466. Dr. Barlaz reviewed the raw data provided by NE Labs, including data pertaining to RX 836. (RX 836; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2466:

Complaint Counsel has no specific response.

2467. For the sample “EP Flex Renew Green Poly Bags Treated,” NE Labs reported 4,716 mL of total methane, compared to just 1,854 mL of methane in the inoculum blank. (RX 836; RX 472; RX 968).

Response to Finding No. 2467:

Complaint Counsel has no specific response.

2468. The net methane yield between the inoculum and the test vessel in RX 836 was 2,862.4 mL. (RX 836; RX 472; RX 968).

Response to Finding No. 2468:

Complaint Counsel has no specific response.

2469. Dr. Barlaz calculated the mean substrate to inoculum ratio at 2.5 for this test, affirming that the methane content observed in the test vessels was from the test substrate (the plastic). (RX 836; RX 968; Barlaz, Tr. 2247-49, 2260-63).

Response to Finding No. 2469:

Complaint Counsel has no specific response.

2470. Dr. Barlaz calculated methane and carbon dioxide t-statistics, and determined that the results of RX 836 were statistically significant. (RX 968; Barlaz, Tr. 2259-60).

Response to Finding No. 2470:

Complaint Counsel has no specific response.

2471. The mass of the test sample in RX 836 was 20 grams. (RX 836 at 1).

Response to Finding No. 2471:

Complaint Counsel has no specific response.

2472. At 1% by weight, the mass of the ECM additive in the sample test was approximately 0.2 grams. (RX 836; RX 968; Barlaz, Tr. 2251-54).

Response to Finding No. 2472:

Complaint Counsel has no specific response.

2473. Based on Dr. Barlaz’s conservative calculations, the total theoretical yield of methane from the 1% ECM additive tested in RX 836 is 186.6 mL of methane, calculated by

multiplying the weight of ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2473:

Complaint Counsel has no specific response.

2474. At a net methane yield of 2,862.4 mL, the biodegradation of the test substrate in RX 836 was more than fifteen (15x) times the amount of biodegradation that could have possibly been sourced from the ECM additive alone. (RX 836; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2474:

Complaint Counsel has no specific response.

2475. Dr. Barlaz also calculated standard deviations for RX 836, which were within reasonable limits as expressed by the t-statistics. (RX 968; RX 472; Barlaz, Tr. 2264).

Response to Finding No. 2475:

Complaint Counsel has no specific response.

2476. Based, in part, on RX 836, Dr. Barlaz testified that the scientific evidence showed that plastic containing the ECM additive anaerobically biodegraded. (RX 968; Barlaz, Tr. 2274).

Response to Finding No. 2476:

Complaint Counsel has no specific response.

b. RX 838, NE Labs 1149980 (MINIGRIP) Testing

2477. From May 2011 through August 2012, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 838).

Response to Finding No. 2477:

Complaint Counsel has no specific response.

2478. NE Labs performed the test on behalf of Minigrrips in Kennesaw, GA. (RX 838 at 1).

Response to Finding No. 2478:

Complaint Counsel has no specific response.

2479. The test marked RX 838 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 838; Johnson, Tr. 1571).

Response to Finding No. 2479:

Complaint Counsel has no specific response.

2480. The test marked RX 838, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 838 at 2; Johnson, Tr. 1575).

Response to Finding No. 2480:

Complaint Counsel has no specific response.

2481. The test marked RX 838 included a plastic amended with 1.5% ECM additive. (RX 838).

Response to Finding No. 2481:

Complaint Counsel has no specific response.

2482. The plastic sample was labeled “#1149980-01 Zip Bags, Green Line LDPE/LLDPE Treated, 1.5% ECM (25 Grams),” and the test involved an untreated control labeled “#1149980-02 Zip Bags, Red Line LDPE/LLDPE Untreated (25 Grams). (RX 838 at 1).

Response to Finding No. 2482:

Complaint Counsel has no specific response.

2483. NE Labs recorded data for the test marked RX 838 through 365 days. (RX 838 at 72 (6/4/2012 Report)).

Response to Finding No. 2483:

Complaint Counsel has no specific response.

2484. There is no provision of D5511 that limits the amount of time under which a D5511 test can be run. (RX 356).

Response to Finding No. 2484:

Complaint Counsel has no specific response.

2485. In the test marked RX 838, NE Labs recorded biodegradation of the ECM amended sample “#1149980-01” in the amount of 17.069% after 365 days of anaerobic testing. (RX 838 at 72 (6/4/2012 Report)).

Response to Finding No. 2485:

Complaint Counsel has no specific response.

2486. The negative control in RX 838 revealed just 0.1009% total biodegradation after 365 days of anaerobic biodegradation testing. (RX 838 at 72 (6/4/2012 Report)).

Response to Finding No. 2486:

Complaint Counsel has no specific response.

2487. Dr. Barlaz reviewed the raw data provided by NE Labs, including data pertaining to RX 838. (RX 838; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2487:

Complaint Counsel has no specific response.

2488. For the sample “#1149980-01,” NE Labs reported 5,197 mL of total methane, compared to just 1,360 mL of methane in the inoculum blank. (RX 838; RX 472; RX 968).

Response to Finding No. 2488:

Complaint Counsel has no specific response.

2489. The net methane yield between the inoculum and the test vessel in RX 838 was 3,837.3 mL. (RX 838; RX 472; RX 968).

Response to Finding No. 2489:

Complaint Counsel has no specific response.

2490. Dr. Barlaz calculated the mean substrate to inoculum ratio at 3.8 for this test, affirming that the methane content observed in the test vessels was from the test substrate (the plastic). (RX 838; RX 968; Barlaz, Tr. 2247-49, 2260-63).

Response to Finding No. 2490:

Complaint Counsel has no specific response.

2491. Dr. Barlaz calculated methane and carbon dioxide t-statistics, and determined that the results of RX 838 were statistically significant. (RX 472; RX 968; Barlaz, Tr. 2259-60).

Response to Finding No. 2491:

Complaint Counsel has no specific response.

2492. The mass of the test sample in RX 838 was 25 grams. (RX 838 at 1).

Response to Finding No. 2492:

Complaint Counsel has no specific response.

2493. At 1.5% by weight, the mass of the ECM additive in the sample test was approximately 0.375 grams. (RX 838; RX 968; Barlaz, Tr. 2251-54).

Response to Finding No. 2493:

Complaint Counsel has no specific response.

2494. Based on Dr. Barlaz's conservative calculations, the total theoretical yield of methane from the 1.5% ECM additive tested in RX 838 is 349.875 mL of methane, calculated by multiplying the weight of ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2494:

Complaint Counsel has no specific response.

2495. At a net methane (CH₄) yield of 3,837.3 mL, the biodegradation of the test plastic in RX 838 was about eleven (11x) times the amount of biodegradation that could have possibly been sourced from the ECM additive alone. (RX 838; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2495:

Complaint Counsel has no specific response.

2496. Dr. Barlaz also calculated standard deviations for RX 838, which were within reasonable limits as expressed by the t-statistics. (RX 968; RX 472; Barlaz, Tr. 2264).

Response to Finding No. 2496:

Complaint Counsel has no specific response.

2497. Based in part on RX 838, Dr. Barlaz testified that the scientific evidence showed that plastic containing the ECM additive anaerobically biodegraded. (RX 968; Barlaz, Tr. 2274).

Response to Finding No. 2497:

Complaint Counsel has no specific response.

2498. Along with its RX 838 test, NE Labs also performed an Analytical Report under ASTM D6579 to determine the molecular weight averages and molecular weight distribution of the test sample after completion of the biodegradation test. (RX 838 at 73 (8/1/2012 Report)).

Response to Finding No. 2498:

Complaint Counsel has no specific response.

2499. In its August 1, 2012 Analytical Report (RX 838), NE Labs demonstrated that the plastic “zip bags” treated with the 1.5% ECM additive had lost molecular weight after biodegradation testing. (RX 838 at 73 (8/1/2012 Report)).

Response to Finding No. 2499:

Complaint Counsel has no specific response.

2500. Both the “number average” and the “weight average” molecular weights of the 1.5% ECM treated plastic had declined by about 16%, as measured using a different ASTM standard, ASTM D6579. (RX 838 at 73 (8/1/2012 Report)).

Response to Finding No. 2500:

Complaint Counsel has no specific response.

2501. For comparison, the biodegradation percentage recorded by NE Labs at the end of the RX 838 testing, measured by methane conversion, was listed at about 17%. (RX 838 at 72 (6/4/2012 Report)).

Response to Finding No. 2501:

Complaint Counsel has no specific response.

2502. In comments written on NE Lab’s certificate of analysis, NE Labs explained that “change in molecular weight is a measure of bulk deterioration.

Response to Finding No. 2502:

Complaint Counsel has no specific response.

2503. As an analytical method it indicates that polymer chains are breaking down or cleaving during biodegradation.” (RX 838 at 73 (8/1/2012 Report)).

Response to Finding No. 2503:

Complaint Counsel has no specific response.

2504. The NE Labs Minigrips test (RX 838) demonstrated about 6% biodegradation based on methane conversion after 30 days of testing, before ultimately continuing to biodegrade to more than 17% after 365 days of testing. (RX 838 at 6 (6/13/2011 Report)).

Response to Finding No. 2504:

Complaint Counsel has no specific response.

2505. Having reviewed the Minigrips data, Mr. Johnson testified that by the end of the test there was virtually no activity of any kind occurring in any of the test vessels. (Johnson, Tr. 1589-90).

Response to Finding No. 2505:

Complaint Counsel has no specific response.

c. RX 398, NE Labs N0946510-01 (Masternet I) Testing

2506. In December 2009, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 398).

Response to Finding No. 2506:

Complaint Counsel has no specific response.

2507. NE Labs performed the test on behalf of Masternet Ltd. in Mississauga, Ontario, Canada. (RX 398 at 1).

Response to Finding No. 2507:

Complaint Counsel has no specific response.

2508. The test marked RX 398 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 398; Johnson, Tr. 1571).

Response to Finding No. 2508:

Complaint Counsel has no specific response.

2509. The test marked RX 398, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic, here polyethylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 398 at 2; Johnson, Tr. 1575).

Response to Finding No. 2509:

Complaint Counsel has no specific response.

2510. The test marked RX 398 included a polyethylene plastic amended with 1% ECM additive. (RX 398 at 1).

Response to Finding No. 2510:

Complaint Counsel has no specific response.

2511. The plastic test sample had an initial weight of 25 grams. (RX 398 at 2).

Response to Finding No. 2511:

Complaint Counsel has no specific response.

2512. NE Labs recorded data for the test marked RX 398 through 15 days. (RX 398 at 4).

Response to Finding No. 2512:

Complaint Counsel has no specific response.

2513. In the test marked RX 398, NE Labs recorded biodegradation of the ECM amended polyethylene in the amount of 4.91% after 15 days of anaerobic testing. (RX 398 at 4).

Response to Finding No. 2513:

Complaint Counsel has no specific response.

2514. The 4.91% biodegradation within 15 days of anaerobic testing, calculated based on methane conversion, is more than the 3.65% biodegradation observed in the first 15 days of testing in NE Labs RX 838, which test would later produce more than 17% biodegradation over 365 days. (RX 398 at 4; RX 838 at 6 (6/13/2011 Report)).

Response to Finding No. 2514:

Complaint Counsel has no specific response.

2515. Dr. Barlaz reviewed the raw data provided by NE Labs, including data pertaining to RX 398. (RX 398; RX 472; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2515:

Complaint Counsel has no specific response.

2516. For the ECM amended plastic, NE Labs reported 2,628 mL of total methane, compared to 1,554 mL of methane in the inoculum blank. (RX 398; RX 472; RX 968).

Response to Finding No. 2516:

Complaint Counsel has no specific response.

2517. The net methane yield between the inoculum and the test vessel in RX 398 was 1,074.3 mL. (RX 398; RX 472; RX 968).

Response to Finding No. 2517:

Complaint Counsel has no specific response.

2518. Dr. Barlaz calculated methane and carbon dioxide t-statistics, and determined that the results of RX 398 were statistically significant. (RX 472; RX 968; Barlaz, Tr. 2259-60).

Response to Finding No. 2518:

Complaint Counsel has no specific response.

2519. The mass of the 1% ECM amended polyethylene sample in RX 398 was 25 grams. (RX 398 at 1).

Response to Finding No. 2519:

Complaint Counsel has no specific response.

2520. At 1% by weight, the mass of the ECM additive in the sample test was approximately 0.25 grams. (RX 398; RX 968; Barlaz, Tr. 2251-54).

Response to Finding No. 2520:

Complaint Counsel has no specific response.

2521. Based on Dr. Barlaz's conservative calculations, the total theoretical yield of methane from the 1% ECM additive tested in RX 398 is 233.25 mL of methane, calculated by multiplying the weight of ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2521:

Complaint Counsel has no specific response.

2522. At a net methane (CH₄) yield of 1,074.3 mL, the biodegradation of the test plastic in RX 398 was more than four and one half (4.5x) times the amount of biodegradation that could have possibly been sourced from the ECM additive alone, all during the short fifteen (15) day test window. (RX 398; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2522:

Complaint Counsel has no specific response.

d. RX 405, NE Labs 1048742-01 (Eco SmartPlastics) Testing

2523. In November 2010, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 405).

Response to Finding No. 2523:

Complaint Counsel has no specific response.

2524. NE Labs performed the test on behalf of Eco SmartPlastics in Bohemia, New York. (RX 405 at 1).

Response to Finding No. 2524:

Complaint Counsel has no specific response.

2525. The test marked RX 405 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 405; Johnson, Tr. 1571).

Response to Finding No. 2525:

Complaint Counsel has no specific response.

2526. The test marked RX 405, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic, here polypropylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 405 at 2; Johnson, Tr. 1575).

Response to Finding No. 2526:

Complaint Counsel has no specific response.

2527. The test marked RX 405 included a low-density polyethylene plastic (LDPE) amended with 1.5% ECM additive. (RX 405 at 1).

Response to Finding No. 2527:

Complaint Counsel has no specific response.

2528. The plastic test sample had an initial weight of 25 grams. (RX 405 at 1).

Response to Finding No. 2528:

Complaint Counsel has no specific response.

2529. NE Labs recorded data for the test marked RX 405 through 45 days. (RX 405 at 3).

Response to Finding No. 2529:

Complaint Counsel has no specific response.

2530. In the test marked RX 405, NE Labs recorded biodegradation of the ECM amended low-density polyethylene in the amount of 7.37% after 45 days of anaerobic testing. (RX 405 at 3).

Response to Finding No. 2530:

Complaint Counsel has no specific response.

2531. The 7.37% biodegradation within 45 days of anaerobic testing, calculated based on methane conversion, is roughly equal to the 7.53% biodegradation observed in the first 45 days of testing in NE Labs RX 838 (Minigrips Test), which latter test would reveal more than 17% biodegradation over 365 days. (RX 405 at 3; RX 838 at 9 (7/5/2011 Report)).

Response to Finding No. 2531:

Complaint Counsel has no specific response.

2532. The 17% biodegradation of the test substrate in the NE Labs RX 838 Minigrips test was confirmed through molecular weight testing, and far exceeded the amount of biodegradation that could have been sourced from the ECM additive alone. (RX 838; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2532:

Complaint Counsel has no specific response.

e. RX 396, NE Labs 1048819 (Eco SmartPlastics) Testing

2533. In December 2010, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 396).

Response to Finding No. 2533:

Complaint Counsel has no specific response.

2534. NE Labs performed the test on behalf of Eco SmartPlastics in Bohemia, New York. (RX 396 at 1).

Response to Finding No. 2534:

Complaint Counsel has no specific response.

2535. RX 396 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 396; Johnson, Tr. 1571).

Response to Finding No. 2535:

Complaint Counsel has no specific response.

2536. The test marked RX 396, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic, here polypropylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 396 at 1-2; Johnson, Tr. 1575).

Response to Finding No. 2536:

Complaint Counsel has no specific response.

2537. The test marked RX 396 included a polyethylene terephthalate (PET) plastic amended with the ECM additive. (RX 396 at 1; CCX 413).

Response to Finding No. 2537:

Complaint Counsel has no specific response.

2538. The plastic test sample had an initial weight of 25 grams. (RX 396 at 1).

Response to Finding No. 2538:

Complaint Counsel has no specific response.

2539. The test report (RX 396) does not specify the amount of ECM additive included in the test plastic. (RX 396).

Response to Finding No. 2539:

Complaint Counsel has no specific response.

2540. Eco SmartPlastics used a 1.5% load rate for the ECM additive in other plastic applications. (RX 405 at 1).

Response to Finding No. 2540:

Complaint Counsel has no specific response.

2541. NE Labs recorded data for the test marked RX 396 through 43 days. (RX 396 at 3).

Response to Finding No. 2541:

Complaint Counsel has no specific response.

2542. In the test marked RX 396, NE Labs recorded biodegradation of the ECM amended polyethylene in the amount of 7.01% after 45 days of anaerobic testing. (RX 396 at 4).

Response to Finding No. 2542:

Complaint Counsel has no specific response.

2543. The 7.01% biodegradation within 45 days of anaerobic testing, calculated based on methane conversion, is roughly equal to the 7.53% biodegradation observed in the first 45 days of testing in NE Labs RX 838 (Minigrips Test), which latter test would reveal more than 17% biodegradation over 365 days. (RX 396 at 4; RX 838 at 9 (7/5/2011 Report)).

Response to Finding No. 2543:

Complaint Counsel has no specific response.

2544. For the ECM amended plastic, NE Labs reported 3,496 mL of total methane, compared to 1,821 mL of methane in the inoculum blank. (RX 396 at 4).

Response to Finding No. 2544:

Complaint Counsel has no specific response.

2545. The net methane yield between the inoculum and the test vessel in RX 396 was therefore 1,675 mL. (RX 396 at 4).

Response to Finding No. 2545:

Complaint Counsel has no specific response.

2546. Even assuming Eco Smartplastics included the ECM additive in the test PET plastic at an amount as high as 2%, a load rate higher than Eco SmartPlastics previously used, the mass of the sample would have been 0.5 grams. (Barlaz, Tr. 2251-54).

Response to Finding No. 2546:

Complaint Counsel has no specific response.

2547. Based on Dr. Barlaz's conservative calculations, the total theoretical yield of methane from a 2% ECM additive (0.5 grams) tested in RX 396 is 466.5 mL of methane, calculated by multiplying the weight of the ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2547:

Complaint Counsel has no specific response.

2548. At a net methane (CH₄) yield of 1,675 mL, the biodegradation of the test plastic in RX 396 was more than three and on half (3.5x) times the amount of biodegradation that could have possibly been sourced from the ECM additive alone, all during the short forty five (45) day test window. (RX 396; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2548:

Complaint Counsel has no specific response.

f. RX 395, NE Labs 1150851 (Sweet Tape Enterprise) Testing

2549. In September 2011, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 395).

Response to Finding No. 2549:

Complaint Counsel has no specific response.

2550. NE Labs performed the test on behalf of Sweet Tape Enterprise (M) Sdn. Bhd., in Malaysia. (RX 395 at 1).

Response to Finding No. 2550:

Complaint Counsel has no specific response.

2551. RX 395 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 395; Johnson, Tr. 1571).

Response to Finding No. 2551:

Complaint Counsel has no specific response.

2552. The test marked RX 395, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated plastic, here polyethylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 395 at 1-2; Johnson, Tr. 1575).

Response to Finding No. 2552:

Complaint Counsel has no specific response.

2553. The test marked RX 395 included a polypropylene (PP) clear tape plastic amended with the ECM additive. (RX 395 at 1; CCX 413).

Response to Finding No. 2553:

Complaint Counsel has no specific response.

2554. The plastic test sample had an initial weight of 25 grams. (RX 395 at 1).

Response to Finding No. 2554:

Complaint Counsel has no specific response.

2555. The test report (RX 395) does not specify the amount of ECM additive included in the test plastic. (RX 395).

Response to Finding No. 2555:

Complaint Counsel has no specific response.

2556. NE Labs recorded data for the test marked RX 395 through 45 days. (RX 395 at 3).

Response to Finding No. 2556:

Complaint Counsel has no specific response.

2557. In the test marked RX 395, NE Labs recorded biodegradation of the ECM amended PP sample in the amount of 4.54% after 45 days of anaerobic testing. (RX 395 at 3).

Response to Finding No. 2557:

Complaint Counsel has no specific response.

g. RX 394, NE Labs 1150851 (Tycoplas Sdn. Bhd.) Testing

2558. In October 2011, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 394).

Response to Finding No. 2558:

Complaint Counsel has no specific response.

2559. NE Labs performed the test on behalf of Tycoplas Sdn Bhd. (RX 394 at 1).

Response to Finding No. 2559:

Complaint Counsel has no specific response.

2560. The test marked RX 394 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 394; Johnson, Tr. 1571).

Response to Finding No. 2560:

Complaint Counsel has no specific response.

2561. The test marked RX 394, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank, a negative control (untreated polyethylene), a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 394 at 1; Johnson, Tr. 1575).

Response to Finding No. 2561:

Complaint Counsel has no specific response.

2562. The test marked RX 394 included a plastic amended with the ECM additive. (RX 394).

Response to Finding No. 2562:

Complaint Counsel has no specific response.

2563. The plastic sample was labeled PS Foam Lunch Boxes with ECM Additive.” (RX 394 at 1).

Response to Finding No. 2563:

Complaint Counsel has no specific response.

2564. NE Labs recorded data for the test marked RX 394 through 15 days. (RX 394 at 3).

Response to Finding No. 2564:

Complaint Counsel has no specific response.

2565. In the test marked RX 394, NE Labs recorded biodegradation of the ECM amended polystyrene sample in the amount of 5.89% after just 15 days of anaerobic testing. (RX 394 at 3).

Response to Finding No. 2565:

Complaint Counsel has no specific response.

2566. Dr. Barlaz reviewed the raw data provided by NE Labs, including data pertaining to RX 394. (RX 394; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2566:

Complaint Counsel has no specific response.

2567. For the test PS sample in RX 394, NE Labs reported 1,962 mL of total methane, compared to just 621 mL of methane in the inoculum blank. (RX 394 at 3; RX 472; RX 968).

Response to Finding No. 2567:

Complaint Counsel has no specific response.

2568. The net methane yield between the inoculum and the test vessel in RX 394 was 1,340.6 mL. (RX 394; RX 472; RX 968).

Response to Finding No. 2568:

Complaint Counsel has no specific response.

2569. Dr. Barlaz calculated the mean substrate to inoculum ratio at 3.2 for this test (RX 394), affirming that the methane content observed in the test vessels was from the test substrate (the plastic). (RX 394; RX 968; Barlaz, Tr. 2247-49, 2260-63).

Response to Finding No. 2569:

Complaint Counsel has no specific response.

2570. Dr. Barlaz calculated methane and carbon dioxide t-statistics, and determined that the results of RX 394 were statistically significant. (RX 472; RX 968; Barlaz, Tr. 2259-60).

Response to Finding No. 2570:

Complaint Counsel has no specific response.

2571. The mass of the test sample in RX 394 was 25 grams. (RX 394 at 1).

Response to Finding No. 2571:

Complaint Counsel has no specific response.

2572. The test report (RX 394) does not specify the load rate of the ECM additive in the test polystyrene product. (RX 394 at 3).

Response to Finding No. 2572:

Complaint Counsel has no specific response.

2573. However, even assuming the additive was included at a 2% load rating, an amount higher than the 1.0-1.5% customers ordinarily use, the mass of the ECM additive would be 0.5 grams. (RX 394 at 3; RX 968; Barlaz, Tr. 2251-54).

Response to Finding No. 2573:

Complaint Counsel has no specific response.

2574. Based on Dr. Barlaz's conservative calculations, the total theoretical yield of methane from 0.5 grams of the ECM additive is 466.5 mL of methane, calculated by multiplying the weight of ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2574:

Complaint Counsel has no specific response.

2575. At a net methane (CH₄) yield of 1,340.6 mL, the biodegradation of the test plastic in RX 394 was about three (3x) times the amount of biodegradation that could have possibly been sourced from the ECM additive alone. (RX 394; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2575:

Complaint Counsel has no specific response.

2576. Dr. Barlaz also calculated standard deviations for RX 394, which were within reasonable limits as expressed by the t-statistics. (RX 968; RX 472; Barlaz, Tr. 2264).

Response to Finding No. 2576:

Complaint Counsel has no specific response.

2577. Based in part on RX 394, Dr. Barlaz testified that the scientific evidence showed that plastic containing the ECM additive anaerobically biodegraded. (RX 968; Barlaz, Tr. 2274).

Response to Finding No. 2577:

Complaint Counsel has no specific response.

2578. The NE Labs Minigrips test (RX 838) demonstrated about 6% biodegradation based on methane conversion after 30 days of testing, before ultimately continuing to biodegrade to more than 17% after 365 days of testing. (RX 394 at 6 (6/13/2011 Report)).

Response to Finding No. 2578:

Complaint Counsel has no specific response.

2579. The NE Labs Tycoplas test (RX 394) exhibited nearly 6% biodegradation in roughly half the time, much of which could not have come from the ECM additive. (RX 394).

Response to Finding No. 2579:

Complaint Counsel has no specific response.

h. RX 393, NE Labs 1253020 (National Tree Co.) Testing

2580. In April 2012, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 393).

Response to Finding No. 2580:

Complaint Counsel has no specific response.

2581. NE Labs performed the test on behalf of National Tree Co. in Cranford, New Jersey. (RX 393 at 1).

Response to Finding No. 2581:

Complaint Counsel has no specific response.

2582. RX 393 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 393; Johnson, Tr. 1571).

Response to Finding No. 2582:

Complaint Counsel has no specific response.

2583. The test marked RX 393, as with other NE Labs ASTM D5511 biodegradation tests, included the use of inoculum blanks, negative controls (untreated plastic, PVC and PE), a positive control (cellulose), and two test samples, all of which were run in triplicate. (RX 393 at 1-2; Johnson, Tr. 1575).

Response to Finding No. 2583:

Complaint Counsel has no specific response.

2584. The test marked RX 393 included two test samples amended with the ECM additive. (RX 393 at 1-2).

Response to Finding No. 2584:

Complaint Counsel has no specific response.

2585. One test sample was “PVC, Treated,” the other test sample was “PE, Treated.” (RX 393 at 2).

Response to Finding No. 2585:

Complaint Counsel has no specific response.

2586. Both test samples were 25 grams at the start of testing. (RX 393 at 2).

Response to Finding No. 2586:

Complaint Counsel has no specific response.

2587. The negative controls involved untreated plastics, “PVC, Untreated” and “PE, Untreated.” (RX 393 at 2).

Response to Finding No. 2587:

Complaint Counsel has no specific response.

2588. NE Labs recorded data for the test marked RX 393 through 15 days of anaerobic testing. (RX 393 at 4).

Response to Finding No. 2588:

Complaint Counsel has no specific response.

2589. In RX 393, NE Labs recorded biodegradation of the ECM amended PVC sample in the amount of 9.89% after 15 days of anaerobic testing. (RX 393 at 4).

Response to Finding No. 2589:

Complaint Counsel has no specific response.

2590. NE Labs recorded biodegradation of the ECM amended PE sample in the amount of 5.75% after 15 days of anaerobic testing. (RX 393 at 4).

Response to Finding No. 2590:

Complaint Counsel has no specific response.

2591. For the ECM amended PVC sample, NE Labs reported 1119 mL of total methane, compared to 254 mL of methane in the inoculum blank. (RX 393 at 4).

Response to Finding No. 2591:

Complaint Counsel has no specific response.

2592. The net methane yield between the inoculum and the treated PVC sample in RX 393 was therefore 865 mL. (RX 393 at 4).

Response to Finding No. 2592:

Complaint Counsel has no specific response.

2593. For the amended PE sample, NE Labs reported 1451 mL of total methane, compared to 254 mL of methane in the inoculum blank. (RX 393 at 4).

Response to Finding No. 2593:

Complaint Counsel has no specific response.

2594. The net methane production in the PE treated sample was therefore 1,197 mL of methane gas. (RX 393 at 4).

Response to Finding No. 2594:

Complaint Counsel has no specific response.

2595. The negative controls for PVC and PE reported 238 mL and 219 mL of methane respectively, which is consistent with the 254 mL of methane produced in the inoculum blank. (RX 393 at 4).

Response to Finding No. 2595:

Complaint Counsel has no specific response.

2596. The test report (RX 393) does not specify the amount of ECM additive included in the test plastic. (RX 393).

Response to Finding No. 2596:

Complaint Counsel has no specific response.

2597. ECM recommends that its customers use close to 1% load rating. (CCX 10; Sinclair, Tr. 787-88).

Response to Finding No. 2597:

Complaint Counsel has no specific response.

2598. Even assuming National Tree Co. included the ECM additive in the test plastics at an amount as high as 2%, a load rate higher than ECM recommended and higher than other customers ordinarily used, the mass of the additive in the samples would have been 0.5 grams. (Barlaz, Tr. 2251-54).

Response to Finding No. 2598:

Complaint Counsel has no specific response.

2599. Based on Dr. Barlaz's conservative calculations, the total theoretical yield of methane from 0.5 grams of the ECM additive is 466.5 mL of methane, calculated by multiplying the weight of the ECM additive by Dr. Barlaz's calculation of the mL of methane per gram of ECM additive (933 mL). (RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2599:

Complaint Counsel has no specific response.

2600. At a net methane (CH₄) yield of 865 mL, the biodegradation of the treated PVC plastic in RX 393 was almost twice (2x) the amount of biodegradation that could have possibly been sourced from the ECM additive alone, all during the short fifteen (15) day test window. (RX 393; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2600:

Complaint Counsel has no specific response.

2601. Similarly, at a net methane (CH₄) yield of 1,197 mL, the biodegradation of the treated PE plastic sample in RX 393 was more than two and one half (2.5x) the amount of biodegradation that could have possibly been sourced from the ECM additive alone, all during the short fifteen (15) day test window. (RX 393; RX 968; Barlaz, Tr. 2252-58).

Response to Finding No. 2601:

Complaint Counsel has no specific response.

i. RX 392, NE Labs 1048036 (Transilwrap Co.) Testing

2602. In April 2011, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 392).

Response to Finding No. 2602:

Complaint Counsel has no specific response.

2603. NE Labs performed the test on behalf of Transilwrap Co. in Richmond, Indiana. (RX 392 at 1).

Response to Finding No. 2603:

Complaint Counsel has no specific response.

2604. RX 392 is an NE Labs analytical report of the type normally supplied by NE Labs. (RX 392; Johnson, Tr. 1571).

Response to Finding No. 2604:

Complaint Counsel has no specific response.

2605. The test marked RX 392, as with other NE Labs ASTM D5511 biodegradation tests, included the use of inoculum blanks, negative controls (here polyethylene), a positive control (cellulose), and two test samples, all of which were run in triplicate. (RX 392 at 1-2; Johnson, Tr. 1575).

Response to Finding No. 2605:

Complaint Counsel has no specific response.

2606. The test marked RX 392 included two test samples amended with the ECM additive. (RX 392 at 1-2).

Response to Finding No. 2606:

Complaint Counsel has no specific response.

2607. One test sample was a Thin HIPS (High Impact Polystyrene) Based Sheet, the other test sample was a "Two Layer Laminating Film." (RX 392 at 1; CCX 273).

Response to Finding No. 2607:

Complaint Counsel has no specific response.

2608. Both test samples were 25 grams at the start of testing. (RX 392 at 1).

Response to Finding No. 2608:

Complaint Counsel has no specific response.

2609. Transilwrap described the samples as a “HIPS sheet allow with the ECM additive, and a thin film PETG coated with EVA (also both having [the ECM] additive).” (CCX 273 at 3).

Response to Finding No. 2609:

Complaint Counsel has no specific response.

2610. NE Labs recorded data for the test marked RX 392 through 233 days of anaerobic testing. (RX 392 at 4).

Response to Finding No. 2610:

Complaint Counsel has no specific response.

2611. In RX 392, NE Labs recorded biodegradation of the ECM amended HIPS polystyrene sample in the amount of 7.85% after 233 days of anaerobic testing. (RX 392 at 4).

Response to Finding No. 2611:

Complaint Counsel has no specific response.

2612. NE Labs recorded biodegradation of the ECM amended Two Layer Laminating Film sample in the amount of 8.53% after 233 days of anaerobic testing. (RX 392 at 4).

Response to Finding No. 2612:

Complaint Counsel has no specific response.

2613. The test report (RX 392) does not specify the amount of ECM additive included in the test plastic. (RX 392).

Response to Finding No. 2613:

Complaint Counsel has no specific response.

2614. ECM recommends that its customers use close to 1% load rating. (CCX 10; Sinclair, Tr. 787-88).

Response to Finding No. 2614:

Complaint Counsel has no specific response.

**j. RX 399, NE Labs N0843980 (Bio-Tec Environmental, LLC)
Testing**

2615. In December 2008, NE Labs reported biodegradation test data from an anaerobic D5511 biodegradation test in laboratory reactors. (RX 399).

Response to Finding No. 2615:

Complaint Counsel has no specific response.

2616. NE Labs performed the test on behalf of Bio-Tec Environmental, LLC in Albuquerque, New Mexico. (RX 399 at 1).

Response to Finding No. 2616:

Complaint Counsel has no specific response.

2617. RX 399 is an NE Labs analytical report similar to the type ordinarily supplied by NE Labs. (RX 399; Johnson, Tr. 1571).

Response to Finding No. 2617:

Complaint Counsel has no specific response.

2618. The test marked RX 399, as with other NE Labs ASTM D5511 biodegradation tests, included the use of an inoculum blank (called “sludge control”), a negative control, a positive control (cellulose), and a test sample, all of which were run in triplicate. (RX 399 at 1-2; Johnson, Tr. 1575).

Response to Finding No. 2618:

Complaint Counsel has no specific response.

2619. The test marked RX 399 included a polypropylene plastic sheet amended with the ECM additive. (RX 399 at 1; CCX 413).

Response to Finding No. 2619:

Complaint Counsel has no specific response.

2620. The plastic test sample had an initial weight of 100 grams. (RX 399 at 1).

Response to Finding No. 2620:

Complaint Counsel has no specific response.

2621. The test report (RX 399) does not specify the amount of ECM additive included in the test plastic. (RX 399).

Response to Finding No. 2621:

Complaint Counsel has no specific response.

2622. ECM recommends that its customers use just above a 1% load rating. (CCX 10; Sinclair, Tr. 787-88).

Response to Finding No. 2622:

Complaint Counsel has no specific response.

2623. NE Labs recorded data for the test marked RX 399 through 14 days. (RX 399 at 2).

Response to Finding No. 2623:

Complaint Counsel has no specific response.

2624. In RX 399, one of the earlier NE Labs biodegradation tests, NE Labs used two endpoints to assess biodegradation, methane gas conversion and gravimetric weight loss. (RX 399 at 2).

Response to Finding No. 2624:

Complaint Counsel has no specific response.

2625. Although gas data was not available, NE Labs concluded in RX 399 that, based on the average weight loss of the triplicate test samples and the methane gas conversion, the “results indicate[d] that the treated PP Sheets was biodegradable.” (RX 399 at 2).

Response to Finding No. 2625:

Complaint Counsel has no specific response.

3. Other Anaerobic Gas Evolution Testing

a. CCX 952, NC State 2010 StarchTech BMP Testing

2626. In March 2010, Dr. Barlaz reported his results from a biochemical methane potential (BMP) test involving recycled polystyrene loosefill peanuts with the ECM additive. (CCX 952 at 1).

Response to Finding No. 2626:

Complaint Counsel has no specific response.

2627. The test was on behalf of StarchTech. (CCX 952).

Response to Finding No. 2627:

Complaint Counsel has no specific response.

2628. Dr. Barlaz performed his BMP test as he did other BMP tests performed at his NC State laboratory. (Barlaz, Tr. 2220-22, 2269-72).

Response to Finding No. 2628:

Complaint Counsel has no specific response.

2629. In the test memorialized as CCX 952, Dr. Barlaz tested two materials, a recycled polystyrene loosefill plastic with the ECM additive, and a starch-based biodegradable loosefill product. (Barlaz, Tr. 2270).

Response to Finding No. 2629:

Complaint Counsel has no specific response.

2630. Dr. Barlaz's results showed significant methane generation that was attributed to the test substrate, to wit, the plastic. (Barlaz, Tr. 2270; CCX 952).

Response to Finding No. 2630:

The results of Dr. Barlaz's BMP test CCX-952 showed negligible amounts of methane production. (CCX-952).

2631. Dr. Barlaz calculated the percent that each material was converted to methane, subtracting the methane produced from the inoculum blanks. (Barlaz, Tr. 2270-71; CCX 952).

Response to Finding No. 2631:

Complaint Counsel has no specific response.

2632. Dr. Barlaz calculated the percentage of biodegradation by examining the percent loss of volatile solids, which was 7.4% of the ECM-amended polystyrene loosefill product in 60 days. (CCX 952; Barlaz, Tr. 2271).

Response to Finding No. 2632:

Complaint Counsel has no specific response.

2633. Although Dr. Barlaz terminated his BMP test on day 60, he observed that the short term, laboratory scale biodegradation test was not an accurate representation of the biodegradation potential of the sample. (Barlaz, Tr. 2271-74).

Response to Finding No. 2633:

Complaint Counsel has no specific response.

2634. Dr. Barlaz’s test report included methane production data at day 30 and day 60. (CCX 952 at 2).

Response to Finding No. 2634:

Complaint Counsel has no specific response.

2635. Dr. Barlaz explained that “the methane generation on day 60 is double that of the methane generation on day 30, so there – the implication is that the measured methane is a lower limit and more methane would have been produced had we run the test for longer than 60 days.” (Barlaz, Tr. 2271).

Response to Finding No. 2635:

Complaint Counsel has no specific response.

2636. The fact that methane generated during days 31-60 was equal to or more than methane generated on days 1-30 was scientifically significant because it demonstrates that the test sample was likely to evidence more biodegradation than the 60-day BMP test would suggest. (Barlaz, Tr. 2271-72).

Response to Finding No. 2636:

Complaint Counsel has no specific response.

2637. According to Dr. Barlaz, there was “no evidence that methane generation is slowing down, whereas, if you look at the second material [Starch-based product] there’s considerable evidence that methane generation is slowing down.” (Barlaz, Tr. 2271-72).

Response to Finding No. 2637:

Complaint Counsel has no specific response.

2638. Dr. Barlaz has concluded that this observed phenomena “speaks to the BMP as I’ve been using it with cutting it off at 60 days is perhaps imperfect or not appropriate if I have a slowly degradable substrate.” (Barlaz, Tr. 2272).

Response to Finding No. 2638:

Complaint Counsel has no specific response.

b. RX 265, OWS Microtech Research Inc. Anaerobic Testing (Feb 1999)

2639. In February 1999, O.W.S. Inc. reported the results of anaerobic testing on the ECM additive pellets. (RX 265 at 6).

Response to Finding No. 2639:

Complaint Counsel has no specific response.

2640. OWS performed the test titled “High Solids Anaerobic Digestion (HSAD) Test of ECM pellets,” on behalf of Patrick F. Riley of Microtech Research. (RX 265).

Response to Finding No. 2640:

Complaint Counsel has no specific response.

2641. The OWS test marked RX 265 was performed under the ASTM D5511-94 method. (RX 265).

Response to Finding No. 2641:

Complaint Counsel has no specific response.

2642. The substance tested were the ECM pellets by themselves. (RX 265).

Response to Finding No. 2642:

Complaint Counsel has no specific response.

2643. At the time, in 1999, the ECM pellets were comprised of approximately 50% active biodegradable components, and 50% of a traditionally non-biodegradable “carrier” resin. (CCX 818 (Sinclair, Dep. at 116)).

Response to Finding No. 2643:

Complaint Counsel has no specific response.

2644. ECM would later change its “load rating” to a 70% load of the actively biodegradable components. (CCX 818 (Sinclair, Dep. at 118-20)).

Response to Finding No. 2644:

Complaint Counsel has no specific response.

2645. OWS, like Eden Laboratories and Northeast Labs, measured total gas volume using a graduated cylinder. (RX 265 at 8).

Response to Finding No. 2645:

Complaint Counsel has no specific response.

2646. The OWS RX 265 test was conducted at a 34.1% solids content (63.9% moisture). (RX 265 at 12).

Response to Finding No. 2646:

Complaint Counsel has no specific response.

2647. After 15 days, the ECM pellets anaerobically biodegraded 24%. (RX 265 at 17).

Response to Finding No. 2647:

Complaint Counsel has no specific response.

2648. The test was terminated after 15 days. (RX 265).

Response to Finding No. 2648:

Complaint Counsel has no specific response.

c. RX 268, OWS Covidien Anaerobic Testing (May 2010)

2649. In May 2010, O.W.S. Inc. reported the results of anaerobic testing on polypropylene (PP) product labeled “polypropylene plaques.” (RX 268 at 6).

Response to Finding No. 2649:

Complaint Counsel has no specific response.

2650. OWS performed the test titled “High Solids Anaerobic Digestion (HSAD) Test,” on behalf of Covidien in Mansfield, MA. (RX 268 at 1).

Response to Finding No. 2650:

Complaint Counsel has no specific response.

2651. The OWS test marked RX 268 was performed under the ASTM D5511-02 method. (RX 268 at 3).

Response to Finding No. 2651:

Complaint Counsel has no specific response.

2652. In the OWS test marked RX 268, the positive control, cellulose, reached a plateau at 69.5%. (RX 268 at 4).

Response to Finding No. 2652:

Complaint Counsel has no specific response.

2653. The failure to achieve 70% biodegradation in the positive control is an indication that the test environment was not suitable for biodegradation testing. (RX 356 at 3 § 11.2.1.1).

Response to Finding No. 2653:

Complaint Counsel has no specific response.

2654. The OWS test marked RX 268 revealed 3.9% biodegradation of the test sample in 15 days of anaerobic degradation. (RX 268 at 7).

Response to Finding No. 2654:

Complaint Counsel has no specific response.

2655. The test indicated that the sample vessels plateaued around the same time as the cellulose vessels plateaued at 69.5%. (RX 268 at 5-7).

Response to Finding No. 2655:

Complaint Counsel has no specific response.

2656. In another OWS test in 1999 (RX 265), OWS wrote that cellulose should biodegrade at least to 85% through gas evolution, while at most 15% of the cellulose can be assimilated by microorganisms or left as other byproduct. (RX 265 at 16-17).

Response to Finding No. 2656:

Complaint Counsel has no specific response.

2657. In the NE Labs Minigrips test (RX 838), 3.65% biodegradation of the test samples were observed after 15 days of D5511 anaerobic testing. (RX 838 at 3).

Response to Finding No. 2657:

Complaint Counsel has no specific response.

2658. The 3.9% biodegradation observed in the OWS RX 268 test, before the entire system plateaued, is consistent with the test data observed after 15 days in RX 838. (RX 838 at 3; RX 265 at 7).

Response to Finding No. 2658:

Complaint Counsel has no specific response.

2659. The NE Labs Minigrips test (RX 838) reflected more than 17% biodegradation of the test sample after one year of sustained testing, based on gas conversion. (RX 838).

Response to Finding No. 2659:

Complaint Counsel has no specific response.

C. Qualitative Testing

2660. Qualitative testing is part of the totality of the scientific evidence in the case. (Sahu, Tr. 1910).

Response to Finding No. 2660:

Complaint Counsel has no specific response.

2661. The qualitative studies provide multiple lines of proof. (Sahu, Tr. 1910-11).

Response to Finding No. 2661:

Complaint Counsel has no specific response.

2662. In the Environ BioPVC study, the measurement of free chloride ions was a significant element. (Sahu, Tr. 1912-13).

Response to Finding No. 2662:

Complaint Counsel has no specific response.

2663. In the Environ test marked RX 254, Dr. Barber observed that the presence of chlorine atoms in solution had increased along with biodegradation of the polyvinyl chloride (PVC) substrate. (Sahu, Tr. 1912-13; RX 254).

Response to Finding No. 2663:

Complaint Counsel has no specific response.

2664. The molecular weight of the PVC is due to the molecular weight of chlorine, which is heavy. (Sahu, Tr. 1912).

Response to Finding No. 2664:

Complaint Counsel has no specific response.

2665. If the PVC molecule loses chloride, there would be an alteration of the chemical structure of PVC that indicates the carbon backbone will also degrade. (Sahu, Tr. 1912-13).

Response to Finding No. 2665:

Complaint Counsel has no specific response.

2666. Hydrogen chloride (HCl) is actually the group that is lost due to degradation. (Sahu, Tr. 1913).

Response to Finding No. 2666:

Complaint Counsel has no specific response.

2667. If the molecule loses the HCl, the underlying carbon backbone is unavoidably altered too. (Sahu, Tr. 1913).

Response to Finding No. 2667:

Complaint Counsel has no specific response.

2668. Double bonds are formed in the carbon backbones that are unavoidably reformed when the HCl group drops out. (Sahu, Tr. 1914).

Response to Finding No. 2668:

Complaint Counsel has no specific response.

2669. Dr. Barber concluded in his published reports that the ECM additive would render plastics such as PVC fully degradable with a 1.9 year half-life. (RX 254 at 1).

Response to Finding No. 2669:

Complaint Counsel has no specific response.

2670. He confirmed his gravimetric endpoints by looking at free chloride content in the test solution, noting that the chloride ions would have come from the degraded sections of the PVC plastic and that “an increase in soil leachate chloride content and reduction in tensile strength was observed, indicat[ing] the PVC molecules were being effectively degraded.” (RX 370 at 6; RX 259).

Response to Finding No. 2670:

Complaint Counsel has no specific response.

2671. Dr. Barber also reviewed test data from other laboratories concerning ECM’s additive technology. (RX 269).

Response to Finding No. 2671:

Complaint Counsel has no specific response.

2672. Dr. Barber had explained that ASTM protocols that are available are inappropriate for to test slowly degrading material and, so, he had to create his own test model. (Barber, Tr. 2062:8-9).

Response to Finding No. 2672:

Complaint Counsel has no specific response.

2673. Conventional plastics are challenging materials that may take many years to biodegrade. (Barber, Tr. 2057:5-6).

Response to Finding No. 2673:

Complaint Counsel has no specific response.

2674. ASTM did not conceive of this type of material when they were developing their standards, and these materials must be tested for longer periods of time. (Barber, Tr. 2062:9-11).

Response to Finding No. 2674:

Complaint Counsel has no specific response.

2675. Therefore, an in-house method of testing with similar reliability safeguards to ASTM (i.e., positive and negative control, and a significant level of replication and statistical testing) must be developed for these materials. (Barber, Tr. 2062:12-2063:3).

Response to Finding No. 2675:

Complaint Counsel has no specific response.

2676. Dr. Barber testified that to see if a slowly degrading material fully biodegrades in a lab, you would have to run a test for ten, fifteen, or twenty years. (Barber, Tr. 2057:7-11).

Response to Finding No. 2676:

Complaint Counsel has no specific response.

2677. Running a test for ten to twenty-five years would be very expensive. (Barber, Tr. 2058:3-4).

Response to Finding No. 2677:

Complaint Counsel has no specific response.

2678. In some cases, testing requires daily monitoring or interaction with the sample, and doing this for tens of years would be prohibitively expensive. (Barber, Tr. 2058:4-8).

Response to Finding No. 2678:

Complaint Counsel has no specific response.

2679. A bigger issue with running tests of this duration is maintaining a viable culture for such a long period of time. (Barber, Tr. 2058:9-11).

Response to Finding No. 2679:

Complaint Counsel has no specific response.

2680. Maintaining a viable culture requires monitoring of temperature, water, pH, and nutrients for ten or more years would be extremely difficult. (Barber, Tr. 2058:17-23).

Response to Finding No. 2680:

Complaint Counsel has no specific response.

2681. Dr. Barber found it very difficult to maintain a real active biological system longer than twelve to eighteen months, and the concept of maintaining this level of activity for tens of years in a laboratory is next to impossible. (Barber, Tr. 2059:5-9).

Response to Finding No. 2681:

Complaint Counsel has no specific response.

2682. Therefore, a test must be run for a discrete, reasonable period of time. (Barber, Tr. 2057:12-13).

Response to Finding No. 2682:

Complaint Counsel has no specific response.

2683. The tester must ensure that that the amount of material that has been biodegraded is much higher than the amount of additive to show that it isn't just the additive that is biodegrading. (Barber, Tr. 2057:13-16).

Response to Finding No. 2683:

Complaint Counsel has no specific response.

2684. This would indicate that the microbes are attacking the base polymer, and there would be no reason to believe this would not continue until the base material is completely biodegraded. (Barber, Tr. 2057:16-20).

Response to Finding No. 2684:

Complaint Counsel has no specific response.

2685. Dr. Barber was convinced based on the test results that ECM's technology produced a biodegradable plastic. (RX 870 (Barber, Dep. at 90)).

Response to Finding No. 2685:

Complaint Counsel has no specific response.

2686. Dr. Barber has performed tests for five or six ECM customers concerning the biodegradability of ECM plastics that they manufacture. (Barber, Tr. 2028).

Response to Finding No. 2686:

Complaint Counsel has no specific response.

2687. Dr. Barber had to create a testing methodology similar to the ASTM testing protocols but on a timescale more appropriate for conventional plastics testing (9 to 18 months) and using slightly different leachate. (Barber, Tr. 2030–31, 2034).

Response to Finding No. 2687:

Complaint Counsel has no specific response.

2688. Dr. Barber’s tests were designed to simulate landfill conditions as closely as possible. (Barber, Tr. 2034, 2044–45).

Response to Finding No. 2688:

Complaint Counsel has no specific response.

2689. Dr. Barber’s tests use special containers to maintain anaerobic conditions, and pH, temperature, and moisture content were monitored to maintain optimal levels. (Barber, Tr. 2037–39).

Response to Finding No. 2689:

Complaint Counsel has no specific response.

2690. Dr. Barber’s tests, like ASTM protocols, utilized both positive and negative controls. (Barber, Tr. 2036).

Response to Finding No. 2690:

Complaint Counsel has no specific response.

2691. Dr. Barber performed testing for FP International to determine the biodegradability of their plastics when infused with the ECM additive under both aerobic and anaerobic conditions. (Barber, Tr. 2034, 2041, 2051, 2065, 2148).

Response to Finding No. 2691:

Complaint Counsel has no specific response.

2692. The FP International Report summarized the findings of Dr. Barber’s tests, stating that ECM plastic “is biodegradable under laboratory conditions that simulate conditions expected to occur in a composting operation or in a municipal landfill managed to promote biological activity.” (Barber, Tr. 2047–48; RX 275).

Response to Finding No. 2692:

Complaint Counsel has no specific response.

2693. Dr. Barber performed weight-loss testing for BioPVC to determine the biodegradability of their plastics when infused with the ECM additive under anaerobic conditions. (Barber, Tr. 2048–49; RX 120).

Response to Finding No. 2693:

Complaint Counsel has no specific response.

2694. Dr. Barber’s testing showed weight loss of the ECM material, but not the negative control, indicating that the ECM material was biodegrading. (Barber, Tr. 2055; RX 120).

Response to Finding No. 2694:

Complaint Counsel has no specific response.

2695. Dr. Barber also had tensile strength and free chloride testing done on the material after nine months in a simulated landfill environment. (Barber, Tr. 2053–55).

Response to Finding No. 2695:

Complaint Counsel has no specific response.

2696. Dr. Barber’s testing showed reduced tensile strength as compared to the negative control, indicating that the material was biodegrading. (Barber, Tr. 2055).

Response to Finding No. 2696:

Complaint Counsel has no specific response.

2697. Dr. Barber’s testing also showed a higher free chloride concentration as compared to the negative control, indicating the breaking of covalent bonds by organic processes. (Barber, Tr. 2056).

Response to Finding No. 2697:

Complaint Counsel has no specific response.

2698. Dr. Barber drafted a report summarizing the findings of his tests. (2049; RX 254).

Response to Finding No. 2698:

Complaint Counsel has no specific response.

2699. Dr. Barber also provided analytical consulting for BIOtech Products, LLC, an ECM customer, of their test data on the biodegradability of the ECM infused plastics they produce. (Barber, Tr. 2056–57).

Response to Finding No. 2699:

Complaint Counsel has no specific response.

2700. Dr. Barber stated in an email to BIOtech Products, LLC explaining his conclusions:

After a significant level of biodegradation, five to ten times the level of the additive, the only reasonable assumption, assuming conditions supportive of biological activity continue, is that all of the base polymer will biodegrade.

(Barber, Tr. 2056–57; RX 426).

Response to Finding No. 2700:

Complaint Counsel has no specific response.

2701. Dr. Barber was contacted by Bill Walters of QC Product Development, an ECM customer, and asked to determine whether their polyethylene product infused with the ECM additive would biodegrade. (Barber, Tr. 2064–65; RX 430).

Response to Finding No. 2701:

Complaint Counsel has no specific response.

2702. Dr. Barber, based on his findings for FP International and their polyethylene product, informed Mr. Walters that “PE film with ECM additive is biodegradable.” (Barber, Tr. 2065; RX 430).

Response to Finding No. 2702:

Complaint Counsel has no specific response.

2703. ECM employees, including Mr. Sinclair, also performed tests of the ECM additive in gardens, backyard soils, and in 50-gallon drums to assess biodegradation in real-time. (CCX 818 (Sinclair, Dep. at 63-69); CCX 820 (Sullivan, Dep. at 8-9); Sullivan, Tr. 725–728; Sinclair, Tr. 755–56).

Response to Finding No. 2703:

Complaint Counsel has no specific response.

2704. Environ had also demonstrated through testing similar to the BioPVC work that polyethylene amended with a 1% ECM additive was biodegradable. (RX 275).

Response to Finding No. 2704:

Complaint Counsel has no specific response.

2705. ECM also received microscopy with images that reflected changes to plastic and biodegradation after plastic articles had been exposed to test environments. (RX 254; RX 269; RX 270; RX 271).

Response to Finding No. 2705:

Complaint Counsel has no specific response.

2706. Other companies and customers have similarly applied qualitative endpoints to verify that plastics made with the ECM additive had biodegraded. (RX 274; 277; RX 388-91).

Response to Finding No. 2706:

Complaint Counsel has no specific response.

XVII. DR. TOLAYMAT'S OPINIONS ARE NOT CREDIBLE

2707. In drafting his expert opinion in this case, Complaint Counsel's witness Dr. Tolaymat rejected dozens of scientific tests (including gas evolution tests) because he deemed them to be unreliable or methodologically flawed. (Tolaymat, Tr. 296; CCX 893 at 39-46).

Response to Finding No. 2707:

Complaint Counsel has no specific response.

2708. Dr. Tolaymat is an employee of the EPA, a sister agency of the FTC. (Tolaymat, Tr. 216-17).

Response to Finding No. 2708:

Complaint Counsel has no specific response.

2709. Dr. Tolaymat was paid an EPA salary for the work he performed in this case. (Tolaymat, Tr. 118-19, 215-16).

Response to Finding No. 2709:

This finding mischaracterizes Dr. Tolaymat's testimony. Dr. Tolaymat testified that he did not represent the EPA's interests in this matter and that he merely received his EPA salary *while* he worked on the case during business hours, not for the work he did in the case. (Tolaymat, Tr. 118, 119, 121, 215, 216).

2710. He worked on this case during regular business hours, from his EPA office. (Tolaymat Tr. 215-16).

Response to Finding No. 2710:

Complaint Counsel has no specific response.

2711. Despite working on the case as an EPA employee, Dr. Tolaymat did not share his report or opinions with any other EPA employee or official before submitting them in this case. (Tolaymat, Tr. 216).

Response to Finding No. 2711:

Complaint Counsel has no specific response.

2712. Dr. Tolaymat did not consult any other colleagues or persons at the EPA concerning his opinions in this case. (Tolaymat, Tr. 216-17).

Response to Finding No. 2712:

Complaint Counsel has no specific response.

2713. The EPA has other individuals in their ranks that are considered landfill gas experts. (Tolaymat, Tr. 217).

Response to Finding No. 2713:

Complaint Counsel has no specific response.

2714. One of those persons is Susan Thorneloe in the EPA's Office of Research and Development, who has more than 25 years of experience with landfills and landfill gas. (Tolaymat, Tr. 217).

Response to Finding No. 2714:

Complaint Counsel has no specific response.

2715. Dr. Tolaymat has been with the EPA for eleven years. (Tolaymat, Tr. 217).

Response to Finding No. 2715:

Complaint Counsel has no specific response.

2716. Dr. Tolaymat did not share his opinions in this case with Susan Thorneloe, or anyone at the EPA's ORD, to determine whether his position was consistent with theirs or scientifically reasonable. (Tolaymat, Tr. 217).

Response to Finding No. 2716:

Complaint Counsel has no specific response.

2717. Dr. Tolaymat was retained by Complaint Counsel as early as 2010 to assist with this case. (Tolaymat, Tr. 214).

Response to Finding No. 2717:

Complaint Counsel has no specific response.

2718. From 2010 through the time when he testified at deposition, Dr. Tolaymat had performed just 80 hours of work on this case total. (Tolaymat, Tr. 214).

Response to Finding No. 2718:

Complaint Counsel has no specific response.

2719. Most of his 80 hours were spent drafting his expert report. (Tolaymat, Tr. 214).

Response to Finding No. 2719:

Complaint Counsel has no specific response.

2720. Dr. Tolaymat did not perform significant research into plastics before preparing his expert opinion. (Tolaymat, Tr. 214).

Response to Finding No. 2720:

Complaint Counsel has no specific response.

2721. Although he had recommended to Complaint Counsel that they perform BMP testing on ECM plastics, Dr. Tolaymat did not test the Plastic containing the ECM additive or plastics made with same. (Tolaymat, Tr. 356, 214).

Response to Finding No. 2721:

Complaint Counsel has no specific response.

2722. Dr. Tolaymat was unable to specifically identify what type of tests or testing would be considered competent and reliable evidence to show biodegradation in landfills. (Tolaymat, Tr. 218).

Response to Finding No. 2722:

Complaint Counsel has no specific response.

2723. Dr. Tolaymat proposed an in-situ landfill study (Tolaymat, Tr. 218), which Dr. Barlaz later explained is impractical and erroneous. (Barlaz, Tr. 2237).

Response to Finding No. 2723:

Complaint Counsel has no specific response.

2724. Dr. Tolaymat recognizes Dr. Barlaz as an authority in the field. (Tolaymat, Tr. 233).

Response to Finding No. 2724:

Complaint Counsel has no specific response.

2725. Dr. Tolaymat has consulted Dr. Barlaz on a number of questions concerning landfill biodegradation, and Dr. Barlaz has been hired by the EPA as a consultant on biodegradation. (Tolaymat, Tr. 233).

Response to Finding No. 2725:

Complaint Counsel has no specific response.

2726. Dr. Tolaymat has asked Dr. Barlaz to comment and review on Tolaymat's work. (Tolaymat, Tr. 234).

Response to Finding No. 2726:

Complaint Counsel has no specific response.

2727. Dr. Tolaymat has asked Dr. Barlaz to revise his work. (Tolaymat, Tr. 234).

Response to Finding No. 2727:

Complaint Counsel has no specific response.

2728. No other expert in the case suggested that an *in situ* landfill study was required to show biodegradation. (Tr. 1-3005).

Response to Finding No. 2728:

Complaint Counsel has no specific response.

2729. Dr. Tolaymat admitted that his proposal to use *in situ* landfill studies to measure biodegradation would not be appropriate because researchers would not be able to quantify or determine a specific amount of biodegradation. (Tolaymat, Tr. 222).

Response to Finding No. 2729:

Complaint Counsel has no specific response.

2730. Dr. Tolaymat later testified that, in his proposed *in situ* landfill study, "weight loss" would be an appropriate measurement of biodegradation, because gas evolution data would not be possible. (Tolaymat, Tr. 224).

Response to Finding No. 2730:

Complaint Counsel has no specific response.

2731. However, when attacking studies favorable to ECM, like the Environ tests, just hours before testifying on cross, Dr. Tolaymat was convinced that "mass loss as an indicator for biodegradation" was not appropriate. (Tolaymat, Tr. 183-84).

Response to Finding No. 2731:

Complaint Counsel has no specific response.

2732. In fact, one of Dr. Tolaymat's principle reasons for rejecting the Environ testing was because the study relied on mass loss as an indicator of biodegradation. (Tolaymat, Tr. 182-84).

Response to Finding No. 2732:

Complaint Counsel has no specific response.

2733. Dr. Tolaymat had never encountered an *in situ* landfill experiment that tested a specific commercial product as opposed to waste generally. (Tolaymat, Tr. 224).

Response to Finding No. 2733:

Complaint Counsel has no specific response.

2734. Dr. Tolaymat had never heard of any company specifically performing an *in situ* study for purposes of evaluating biodegradation claims. (Tolaymat, Tr. 224-25).

Response to Finding No. 2734:

Complaint Counsel has no specific response.

2735. Dr. Tolaymat admitted that *in situ* studies carry substantial difficulties and risks that complicate the ability to perform a successful test. (Tolaymat, Tr. 225-26).

Response to Finding No. 2735:

Complaint Counsel has no specific response.

2736. Dr. Tolaymat testified that landfill *in situ* studies are "rarely" performed. (Tolaymat, Tr. 237).

Response to Finding No. 2736:

Complaint Counsel has no specific response.

2737. Dr. Tolaymat also testified that lysimeter studies are possible. (Tolaymat, Tr. 228-29).

Response to Finding No. 2737:

Complaint Counsel has no specific response.

2738. Dr. Tolaymat stated that, to perform an adequate lysimeter study, he would make 12 percent of the lysimeter composed of ECM amended plastics. (Tolaymat, Tr. 229).

Response to Finding No. 2738:

Complaint Counsel has no specific response.

2739. Dr. Tolaymat could not explain how a lysimeter test composed of fully twelve percent ECM plastic would be representative of the typical landfill environment, particularly after he testified that plastics generally (not just ECM) ordinarily comprise twelve percent of the total waste. (Tolaymat, Tr. 229).

Response to Finding No. 2739:

Complaint Counsel has no specific response.

2740. Dr. Tolaymat's proposed lysimeter study would not rely on gas evolution data, but rather a series of qualitative endpoints like leachate quality and quantity. (Tolaymat, Tr. 230).

Response to Finding No. 2740:

Complaint Counsel has no specific response.

2741. Dr. Tolaymat did not explain how, if at all, he could calculate the percentage of biodegradation in a landfill based on those endpoints he posited for the lysimeter study. (Tolaymat, Tr. 230).

Response to Finding No. 2741:

Complaint Counsel has no specific response.

2742. In fact, although Dr. Tolaymat rejected entirely the Environ BioPVC study (and similar Environ studies) because Environ relied on weight loss as an endpoint, Dr. Tolaymat himself suggested that weight loss was an acceptable measurement when used in his *in situ* landfill studies. (Tolaymat, Tr. 279-80).

Response to Finding No. 2742:

Complaint Counsel has no specific response.

2743. He testified that weight loss was an appropriate endpoint for *in situ* studies, but not for the Environ study, even though he agreed that for the *in situ* landfill studies there are more variables as far as possible confounders than in the laboratory test performed by Dr. Barber at Environ. (Tolaymat, Tr. 281).

Response to Finding No. 2743:

Complaint Counsel has no specific response.

2744. In fact, Dr. Tolaymat testified that there are more concerns with "things that could go wrong" in an *in situ* landfill study than there would be in the Environ BioPVC study, which Dr. Tolaymat rejected outright. (Tolaymat, Tr. 281).

Response to Finding No. 2744:

Complaint Counsel has no specific response.

2745. Without supporting data, Dr. Tolaymat testified that he could use mass loss endpoints for an *in situ* study, but not for a laboratory study. (Tolaymat, Tr. 282).

Response to Finding No. 2745:

Complaint Counsel has no specific response.

2746. When specifically asked about what type of competent and reliable scientific evidence would be appropriate to prove that a product biodegrades at a certain rate in a landfill, Dr. Tolaymat explained that he would accept a “combination of tests.” (Tolaymat, Tr. 262).

Response to Finding No. 2746:

Complaint Counsel has no specific response.

2747. He explained that, under the totality of scientific evidence, whether a biodegradation claim was supported was entirely a matter of scientific judgment. (Tolaymat, Tr. 262).

Response to Finding No. 2747:

Complaint Counsel has no specific response.

2748. Dr. Tolaymat has himself relied on less than perfect scientific data in his research. (Tolaymat, Tr. 262).

Response to Finding No. 2748:

Complaint Counsel has no specific response.

2749. The EPA has guidance documents addressing how to glean information from less than perfect scientific information. (Tolaymat, Tr. 262-63).

Response to Finding No. 2749:

Complaint Counsel has no specific response.

2750. Dr. Tolaymat did not consult the EPA’s guidance documents concerning data validation and verification before authoring his report. (Tolaymat, Tr. 262-63).

Response to Finding No. 2750:

Complaint Counsel has no specific response.

2751. When specifically asked about what type of competent and reliable scientific evidence would be appropriate to prove that a product biodegrades at a certain rate in a landfill, Dr. Tolaymat explained that “one of the tests would be the biochemical methane potential test” or BMP. (Tolaymat, Tr. 218-19).

Response to Finding No. 2751:

Complaint Counsel has no specific response.

2752. The BMP test is a gas evolution test performed in a laboratory. (Tolaymat, Tr. 219).

Response to Finding No. 2752:

Complaint Counsel has no specific response.

2753. Dr. Tolaymat attempted to describe in vague terms how he would calculate a rate of biodegradation in an MSW landfill using a BMP test. (Tolaymat, Tr. 220-21).

Response to Finding No. 2753:

Complaint Counsel has no specific response.

2754. Dr. Tolaymat acknowledged that the rate of degradation would be “slower” in a landfill than in a BMP test. (Tolaymat, Tr. 221).

Response to Finding No. 2754:

Complaint Counsel has no specific response.

2755. When asked how he could then determine the specific rate of biodegradation in the landfill from the BMP, in other words, how much slower the degradation would be, Dr. Tolaymat testified that he “would be speculating if I tell you.” (Tolaymat, Tr. 221).

Response to Finding No. 2755:

Complaint Counsel has no specific response.

2756. The BMP test does not “replicate or simulate” landfill conditions, as Dr. Tolaymat uses that phrase, because it does not have the same moisture content as many landfills, it is usually conducted at higher temperatures, the test is enriched with nutrients, and the test samples are often ground or passed through screens. (Tolaymat, Tr. 220, 237-38).

Response to Finding No. 2756:

Complaint Counsel has no specific response.

2757. Dr. Tolaymat specifically testified that the BMP test “does not simulate” a landfill, and that the environment is optimized to show biodegradation. (Tolaymat, Tr. 237-38).

Response to Finding No. 2757:

Complaint Counsel has no specific response.

2758. Dr. Tolaymat testified that the BMP differs “dramatically” from the typical U.S. landfill. (Tolaymat, Tr. 238).

Response to Finding No. 2758:

Complaint Counsel has no specific response.

2759. Dr. Tolaymat still testified that “the BMP test provides [competent and reliable] data to shed light on the degradation in a landfill.” (Tolaymat, Tr. 218).

Response to Finding No. 2759:

Complaint Counsel has no specific response.

2760. He explained that, “if you run the appropriate controls, yes, the BMP could be a suitable test.” (Tolaymat, Tr. 237-38).

Response to Finding No. 2760:

Complaint Counsel has no specific response.

2761. Dr. Tolaymat recommended to Complaint Counsel that they perform a BMP test to assess the biodegradability of plastics made with the ECM additive. (Tolaymat, Tr. 356-57).

Response to Finding No. 2761:

Complaint Counsel has no specific response.

2762. At hearing, Dr. Tolaymat deviated from prior testimony and testified that he could not have tested the ECM additive because of hardship. (Tolaymat, Tr. 353-54).

Response to Finding No. 2762:

Complaint Counsel has no specific response.

2763. Contrary to his hearing testimony, Dr. Tolaymat testified at deposition that he offered to perform product testing of the ECM plastics for Complaint Counsel. (RX 851 (Tolaymat, Dep. at 39)).

Response to Finding No. 2763:

Complaint Counsel has no specific response.

2764. Specifically, Dr. Tolaymat testified as follows:

Q: Do you have the capability of performing product testing of ECM’s products?

A: Yes.

Q: You could run any of the tests that you did that you cite to in the peer-reviewed literature, right?

- A: Given enough time, we have the capability to run any tests we deem necessary.
- ...
- Q: Did you ask to perform any of those tests?
- A: I suggested one time that it may be beneficial to do it, but that was it.
- ...
- Q: What kind of test did you suggest?
- A: Whatever anaerobic tests we were conducting at the time, so it probably would be the biochemical methane potential test.

(RX 851 (Tolaymat, Dep. at 38-39).

Response to Finding No. 2764:

Complaint Counsel has no specific response.

2765. Then, at the hearing, Dr. Tolaymat testified contrary to his deposition that EPA could not have performed testing because they “would have to open it up for any other company out there that has a product that they claim is biodegradable.” (Tolaymat, Tr. 353).

Response to Finding No. 2765:

Complaint Counsel has no specific response.

2766. Dr. Tolaymat conceded that the test protocol for a BMP test is not standardized and it varies considerably from one laboratory to another. (Tolaymat, Tr. 239).

Response to Finding No. 2766:

Complaint Counsel has no specific response.

2767. Dr. Tolaymat stated that the deviation from one laboratory to another in the operation of the BMP study did not render data unreliable. (Tolaymat, Tr. 239).

Response to Finding No. 2767:

Complaint Counsel has no specific response.

2768. Dr. Tolaymat himself chose to perform a BMP test to evaluate the biodegradability of commercial plastic products in about 2010. (Tolaymat, Tr. 238-39).

Response to Finding No. 2768:

Complaint Counsel has no specific response.

2769. The point of Dr. Tolaymat’s BMP study was specifically to draw conclusions about “the performance of the plastics in a landfill environment.” (Tolaymat, Tr. 243).

Response to Finding No. 2769:

Complaint Counsel has no specific response.

2770. At the same time, Dr. Tolaymat rejected “dozens” of favorable ECM D5511 gas evolution studies because, according to Dr. Tolaymat, they did not “simulate” landfill conditions. (Tolaymat, Tr. 235-37).

Response to Finding No. 2770:

Complaint Counsel has no specific response.

2771. He testified that he rejected “all of ... ECM’s D5511 studies because they don’t simulate the landfill environment.” (Tolaymat, Tr. 243).

Response to Finding No. 2771:

Complaint Counsel has no specific response.

2772. But Dr. Tolaymat himself relied on that same type of scientific information in his own assessments of plastics biodegradability in landfills. (Tolaymat, Tr. 243).

Response to Finding No. 2772:

Complaint Counsel has no specific response.

2773. Despite that fact, Dr. Tolaymat testified that a test which deviates in any respect from a landfill environment through, e.g., temperature or moisture, is not competent and reliable scientific evidence to show that a product will biodegrade in a typical municipal solid waste landfill. (Tolaymat, Tr. 236-37).

Response to Finding No. 2773:

Complaint Counsel has no specific response.

2774. Dr. Tolaymat agreed that biodegradation tests can be accelerated, but he did not know and would have needed to “speculate” how a researcher would accelerate the tests. (Tolaymat, Tr. 244).

Response to Finding No. 2774:

Complaint Counsel has no specific response.

2775. Dr. Tolaymat was not sure whether a plastic that biodegraded in a landfill in twenty years was environmentally beneficial. (Tolaymat, Tr. 245-46).

Response to Finding No. 2775:

Complaint Counsel has no specific response.

2776. In his expert report, Dr. Tolaymat did not understand how half-lives operate, and he repeatedly calculated the time for complete biodegradation of a material to be simply twice the half-life. (CCX 893 at 16 n.9, 27 ¶67).

Response to Finding No. 2776:

The Court should disregard this finding because it merely provides an opinion unsupported by the citations to the record and does not state any fact.

2777. He later corrected himself at the hearing after being confronted with his erroneous understanding of half-lives during his deposition. (RX 851 (Tolaymat, Dep. at 97-99); Tolaymat, Tr. 246-47).

Response to Finding No. 2777:

The Court should disregard this finding because it merely provides an opinion unsupported by the citations to the record and does not state any fact.

2778. Based on Dr. Tolaymat's insistence that a test must replicate or simulate a landfill environment, Dr. Tolaymat admitted that, to satisfy his standard, a test would need to be run for decades in order to show that a degradable plastic, which could reasonably biodegrade over 20 years, was completely biodegraded. (Tolaymat, Tr. 245-50).

Response to Finding No. 2778:

The Court should disregard this finding because it is not supported by the citation to the record.

2779. Dr. Tolaymat testified that a test must precisely simulate the landfill environment to be competent and reliable, but, he also accepted that a biodegradation test could be "accelerated" so that it would not be required to run for decades. (Tolaymat, Tr. 249).

Response to Finding No. 2779:

Complaint Counsel has no specific response.

2780. When asked how tests could be accelerated while at the same time simulating a landfill environment, Dr. Tolaymat stated, "that is an open-ended question. I mean, we can spend hours and hours talking about it" and "it's going to take more than this court has time to allow." (Tolaymat, Tr. 250).

Response to Finding No. 2780:

Complaint Counsel has no specific response.

2781. Dr. Tolaymat testified that the D5511 test is not an "accelerated" test. (Tolaymat, Tr. 250-51).

Response to Finding No. 2781:

Complaint Counsel has no specific response.

2782. He testified that a laboratory could conduct a D5511 test for several years while maintaining test conditions. (Tolaymat, Tr. 251).

Response to Finding No. 2782:

Complaint Counsel has no specific response.

2783. However, Dr. Tolaymat rejected certain ECM D5511 tests that were longer in duration because, according to Dr. Tolaymat, they did not follow the D5511 method precisely. (Tolaymat, Tr. 251-52).

Response to Finding No. 2783:

Complaint Counsel has no specific response.

2784. Dr. Tolaymat offered no explanation for why a D5511 test of longer duration would not follow the D5511 method. (Tolaymat, Tr. 250-53).

Response to Finding No. 2784:

Complaint Counsel has no specific response.

2785. The ASTM D5511 method does not specify a cutoff time or duration for the test and, in fact, the method specifically contemplates tests of varying durations: “The incubation time shall be run **until** no net gas production is noted for at least five days from both the positive control and the test substance reactors.” (RX 356 at 3 § 11.2.1.2) (emphasis added).

Response to Finding No. 2785:

This finding is misleading. The method specifically states as follows:

Incubate the Erlenmeyer flasks in the dark or in diffused light at 52°C (62°C) for thermophilic conditions, or 37°C (62°C) for mesophilic conditions **for a period of normally 15-30 days.**

RX 356 at 3 (Section 11.2.1) (emphasis added).

If sufficient biodegradation (a minimum of 70 % for cellulose **after 30 days**, and the deviation among the cellulose replicates is less than 20 % of the mean) is not observed within the duration of the test method, then the test method must be regarded as invalid and shall be repeated with fresh inoculum.

RX 356 at 4 (Section 13.2) (emphasis added).

Furthermore, the method specifically states that the “results shall not be extrapolated past the actual duration of the test.” RX 356 at 1 (Section 1.4).

2786. Although Dr. Tolaymat entirely rejected ECM D5511 tests that were run longer than 60 days because those tests did not “follow the standard test method,” he offered no scientific basis to reject data on those grounds alone, and he acknowledged that the BMP test, upon which he himself used and recommended, did not even have a standard test method. (Tolaymat, Tr. 252-54).

Response to Finding No. 2786:

The Court should disregard the part of the finding stating that Dr. Tolaymat “offered no scientific basis to reject data on those grounds alone” because it merely offers an opinion and is not supported by the citation to the record.

2787. Dr. Tolaymat admitted that he excluded “an entire class of studies” solely because they did not “simulate the landfill” and that he excluded those studies “**regardless of how well-conducted those studies [were].**” (Tolaymat, Tr. 296) (emphasis added).

Response to Finding No. 2787:

Complaint Counsel has no specific response.

2788. On that basis, he rejected “dozens” of positive ECM studies. (Tolaymat, Tr. 296).

Response to Finding No. 2788:

Complaint Counsel has no specific response.

2789. Dr. Tolaymat performed no research and reviewed no studies or articles concerning the limitations of closed-system laboratories. (Tolaymat, Tr. 290).

Response to Finding No. 2789:

Complaint Counsel has no specific response.

2790. He reviewed no articles or literature on the principle of feedback inhibition. (Tolaymat, Tr. 290).

Response to Finding No. 2790:

Complaint Counsel has no specific response.

2791. Dr. Sahu, by contrast, testified that extending the duration of a D5511 test does not render the data unreliable. (Sahu, Tr. 1928).

Response to Finding No. 2791:

Complaint Counsel has no specific response.

2792. Dr. Sahu testified that, consistent with the D5511 standard itself, as long as the conditions of the test are maintained, then there is no reason to simply reject a test based on an increase in study duration. (Sahu, Tr. 1928).

Response to Finding No. 2792:

Complaint Counsel has no specific response.

2793. Dr. Sahu had no concerns with the methodology of the various laboratory reactor tests performed on ECM plastics. (Sahu, Tr. 1932-33).

Response to Finding No. 2793:

Complaint Counsel has no specific response.

2794. In his expert report, Dr. Tolaymat wrote that the conditions in a D5511 gas evolution test will cause activity by “different bacterial communities” in landfills. (Tolaymat, Tr. 263).

Response to Finding No. 2794:

Complaint Counsel has no specific response.

2795. Dr. Tolaymat presented no data in his report or testimony concerning an assessment of bacterial communities in landfills. (Tolaymat, Tr. 264).

Response to Finding No. 2795:

Complaint Counsel has no specific response.

2796. Dr. Tolaymat does not consider himself to be an expert in the kinds of microbial species that exist in landfills. (Tolaymat, Tr. 264).

Response to Finding No. 2796:

Complaint Counsel has no specific response.

2797. Dr. Tolaymat was not aware of the type of enzymes produced by microbial species that might cause biodegradation. (Tolaymat, Tr. 264).

Response to Finding No. 2797:

Complaint Counsel has no specific response.

2798. Dr. Tolaymat could not identify or explain the mechanisms of action used by microbes and colonies of microbes to biodegrade plastics. (Tolaymat, Tr. 264).

Response to Finding No. 2798:

Complaint Counsel has no specific response.

2799. Dr. Tolaymat did not know whether there is an overlap in the temperatures where mesophilic and thermophilic bacteria function. (Tolaymat, Tr. 266).

Response to Finding No. 2799:

Complaint Counsel has no specific response.

2800. Dr. Tolaymat did not evaluate whether thermophilic and mesophilic bacteria would use similar forms of enzymatic degradation or metabolism to break down substrates. (Tolaymat, Tr. 266).

Response to Finding No. 2800:

Complaint Counsel has no specific response.

2801. Dr. Tolaymat could not name a single phyla of bacteria that exist in landfills. (Tolaymat, Tr. 266).

Response to Finding No. 2801:

Complaint Counsel has no specific response.

2802. Dr. Tolaymat could not name a single phyla of fungi that exist in landfills. (Tolaymat, Tr. 266).

Response to Finding No. 2802:

Complaint Counsel has no specific response.

2803. Dr. Tolaymat could not state whether types of bacteria in a D5511 test environment also exist in the MSW landfills. (Tolaymat, Tr. 266-67).

Response to Finding No. 2803:

Complaint Counsel has no specific response.

2804. Dr. Tolaymat rejected the Environ BioPVC study (CCX 739) because, according to him, it contained several methodological flaws. (Tolaymat, Tr. 268-69).

Response to Finding No. 2804:

Complaint Counsel has no specific response.

2805. He rejected the study (CCX 739) because the moisture content was too high. (Tolaymat, Tr. 268-69).

Response to Finding No. 2805:

Complaint Counsel has no specific response.

2806. However, Dr. Tolaymat himself had relied on BMP studies that had higher moisture levels than the Environ BioPVC study, and Dr. Tolaymat testified that those BMP studies were competent and reliable. (Tolaymat, Tr. 218-19, 268-69).

Response to Finding No. 2806:

Complaint Counsel has no specific response.

2807. Dr. Tolaymat also conceded that landfill systems are highly variable and have many different moisture levels throughout a single landfill, including pockets where waste is saturated. (Tolaymat, Tr. 270-71).

Response to Finding No. 2807:

Complaint Counsel has no specific response.

2808. Dr. Tolaymat conceded that landfills have “ponding” or ponded areas where water content is saturated above the fifty percent (50%) mark. (Tolaymat, Tr. 273-74).

Response to Finding No. 2808:

Complaint Counsel has no specific response.

2809. He admitted that a landfill could be almost dry on one side and then very wet on the other side. (Tolaymat, Tr. 274-75).

Response to Finding No. 2809:

Complaint Counsel has no specific response.

2810. He also conceded that landfills receive moisture that infiltrates from rainwater, and that landfill moisture content varies considerably by geographic location. (Tolaymat, Tr. 276-77).

Response to Finding No. 2810:

Complaint Counsel has no specific response.

2811. Dr. Tolaymat was also aware that certain landfills practice spray application of liquid to waste. (Tolaymat, Tr. 277-78).

Response to Finding No. 2811:

Complaint Counsel has no specific response.

2812. In rejecting the Environ BioPVC study (CCX 739), Dr. Tolaymat testified that it was more likely that the mass loss resulted from fragmentation of the BioPVC than from biodegradation. (Tolaymat, Tr. 282).

Response to Finding No. 2812:

Complaint Counsel has no specific response.

2813. However, Dr. Tolaymat observed no evidence that suggested fragmentation was possible or likely, such as agitation of the test vessels. (Tolaymat, Tr. 282).

Response to Finding No. 2813:

Complaint Counsel has no specific response.

2814. Dr. Tolaymat could not explain the type of mechanical processes that he thought were responsible for fragmentation of the BioPVC in lieu of biodegradation. (Tolaymat, Tr. 283).

Response to Finding No. 2814:

Complaint Counsel has no specific response.

2815. Dr. Tolaymat never determined whether the PVC plastic would be susceptible to fragmentation based on the PVC's molecular structure. (Tolaymat, Tr. 283).

Response to Finding No. 2815:

Complaint Counsel has no specific response.

2816. He never considered the PVC molecule's melting point, glass transition temperature, crystallinity, or modulus of elasticity. (Tolaymat, Tr. 283).

Response to Finding No. 2816:

Complaint Counsel has no specific response.

2817. He was not aware whether the negative controls displayed similar results. (Tolaymat, Tr. 284).

Response to Finding No. 2817:

Complaint Counsel has no specific response.

2818. Dr. Tolaymat was aware that Dr. Barber at Environ also relied on the presence of free chloride ions in solution to show that the PVC molecule had broken down. (Tolaymat, Tr. 284-85).

Response to Finding No. 2818:

Complaint Counsel has no specific response.

2819. Dr. Tolaymat agreed that the BioPVC molecule would have originally contained chloride. (Tolaymat, Tr. 284).

Response to Finding No. 2819:

Complaint Counsel has no specific response.

2820. Dr. Tolaymat was also aware that the negative control did not display a similar increase in chloride ions. (Tolaymat, Tr. 285).

Response to Finding No. 2820:

Complaint Counsel has no specific response.

2821. Dr. Tolaymat dismissed the significance of the chloride ions. (Tolaymat, Tr. 285).

Response to Finding No. 2821:

Complaint Counsel has no specific response.

2822. Dr. Tolaymat suggested that “the free chloride could have come from the ECM additive that was used since there was no ECM control by itself.” (Tolaymat, Tr. 285).

Response to Finding No. 2822:

Complaint Counsel has no specific response.

2823. However, he testified immediately thereafter that the ECM additive “**shouldn’t**” contain polyvinyl chloride. (Tolaymat, Tr. 285).

Response to Finding No. 2823:

Complaint Counsel has no specific response.

2824. In fact, Dr. Tolaymat conceded that “if the ECM additive we are sure does not contain chloride, then **the chloride obviously would be coming from potentially the degradation of the PVC.**” (Tolaymat, Tr. 286) (emphasis added).

Response to Finding No. 2824:

Complaint Counsel has no specific response.

2825. Dr. McCarthy, in his report at page 24 n.17, reported that the ECM additive contains polyethylene vinyl acetate (EVA), polycaprolactone (PCL), linear low-density polyethylene (LLDPE), calcium stearate, and starch, none of which contain chloride (CCX 891 at 24 n.17).

Response to Finding No. 2825:

Complaint Counsel has no specific response.

2826. Dr. Tolaymat also concluded that a plateau in the test environment is evidence that the test plastic is no longer biodegradable. (Tolaymat, Tr. 287).

Response to Finding No. 2826:

Complaint Counsel has no specific response.

2827. Dr. Tolaymat, without evidentiary support or a basis in fact, testified that exposing a partially biodegraded test sample to the atmosphere would render that product incapable of further biodegradation testing. (Tolaymat, Tr. 287).

Response to Finding No. 2827:

The Court should disregard this finding because it is not supported by the citation to the record.

2828. Dr. Tolaymat conceded, however, that the test plastic is exposed to the atmosphere before biodegradation testing. (Tolaymat, Tr. 288).

Response to Finding No. 2828:

Complaint Counsel has no specific response.

2829. He also conceded that if a test sample were returned to a test vessel, the production of methane gas would indicate the presence of continued anaerobic biodegradation. (Tolaymat, Tr. 289).

Response to Finding No. 2829:

Complaint Counsel has no specific response.

2830. Dr. Tolaymat's theory on the "plateau effect" is that once a plateau is observed, the ECM additive has been exhausted and there is nothing left to biodegrade. (Tolaymat, Tr. 289).

Response to Finding No. 2830:

Complaint Counsel has no specific response.

2831. Without any scientific basis, Dr. Tolaymat rejected the logical idea that a lab could retest the partially degraded sample to test whether any portion remains biodegradable after the first test. (Tolaymat, Tr. 289).

Response to Finding No. 2831:

The Court should disregard this finding because it is not supported by the citation to the record.

2832. Dr. Tolaymat conceded and agreed that, "if the additive is ... exhausted and there's biodegradation, that would be reflective that the test article, the plastic, is degrading." (Tolaymat, Tr. 289).

Response to Finding No. 2832:

Complaint Counsel has no specific response.

2833. Dr. Tolaymat considers cellulose to be a “fully degradable material.” (Tolaymat, Tr. 290).

Response to Finding No. 2833:

Complaint Counsel has no specific response.

2834. Laboratories use cellulose as a positive control in gas evolution testing precisely because the product should be fully biodegradable. (Tolaymat, Tr. 291).

Response to Finding No. 2834:

Complaint Counsel has no specific response.

2835. Dr. Tolaymat conceded that in studies that are in the record, evidence suggests that cellulose “plateaued” or stopped degrading well below 90% and in at least one test it plateaued under 50%. (Tolaymat, Tr. 292-93).

Response to Finding No. 2835:

Complaint Counsel has no specific response.

2836. Dr. Tolaymat conceded that the material may have stopped biodegrading because “the environment that it is in [was] not conducive for complete biodegradation...” (Tolaymat, Tr. 292).

Response to Finding No. 2836:

Complaint Counsel has no specific response.

2837. Dr. Tolaymat also rejected many positive ECM D5511 tests because, according to Dr. Tolaymat, they did not provide a means to distinguish biodegradation of the plastics and the additive. (Tolaymat, Tr. 296).

Response to Finding No. 2837:

Complaint Counsel has no specific response.

2838. He could not explain how plastics are manufactured with the ECM additive. (Tolaymat, Tr. 297-98).

Response to Finding No. 2838:

Complaint Counsel has no specific response.

2839. Dr. Tolaymat agreed that other additives, like colorants, which are introduced into the plastics in a similar method and at similar percentages as the ECM additive (Sahu, Tr. 1818-20), appear to be mixed throughout the plastic uniformly. (Tolaymat, Tr. 298-99).

Response to Finding No. 2839:

Complaint Counsel has no specific response.

2840. Dr. Tolaymat had no reason to think that the ECM additive is not uniformly mixed throughout the plastic if manufactured as intended. (Tolaymat, Tr. 299).

Response to Finding No. 2840:

Complaint Counsel has no specific response.

2841. He agreed that the goal of manufacturing the ECM plastic is to achieve a uniform distribution throughout the plastic. (Tolaymat, Tr. 299).

Response to Finding No. 2841:

Complaint Counsel has no specific response.

2842. Dr. Tolaymat testified that much of the ECM additive will not, therefore, be accessible to the microbes at once. (Tolaymat, Tr. 299).

Response to Finding No. 2842:

Complaint Counsel has no specific response.

2843. Dr. Tolaymat agreed that the methane sourced from a D5511 test can only be sourced from anaerobic biodegradation. (Tolaymat, Tr. 302).

Response to Finding No. 2843:

Complaint Counsel has no specific response.

2844. He testified that the presence of methane in the test environment is an indication that there is anaerobic biodegradation. (Tolaymat, Tr. 302).

Response to Finding No. 2844:

Complaint Counsel has no specific response.

2845. The point of a D5511 test, or a “gas evolution” test, is to calculate a percentage of biodegradation based on the gas emissions. (Tolaymat, Tr. 303).

Response to Finding No. 2845:

Complaint Counsel has no specific response.

2846. That percentage is calculated by first determining the theoretical yield of gas that could possibly be sourced from the test article, assuming complete conversion of carbon to gas. (Tolaymat, Tr. 303).

Response to Finding No. 2846:

Complaint Counsel has no specific response.

2847. Dr. Tolaymat agreed that the theoretical yields are appropriate endpoints because “there can only be so much carbon in a test sample based on weight.” (Tolaymat, Tr. 305).

Response to Finding No. 2847:

Complaint Counsel has no specific response.

2848. He also agreed that it would be scientifically appropriate to calculate a maximum theoretical yield of gas from the ECM additive alone. (Tolaymat, Tr. 305).

Response to Finding No. 2848:

Complaint Counsel has no specific response.

2849. Dr. Tolaymat did not attempt to calculate a theoretical yield of methane or gas from the ECM additive alone. (Tolaymat, Tr. 306).

Response to Finding No. 2849:

Complaint Counsel has no specific response.

2850. Dr. Tolaymat did not consider whether the amount of methane recorded in ECM’s gas evolution tests would have been greater than the maximum amount of methane theoretically possible from the ECM additive alone. (Tolaymat, Tr. 308-10).

Response to Finding No. 2850:

Complaint Counsel has no specific response.

2851. Dr. Tolaymat testified that a D5511 test of sound methodological quality that revealed a percentage of biodegradation in the range of 50%, with just 1% of the additive, would be evidence that the plastic was biodegrading and not the additive. (Tolaymat, Tr. 314).

Response to Finding No. 2851:

This finding is misleading. Dr. Tolaymat’s testimony was based on an assumption that Respondent asked him to accept before offering the testimony.

2852. Dr. Tolaymat’s statement that a methodologically sound D5511 test could produce evidence that the plastic and not the additive was degrading conflicts with his testimony and expert report where he testified that the D5511 test does not allow researchers to determine if the plastic degraded above the additive. (Tolaymat, Tr. 296, 313-14).

Response to Finding No. 2852:

The Court should disregard this finding because it merely offers an opinion and is not supported by the citation to the record.

2853. Dr. Tolaymat did not perform any statistical analyses of the test data. (Tolaymat, Tr. 314-15).

Response to Finding No. 2853:

Complaint Counsel has no specific response.

2854. With respect to NE Labs testing, or any gas evolution testing relevant to the case, Dr. Tolaymat did not perform statistical analyses of the data. (Tolaymat, Tr. 316-17).

Response to Finding No. 2854:

Complaint Counsel has no specific response.

2855. Dr. Tolaymat testified that the same raw data available to Dr. Barlaz was also available to him. (Tolaymat, Tr. 317).

Response to Finding No. 2855:

Complaint Counsel has no specific response.

2856. He testified that he was aware of Dr. Barlaz's statistical calculations, but he did not perform the same calculations on his own, or any similar calculations. (Tolaymat, Tr. 317).

Response to Finding No. 2856:

Complaint Counsel has no specific response.

2857. Dr. Tolaymat was aware of Dr. Barlaz's statistical calculations based on gas evolution data, but Dr. Tolaymat did not review Dr. Barlaz's statistical calculations. (Tolaymat, Tr. 316-17).

Response to Finding No. 2857:

Complaint Counsel has no specific response.

2858. Dr. Tolaymat claimed to have reviewed test data after his deposition, but before the hearing, but he testified that he "didn't do any calculations." (Tolaymat, Tr. 317).

Response to Finding No. 2858:

Complaint Counsel has no specific response.

2859. Although the raw data was available to him, Dr. Tolaymat did not calculate the ratio of methane yield of the substrate to the inoculum yield. (Tolaymat, Tr. 320-21).

Response to Finding No. 2859:

Complaint Counsel has no specific response.

2860. Dr. Tolaymat did not calculate the mean methane in milliliters for the inoculum. (Tolaymat, Tr. 320).

Response to Finding No. 2860:

Complaint Counsel has no specific response.

2861. He did not calculate t-statistics for the methane or carbon dioxide readings. (Tolaymat, Tr. 321).

Response to Finding No. 2861:

Complaint Counsel has no specific response.

2862. He did not calculate standard deviations. (Tolaymat, Tr. 321).

Response to Finding No. 2862:

Complaint Counsel has no specific response.

2863. He did not calculate ranges. (Tolaymat, Tr. 321).

Response to Finding No. 2863:

Complaint Counsel has no specific response.

2864. He did not calculate the theoretical yield of methane from the ECM additive (Tolaymat, Tr. 321-22), yet he testified that the D5511 tests cannot show that the biodegradation occurring from the test sample is from the additive. (Tolaymat, Tr. 207).

Response to Finding No. 2864:

Complaint Counsel has no specific response.

2865. Even when accepting the premise behind Dr. Barlaz's opinion, and accepting that the amount of methane gas stemming from the additive is limited, Dr. Tolaymat still insisted that he could not determine whether biodegradation exceeded the maximum amount potentially supplied by the ECM additive. (Tolaymat, Tr. 307-10).

Response to Finding No. 2865:

Complaint Counsel has no specific response.

2866. Dr. Tolaymat also rejected aerobic studies of ECM amended plastics solely because they were conducted under aerobic conditions. (Tolaymat, Tr. 324).

Response to Finding No. 2866:

Complaint Counsel has no specific response.

2867. Dr. Tolaymat rejected the Ecologica Applicata aerobic test which revealed 47% biodegradation over 180 days, solely because the test did not simulate landfill conditions. (Tolaymat, Tr. 324; RX 276).

Response to Finding No. 2867:

Complaint Counsel has no specific response.

2868. Dr. Tolaymat had no basis to conclude that the test reported as RX 276 did not adhere to the ISO 14855 standard that was described in the report. (Tolaymat, Tr. 325; RX 276).

Response to Finding No. 2868:

Complaint Counsel has no specific response.

2869. He testified that he had no reason to think that the test marked RX 276 was methodologically flawed. (Tolaymat, Tr. 326).

Response to Finding No. 2869:

The Court should disregard this finding because it is not supported by the citation to the record.

2870. Dr. Tolaymat had no specific belief that the polyamide nylon plastic polymer tested in RX 276 was a product that would be aerobically biodegradable but not anaerobically biodegradable. (Tolaymat, Tr. 326-27).

Response to Finding No. 2870:

The Court should disregard this finding because it is not supported by the citation to the record.

2871. Dr. Tolaymat also rejected all biodegradation studies that did not show “complete” biodegradation because, according to Dr. Tolaymat, the only way to prove complete biodegradation is to test and actually witness complete biodegradation. (Tolaymat, Tr. 329-30).

Response to Finding No. 2871:

Complaint Counsel has no specific response.

2872. Dr. Tolaymat also rejected ASTM D5511 tests because the laboratories measured gas weekly. (Tolaymat, Tr. 329).

Response to Finding No. 2872:

Complaint Counsel has no specific response.

2873. He provided no scientific basis to conclude that weekly gas measurements would render the data or study conclusions unreliable. (Tolaymat, Tr. 329-31).

Response to Finding No. 2873:

Complaint Counsel has no specific response.

2874. In fact, Dr. Tolaymat himself published two peer reviewed articles wherein he employed gas evolution tests and recorded gas readings even less frequent than weekly. (Tolaymat, Tr. 330-32).

Response to Finding No. 2874:

Complaint Counsel has no specific response.

2875. Although Dr. Tolaymat testified that he did not “see any scientific issues affecting the data from once-per-week gas measurement[s],” he rejected ECM tests that relied on weekly measurements. (Tolaymat, Tr. 329-31).

Response to Finding No. 2875:

Complaint Counsel has no specific response.

2876. Dr. Tolaymat did not reject his own study data when he relied on weekly gas measurements and, in fact, he relied on that data to support his writings in the peer reviewed literature. (Tolaymat, Tr. 332-33).

Response to Finding No. 2876:

Complaint Counsel has no specific response.

2877. The EPA’s Landfill Methane Outreach Program (LMOP) has a mission to reduce methane emissions from landfills. (RX 967).

Response to Finding No. 2877:

Complaint Counsel has no specific response.

2878. One of the ways LMPO tries to accomplish its mission is by promoting successful recovery of landfill gas emissions. (RX 967).

Response to Finding No. 2878:

Complaint Counsel has no specific response.

2879. In 2013, the EPA had estimated that landfills were supplying already over 102 billion cubic feet of usable methane landfill gas per year. (RX 967).

Response to Finding No. 2879:

Complaint Counsel has no specific response.

2880. Dr. Tolaymat conceded that the amount of methane identified by LMOP mostly came from those landfills Dr. Tolaymat had described as “dry tomb” landfills. (Tolaymat, Tr. 343).

Response to Finding No. 2880:

Complaint Counsel has no specific response.

2881. Dr. Tolaymat also accepted that the EPA LMOP has identified another 600 potential landfills for methane gas recovery for beneficial use, most of which would also be “dry tomb” landfills as Dr. Tolaymat described them. (Tolaymat, Tr. 343).

Response to Finding No. 2881:

Complaint Counsel has no specific response.

2882. Dr. Tolaymat conceded that the presence of landfill gas, specifically methane, is an indication of biological activity because, in part, “methane can only be sourced in a landfill from anaerobic biodegradation.” (Tolaymat, Tr. 340).

Response to Finding No. 2882:

Complaint Counsel has no specific response.

2883. Dr. Tolaymat never discussed his position concerning “dry tomb” landfills with colleagues in the EPA’s LMOP. (Tolaymat, Tr. 344).

Response to Finding No. 2883:

Complaint Counsel has no specific response.

2884. Dr. Tolaymat did not share his report with any person in the EPA’s LMOP. (Tolaymat, Tr. 344).

Response to Finding No. 2884:

Complaint Counsel has no specific response.

2885. Dr. Tolaymat did not consult with anyone in the EPA’s LMOP when preparing his opinion in this case. (Tolaymat, Tr. 344).

Response to Finding No. 2885:

Complaint Counsel has no specific response.

XVIII. AN INCONCLUSIVE TEST IS NOT PROOF OF A NEGATIVE TEST

2886. Any laboratory test used to measure real-world phenomena is an approximation of the real-world situation and, so, scientists must accept that the real world is more complex and subject to more factors that cannot be controlled for in the laboratory environment. (Sahu, Tr. 1915).

Response to Finding No. 2886:

Complaint Counsel has no specific response.

2887. Dr. Sahu explained that because MSW landfills are so heterogeneous, and that the range of conditions are so vast, it would be impossible to “replicate” in one laboratory test the conditions present in landfills generally. (Sahu, Tr. 1915-16).

Response to Finding No. 2887:

Complaint Counsel has no specific response.

2888. Gas evolution tests cannot scientifically be rejected simply because they do not perfectly replicate all conditions (or even average conditions) found in MSW landfills. (Sahu, Tr. 1016-17).

Response to Finding No. 2888:

The Court should disregard this finding because it merely offers an opinion of Respondent’s expert and does not state any fact.

2889. Many laboratories deviate slightly from the ASTM D5511 protocol. (Sahu, Tr. 1922-23). Variations of the testing protocol do not render the test data unreliable. (Sahu, Tr. 1922-23).

Response to Finding No. 2889:

The Court should disregard this finding because it merely offers an opinion of Respondent’s expert and does not state any fact.

2890. Dr. Sahu testified that there are concerns with running a closed-system laboratory test over longer periods of time. (Sahu, Tr. 1928-29). The test ecosystem must be maintained, which is challenging. (Sahu, Tr. 1928-29).

Response to Finding No. 2890:

Complaint Counsel has no specific response.

2891. Unlike in a landfill where biological systems are being replenished and renewed and have a greater propensity to thrive, a lab environment can quickly lose activity if the biota die. (Sahu, Tr. 1929).

Response to Finding No. 2891:

Complaint Counsel has no specific response.

2892. Biological systems produce waste, and the closed-system laboratory test does not permit that waste to be rejected or expelled. (Sahu, Tr. 1930).

Response to Finding No. 2892:

Complaint Counsel has no specific response.

2893. The closed-system laboratory test vessel is also limited in that there may be less biological diversity in the test sample than what might exist in the natural environment. (Sahu, Tr. 1931).

Response to Finding No. 2893:

Complaint Counsel has no specific response.

2894. Evidence that a plateau has formed in the laboratory tests can signal that the test environment is no longer conducive to biodegradation testing. (Sahu, Tr. 1929). That is particularly evident where the plateau forms in the positive control, an article known to be biodegradable. (Sahu, Tr. 1929-30).

Response to Finding No. 2894:

Complaint Counsel has no specific response.

2895. Dr. Sahu testified that the presence of a “plateau effect” in the closed-system laboratory tests does not mean that biodegradation of the test substrate is no longer possible, or that the test substrate is finished biodegrading. (Sahu, Tr. 1931).

Response to Finding No. 2895:

Complaint Counsel has no specific response.

2896. Dr. Sahu explained that there are multiple candidate answers to explain the plateau effect, and one of which is that the article has seemingly stopped biodegrading because the biological activity in the test vessel has diminished or is no longer present. (Sahu, Tr. 1931-32).

Response to Finding No. 2896:

Complaint Counsel has no specific response.

2897. Dr. Sahu reviewed biodegradation tests of ECM plastics that were inconclusive with respect to biodegradation. (Sahu, Tr. 1937).

Response to Finding No. 2897:

Complaint Counsel has no specific response.

2898. Dr. Sahu explained that there are many reasons that might point to the cause of an inconclusive test. (Sahu, Tr. 1938-39).

Response to Finding No. 2898:

Complaint Counsel has no specific response.

2899. To properly understand an inconclusive test, the scientist must understand, inter alia, the biological activity in the test vessels; know whether the additive as in fact properly mixed and present in the plastic; know whether the plastic was manufactured with the additive properly such that the additive was not rendered ineffective; and know whether the presence of other additives or impurities may have hindered biodegradation. (Sahu, Tr. 1938-39).

Response to Finding No. 2899:

Complaint Counsel has no specific response.

2900. For instance, Dr. Barber at Environ explained that polystyrene foams did not test well in his methodology that is based on weight loss because the foams collect and retain too much environmental material. Dolco and EDS produce products that use expanded polystyrene. (Barber, Tr. 2148:16-18, 2149:5-11, 2148:6-7).

Response to Finding No. 2900:

Complaint Counsel has no specific response.

2901. Expanded polystyrene has a lot of pore space that can trap dirt and microorganisms, and flushing these materials out can be problematic. (Barber, Tr. 2148:16-18, 2149:5-11).

Response to Finding No. 2901:

Complaint Counsel has no specific response.

2902. The inability to clear out the dirt, bacteria and other materials from these pores can result in negative weight loss or weight gain during the exposure period. (Barber, Tr. 2149:8-12).

Response to Finding No. 2902:

Complaint Counsel has no specific response.

2903. Dispoz-o products are made of both expanded polystyrene and molded polystyrene. (Barber, Tr. 2148:8-9).

Response to Finding No. 2903:

Complaint Counsel has no specific response.

2904. FP International produces a product that uses a combination of polyethylene film and expanded polystyrene. (Barber, Tr. 2148:10-12).

Response to Finding No. 2904:

Complaint Counsel has no specific response.

2905. The manufacturing process with the ECM additive is subject to complexities that must be controlled for. (Sahu, Tr. 1938-39).

Response to Finding No. 2905:

Complaint Counsel has no specific response.

2906. In the inconclusive studies, the laboratories generally did not follow-up or investigate why the study may have been inconclusive. (Sahu, Tr. 1939).

Response to Finding No. 2906:

Complaint Counsel has no specific response.

2907. Even assuming that Complaint Counsel's priming effect theory is supportable, that priming effect would be expected in all ECM studies because the ECM additive itself is biodegradable. (Sahu, Tr. 1942).

Response to Finding No. 2907:

The Court should disregard this finding because it merely offers an opinion of Respondent's expert and does not state any fact.

2908. If a test shows no biodegradation, or very little biodegradation, then that data is inconsistent with Complaint Counsel's theory on the priming effect. (Sahu, Tr. 1942-43). That data is also consistent with the implication that manufacturing errors or other variables limited the ECM additive's efficacy or presence in the final product. (Sahu, Tr. 1942-43).

Response to Finding No. 2908:

The Court should disregard this finding because it merely offers an opinion of Respondent's expert and does not state any fact.

XIX. THIS COURT SANCTIONED COMPLAINT COUNSEL FOR A DISCOVERY OBLIGATION

2909. On February 28, 2014, Respondent filed a Motion for Sanctions, asserting that FTC Complaint Counsel failed to supplement its document production “in a timely manner,” pursuant to FTC Rule 3.31(e)(2). (Order Granting in part and Denying in part Resp. Mot. for Sanctions, Dkt. 9358 (March 21, 2014)).

Response to Finding No. 2909:

Complaint Counsel has no specific response.

2910. Complaint Counsel filed an opposition to the Motion on March 10, 2014, and a Clarification Regarding Respondent’s Motion for Sanctions on March 13, 2014. (Order Granting in part and Denying in part Resp. Mot. for Sanctions, Dkt. 9358 (March 21, 2014)).

Response to Finding No. 2910:

Complaint Counsel has no specific response.

2911. On March 21, 2014, the Court granted in part Respondent’s Motion for Sanctions, because “Complaint Counsel violated its discovery obligation.” (Order Granting in part and Denying in part Resp. Mot. for Sanctions, Dkt. 9358 (March 21, 2014)).

Response to Finding No. 2911:

Complaint Counsel has no specific response.

XX. DR. MICHEL, A LAST MINUTE SURPRISE REBUTTAL WITNESS, LACKED CREDIBILITY

2912. On July 9, 2014, Respondent moved to exclude testimony of surprise Complaint Counsel Expert witness, Dr. Frederick Michel, to strike his rebuttal report, and for sanctions against Complaint Counsel under Rule 3.38(b). (Resp. Mot. for Sanctions 1-3, (July 9, 2014)).

Response to Finding No. 2912:

Complaint Counsel has no specific response.

2913. Respondent alleged that Complaint Counsel had failed to comply with discovery obligations imposed by the rules, and that such conduct was sanctionable under Rule 3.38(b).

Response to Finding No. 2913:

Complaint Counsel has no specific response.

2914. Dr. Michel co-authored a study entitled “Biodegradation of Conventional and Bio-Based Plastics and Natural Fiber Composites During Composting, Anaerobic Digestion and Long-Term Soil Incubation” (“Dr. Michel’s study”). (Michel, Tr. 2903–04).

Response to Finding No. 2914:

Complaint Counsel has no specific response.

2915. In Dr. Michel’s study, he assessed the anaerobic biodegradability of a wide range of commercial available materials used to manufacture plastic products. (Michel, Tr. 2904).

Response to Finding No. 2915:

Complaint Counsel has no specific response.

2916. One or two of the materials Dr. Michel tested in his study was the ECM additive. (Michel, Tr. 2904).

Response to Finding No. 2916:

Complaint Counsel has no specific response.

2917. In order to measure the anaerobic biodegradation of plastics infused with the ECM additive, Dr. Michel’s study tested those materials based on a protocol similar to that described in ASTM D5511-02. (Michel, Tr. 2904–05).

Response to Finding No. 2917:

Complaint Counsel has no specific response.

2918. At the hearing, Dr. Michel testified that he used the protocol similar to ASTM D5511 only because that protocol mimicked really anaerobic digestion conditions. (Michel, Tr. 2905).

Response to Finding No. 2918:

Complaint Counsel has no specific response.

2919. However, Dr. Michel’s study states that he chose the protocol similar to ASTM D5511 because “[t]hese conditions resemble those found in high-solids AD digesters and in **biologically active landfills.**” (Michel, Tr. 2905–06; CCX 880) (emphasis added).

Response to Finding No. 2919:

Complaint Counsel has no specific response.

2920. Dr. Michel further testified at the hearing that he did use the protocol similar to ASTM D5511 to test the anaerobic biodegradability of ECM amended plastics at least in part because that protocol resembles the environment in a biologically active landfill. (Michel, Tr. 2906).

Response to Finding No. 2920:

Complaint Counsel has no specific response.

2921. In testing for anaerobic biodegradation of ECM amended plastics in his peer-reviewed study, Dr. Michel used no C-14 radiolabeling testing. (Michel, Tr. 2906; CCX 880).

Response to Finding No. 2921:

Complaint Counsel has no specific response.

2922. In fact, Dr. Michel has never tested any polymer using ¹⁴C radiolabeling testing. (Michel, Tr. 2906).

Response to Finding No. 2922:

Complaint Counsel has no specific response.

2923. In testing for anaerobic biodegradation of ECM amended plastics in his peer-reviewed study, Dr. Michel used no in situ testing. (Michel, Tr. 2906–07; CCX 880).

Response to Finding No. 2923:

Complaint Counsel has no specific response.

2924. In testing for anaerobic biodegradation of ECM amended plastics in his peer-reviewed study, Dr. Michel used no lysimeter testing. (Michel, Tr. 2906–07; CCX 880).

Response to Finding No. 2924:

Complaint Counsel has no specific response.

2925. According to Dr. Michel and Dr. Michel’s study, respirometric testing, like the D5511 tests, are generally recognized in the field as competent and reliable evidence to show biodegradation. (Michel, Tr. 2907; CCX 880).

Response to Finding No. 2925:

Complaint Counsel has no specific response.

2926. In his study, Dr. Michel defines “biodegradation” as “the mineralization of materials as a result of naturally-occurring microorganisms such as bacteria and fungi.” (Michel, Tr. 2907–08; CCX 880).

Response to Finding No. 2926:

Complaint Counsel has no specific response.

2927. In the definition of biodegradation that Dr. Michel writes in his study, there is no statement of rate of biodegradation or time for biodegradation. (Michel, Tr. 2908; CCX 880).

Response to Finding No. 2927:

Complaint Counsel has no specific response.

2928. In fact, Dr. Michel has never defined biodegradation as having to result in a complete breakdown of material into elements found in nature within one year after customary disposal in any of his peer-reviewed articles. (Michel, Tr. 2908).

Response to Finding No. 2928:

Complaint Counsel has no specific response.

2929. Furthermore, Dr. Michel has never stated in any of his peer reviewed article that biodegradation has to occur within any specific time period. (Michel, Tr. 2908).

Response to Finding No. 2929:

Complaint Counsel has no specific response.

2930. However, in his rebuttal report, Dr. Michel conveniently states that:

Biodegradation in the context of disposable consumer products must mean something different. It means that a material will biodegrade to natural products over a time frame used for municipal waste management via composting, anaerobic digestion and/or landfilling. It also implies that materials will biodegrade rapidly if they end up in natural environment and will not accumulate.

(Michel, Tr. 2909–10; CCX 895).

Response to Finding No. 2930:

Complaint Counsel has no specific response.

2931. At his deposition, Dr. Michel defined “rapidly,” in the context of the definition of biodegradation he stated in his rebuttal report, as:

[D]uring the process of those waste management technologies, so during the composting process, which would be a period of 30 to 60 days in anaerobic environment, which could include landfills or

anaerobic digesters, it would be the course of 30 to 60 days. Or in a natural environment to the extent of maybe 60 to 90 days that material is broken down.

(Michel, Tr. 2912; RX 970 (Michel, Dep. at 18)).

Response to Finding No. 2931:

Complaint Counsel has no specific response.

2932. So, despite never defining biodegradation to include any rate or time frame in any of his peer reviewed articles, Dr. Michel defined biodegradation for purposes of this litigation as requiring material to break down within 90 days in any natural environment. (Michel, Tr. 2908–12; RX 970 (Michel, Dep. at 18)).

Response to Finding No. 2932:

Complaint Counsel has no specific response.

2933. According to Dr. Michel, if a plastic product completely breaks down into elements found in nature one year after being disposed of in a landfill, that plastic product is not biodegradable. (Michel, Tr. 2912–13).

Response to Finding No. 2933:

Complaint Counsel has no specific response.

2934. According to Dr. Michel, if a plastic product completely breaks down into elements found in nature 6 months after being disposed of in a landfill, then that plastic product is not biodegradable. (Michel, Tr. 2915–16).

Response to Finding No. 2934:

Complaint Counsel has no specific response.

2935. According to Dr. Michel, if a plastic product completely breaks down into elements found in nature 3 months after being disposed of in a landfill, then that plastic product is not biodegradable. (Michel, Tr. 2916–17).

Response to Finding No. 2935:

Complaint Counsel has no specific response.

2936. However, Dr. Michel is not aware of any plastic product that would always biodegrade within 90 in an anaerobic landfill. (Michel, Tr. 2923).

Response to Finding No. 2936:

Complaint Counsel has no specific response.

2937. Dr. Michel is a paid consultant for multiple companies in the composting industry, such as DuPont, Indian Summer Composting, AllTreat Organics Composting, Amylex, and International Paper, and Myers Company. (Michel, Tr 2919–22).

Response to Finding No. 2937:

Complaint Counsel has no specific response.

2938. Dr. Michel has also consulted for the Federal Trade Commission on two or three cases. (Michel, Tr. 2922–23).

Response to Finding No. 2938:

Complaint Counsel has no specific response.

2939. In Dr. Michel’s study, Myers Company prepared the two sample materials purportedly containing the ECM additive. (Michel, Tr. 2925; CCX 880).

Response to Finding No. 2939:

Complaint Counsel has no specific response.

2940. Dr. Michel readily admits that he is not an expert on the types of plastic processing that Myers used to prepare the samples allegedly blended with the ECM additive. (Michel, Tr. 2925).

Response to Finding No. 2940:

Complaint Counsel has no specific response.

2941. Other than simply stating that the samples containing the ECM additive were produced by injection molding, Dr. Michel’s article does not indicate the conditions for the injection molding. (Michel, Tr. 2926; CCX 880).

Response to Finding No. 2941:

Complaint Counsel has no specific response.

2942. There is nothing in Dr. Michel’s article that identifies anything regarding the particular processing conditions that were in the injection molding of the blends containing the ECM additive. (Michel, Tr. 2927; CCX 880).

Response to Finding No. 2942:

Complaint Counsel has no specific response.

2943. There is nothing in Dr. Michel’s rebuttal report that discusses anything about the particular manufacturing methods and conditions that were used in the injection molding of the blends containing the ECM additive. (Michel, Tr. 2927; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2943:

Complaint Counsel has no specific response.

2944. Nothing in Dr. Michel's study or Dr. Michel rebuttal report provides the molding conditions for the negative control employed in Dr. Michel's study. (Michel, Tr. 2927–28).

Response to Finding No. 2944:

Complaint Counsel has no specific response.

2945. Myers Industries first paid Dr. Michel to conduct a study around 2008 or 2009. (Michel, Tr. 2928).

Response to Finding No. 2945:

Complaint Counsel has no specific response.

2946. Myers Industries has paid around 40 or 50 thousand dollars for the work done by Dr. Michel. (Michel, Tr. 2929).

Response to Finding No. 2946:

Complaint Counsel has no specific response.

2947. Myers' financial support of 40 or 50 thousand dollars to Dr. Michel and his employer culminated in Dr. Michel's article. (Michel, Tr. 2929).

Response to Finding No. 2947:

Complaint Counsel has no specific response.

2948. Dr. Michel is aware, and has been aware since he first started doing work for Myers, that Myers sells pots made out of natural fibers, which means that Myers markets those pots as compostable or biodegradable without incorporating the ECM additive. (Michel, Tr. 2931–32).

Response to Finding No. 2948:

Complaint Counsel has no specific response.

2949. Myers Industries provided Dr. Michel and his co-author Eddie Gomez with the products that were purportedly infused with the ECM additive that were the subject of Dr. Michel's article. (Michel, Tr. 2932–33).

Response to Finding No. 2949:

Complaint Counsel has no specific response.

2950. Dr. Michel does not have any certificate of ingredients regarding the samples provided to him by Myers Industries which purportedly contain the ECM additive. (Michel, Tr. 2933).

Response to Finding No. 2950:

Complaint Counsel has no specific response.

2951. Dr. Michel never contacted ECM directly to ensure that Myers Industries properly manufactured the plastics purportedly containing the ECM additive. (Michel, Tr. 2935).

Response to Finding No. 2951:

Complaint Counsel has no specific response.

2952. Dr. Michel did no testing to ensure that the plastics Myers Industries told him contained the ECM additive actually contained the ECM additive. (Michel, Tr. 2935–36).

Response to Finding No. 2952:

Complaint Counsel has no specific response.

2953. Dr. Michel did no testing to ensure that the plastics Myers Industries told him contained the ECM additive was manufactured in strict accordance with the instructions for doing so given by ECM. (Michel, Tr. 2936).

Response to Finding No. 2953:

Complaint Counsel has no specific response.

2954. Dr. Michel did no testing to determine whether the ECM additive had been scorched by Myers during the manufacturing process of the plastic products purportedly amended with the ECM additive. (Michel, Tr. 2936).

Response to Finding No. 2954:

Complaint Counsel has no specific response.

2955. Dr. Michel did no testing of the test environment in his study to ensure that the inoculum contained microbes known to biodegrade plastics. (Michel, Tr. 2936).

Response to Finding No. 2955:

Complaint Counsel has no specific response.

2956. Dr. Michel performed no tests on the samples purporting to contain the ECM additive to determine whether any ingredient in the plastic had an adverse effect on microbial life forms in the environment. (Michel, Tr. 2938).

Response to Finding No. 2956:

Complaint Counsel has no specific response.

2957. Dr. Michel is not aware of whether or not Compost Science & Utilization Journal, which he edits, has a conflict of interest policy. (Michel, Tr. 2937).

Response to Finding No. 2957:

Complaint Counsel has no specific response.

2958. Dr. Michel is aware of the ethical standards that apply to peer-reviewed journal publications in his field. (Michel, Tr. 2939).

Response to Finding No. 2958:

Complaint Counsel has no specific response.

2959. Dr. Michel submitted his article to Elsevier for peer review publication. (Michel, Tr. 2940).

Response to Finding No. 2959:

Complaint Counsel has no specific response.

2960. When Dr. Michel submitted his study for publication, he submitted only the article itself and no other documentation such as the underlying data that the study was based on. (Michel, Tr. 2940).

Response to Finding No. 2960:

Complaint Counsel has no specific response.

2961. Elsevier based their decision to publish Dr. Michel's article solely on the text of the article and no underlying data. (Michel, Tr. 2940).

Response to Finding No. 2961:

Complaint Counsel has no specific response.

2962. The data underlying Dr. Michel's study was not the subject of peer review. (Michel, Tr. 2940).

Response to Finding No. 2962:

Complaint Counsel has no specific response.

2963. Myers Industries funded Dr. Michel's article. (Michel, Tr. 2941).

Response to Finding No. 2963:

Complaint Counsel has no specific response.

2964. Dr. Michel did not disclose to Elsevier that Myers funded his article. (Michel, Tr. 2942).

Response to Finding No. 2964:

Complaint Counsel has no specific response.

2965. Dr. Michel's article does not disclose the fact that Myers Industries funded the article. (Michel, Tr. 2942; CCX 880).

Response to Finding No. 2965:

Complaint Counsel has no specific response.

2966. Dr. Michel did not disclose the fact that Eddie Gomez, a co-author of Dr. Michel's article, was financially supported mostly by Myers' contributions to Ohio State University. (Michel, Tr. 2942).

Response to Finding No. 2966:

Complaint Counsel has no specific response.

2967. Dr. Michel's article does not disclose the fact that Myers' Industries supported Eddie Gomez, one of the co-authors of that article. (Michel, Tr. 2942; CCX 880).

Response to Finding No. 2967:

Complaint Counsel has no specific response.

2968. Under an agreement between Dr. Michel, Eddie Gomez, and Myers Industries, Dr. Michel could disseminate data obtained and used in the article only after revision by Myers Industries. (Michel, Tr. 2943–44; RX 223, at 15).

Response to Finding No. 2968:

Complaint Counsel has no specific response.

2969. Dr. Michel did not disclose to Elsevier the fact that dissemination of the data, which was funded by Myers Industries, could only occur after revision by Myers Industries. (Michel, Tr. 2944).

Response to Finding No. 2969:

Complaint Counsel has no specific response.

2970. At the hearing, Dr. Michel testified that Myers Industries did not approve his article before he sent it to Elsevier. (Michel, Tr. 2945–46).

Response to Finding No. 2970:

Complaint Counsel has no specific response.

2971. However, Eddie Gomez sent Dr. Michel's article directly to Myers Industries for approval before sending the article to Elsevier. (Michel, Tr. 2946–47; RX 244).

Response to Finding No. 2971:

Complaint Counsel has no specific response.

2972. Dr. Michel did not send his article to Elsevier until after Myers Industries approved the article. (Michel, Tr. 2947).

Response to Finding No. 2972:

Complaint Counsel has no specific response.

2973. Dr. Michel did not disclose the fact that Myers Industries approved the article before submitting it for peer review to either Elsevier or in the article itself. (Michel, Tr. 2947).

Response to Finding No. 2973:

Complaint Counsel has no specific response.

2974. Mr. Tarang Shah was an employee for Myers Industries at the time Dr. Michel conducted his studies for his article. (Michel, Tr. 2946–48).

Response to Finding No. 2974:

Complaint Counsel has no specific response.

2975. Eddie Gomez asked Tarang Shah whether he had any suggestions for conducting the research for Dr. Michel's article. (Michel, Tr. 2948).

Response to Finding No. 2975:

Complaint Counsel has no specific response.

2976. Dr. Michel failed to disclose the fact that Eddie Gomez asked a Myers Industries employee for suggestions regarding the article either to Elsevier or in the article itself. (Michel, Tr. 2948).

Response to Finding No. 2976:

Complaint Counsel has no specific response.

2977. Dr. Michel failed to disclose the fact that a Myers Industries employee worked with Mr. Gomez and Dr. Michel on the article to either Elsevier or in the article itself. (Michel, Tr. 2948).

Response to Finding No. 2977:

Complaint Counsel has no specific response.

2978. Elsevier probably directed Dr. Michel to review the terms and conditions for authoring articles in its publications. (Michel, Tr. 2949).

Response to Finding No. 2978:

Complaint Counsel has no specific response.

2979. Dr. Michel would expect that Elsevier, like most, if not all, reputable peer review publishers to have a conflict of interest policy. (Michel, Tr. 2949).

Response to Finding No. 2979:

Complaint Counsel has no specific response.

2980. According to Dr. Michel, if Elsevier did not have a conflicts of interest policy, that fact would call into question Elsevier's status as a reputable academic journal. (Michel, Tr. 2950).

Response to Finding No. 2980:

Complaint Counsel has no specific response.

2981. Dr. Michel is aware that reputable peer review publishers, like Elsevier, require disclosures of conflicts of interest. (Michel, Tr. 2950).

Response to Finding No. 2981:

Complaint Counsel has no specific response.

2982. Elsevier's conflicts of interest policy requires that all funding sources be declared. (Michel, Tr. 2951–52).

Response to Finding No. 2982:

Complaint Counsel has no specific response.

2983. Dr. Michel violated Elsevier's conflict of interest policy by failing to disclose the fact that Myers Industries provided funding for Dr. Michel's article. (Michel, Tr. 2941, 2951–52).

Response to Finding No. 2983:

Complaint Counsel has no specific response.

2984. It was so important to Dr. Michel that he and Eddie Gomez finish the report for Myers Industries on time that Dr. Michel actually told Eddie Gomez that he should

drop a course he was taking so that he could complete the report in a timely manner. (Michel, Tr. 2953).

Response to Finding No. 2984:

Complaint Counsel has no specific response.

2985. Dr. Michel considers cellulose to be fully biodegradable. (Michel, Tr. 2954).

Response to Finding No. 2985:

Complaint Counsel has no specific response.

2986. In his article, Dr. Michel did not stop his biodegradation test at 365 days. (Michel, Tr. 2954–55).

Response to Finding No. 2986:

Complaint Counsel has no specific response.

2987. In his article, cellulose degraded roughly 74% in approximately 400 days. (Michel, Tr. 2955).

Response to Finding No. 2987:

Complaint Counsel has no specific response.

2988. According to Dr. Michel, if a positive control in a biodegradation test does not biodegrade, it indicates that the test environment failed. (Michel, Tr. 2959).

Response to Finding No. 2988:

Complaint Counsel has no specific response.

2989. According to Dr. Michel, a material that biodegrades only 44 percent to elements found in nature is biodegradable:

Q. So then a material that only biodegrades 44 percent to elements found in nature is biodegradable; right?

Dr. Michel: Yes.

(Michel, Tr. 2961).

Response to Finding No. 2989:

Complaint Counsel has no specific response.

2990. According to Dr. Michel, the fact that cellulose plateaued at 44 percent biodegradation in a test does not mean that the cellulose itself is not biodegrade. (Michel, Tr. 2961).

Response to Finding No. 2990:

Complaint Counsel has no specific response.

2991. Dr. Michel conducted no investigation of the inoculum used in his article to determine if the inoculum remained viable halfway through the test. (Michel, Tr. 2961–62).

Response to Finding No. 2991:

Complaint Counsel has no specific response.

2992. Dr. Michel conducted no investigation to determine why the cellulose in his test stopped degrading at roughly 74 percent. (Michel, Tr. 2962).

Response to Finding No. 2992:

Complaint Counsel has no specific response.

2993. Neither Dr. Michel’s article nor rebuttal report informs the reader as to the molecular weight of the polypropylene employed in the article. (Michel, Tr. 2962; CCX 880; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2993:

Complaint Counsel has no specific response.

2994. Neither Dr. Michel’s article nor rebuttal report informs the reader as to the molecular weight of the polystyrene employed in the article. (Michel, Tr. 2962; CCX 880; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2994:

Complaint Counsel has no specific response.

2995. Neither Dr. Michel’s article nor rebuttal report informs the reader as to the level of crystallinity of the polypropylene or polystyrene that Dr. Michel employed in his article. (Michel, Tr. 2963; CCX 880; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2995:

Complaint Counsel has no specific response.

2996. Dr. Michel’s article reveals no investigation to determine which kinds of bacteria were alive within the test environment at the conclusion of the test. (Michel, Tr. 2963).

Response to Finding No. 2996:

Complaint Counsel has no specific response.

2997. The only test of ECM amended plastic that Dr. Michel mentioned in his rebuttal report, besides the test he himself conducted, was an Environ BioPVC report. (Michel, Tr. 2965–66; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2997:

Complaint Counsel has no specific response.

2998. The Environ BioPVC report is not a gas evolution test. (Michel, Tr. 2965).

Response to Finding No. 2998:

Complaint Counsel has no specific response.

2999. Dr. Michel’s rebuttal report does not contain any statistical analysis of any tests at issue in this case. (Michel, Tr. 2966; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 2999:

Complaint Counsel has no specific response.

3000. During his direct examination, Dr. Michel discussed polyethylene succinate. (Michel, Tr. 2968).

Response to Finding No. 3000:

Complaint Counsel has no specific response.

3001. In his rebuttal report, Dr. Michel does not mention polyethylene succinate. (Michel, Tr. 2968; CCX 895 (Michel, Rebuttal Rep.)).

Response to Finding No. 3001:

Complaint Counsel has no specific response.

3002. Dr. Michel provided no documentation other than a one page estimate that he himself drafted regarding the possibility of, and costs associated, with conducting C-14 radiolabeling testing on plastic polymers. (Michel, Tr. 2968–69; CCX 895 (Michel, Rebuttal Rep. at Appx. 2)).

Response to Finding No. 3002:

Complaint Counsel has no specific response.

3003. While Dr. Michel testified that its possible to conduct radiolabeled testing on polymers, Dr. Michel never testified that the scientific community requires radiolabeled testing to conclude that polymers are biodegradable. (Michel, Tr. 2829–2998).

Response to Finding No. 3003:

Complaint Counsel has no specific response.

3004. The Court accepted ECM's offer of proof of Dr. Steven Grossman's testimony as RX 970, however RX 970 is a different exhibit; Dr. Grossman's proffer should be marked as RX 971. (Tr. 2821; JX-1-A).

Response to Finding No. 3004:

Complaint Counsel has no specific response.

Date: October 16, 2014

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on October 16, 2014, I caused a true and correct copy of the foregoing to be served as follows:

One electronic copy to the **Office of the Secretary**, one hard copy, and one copy through the FTC's e-filing system:

Donald S. Clark, Secretary
Federal Trade Commission
600 Pennsylvania Ave., NW, Room H-159
Washington, DC 20580
Email: secretary@ftc.gov

One electronic copy and three hard copies to the **Office of the Administrative Law Judge:**

The Honorable D. Michael Chappell
Administrative Law Judge
600 Pennsylvania Ave., NW, Room H-110
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One electronic copy to **Counsel for the Respondent:**

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