IN THE CIRCUIT COURT OF WOOD COUNTY, WEST VIRGINIA

JACK W. LEACH, et al.,

Plaintiffs,

v.

CIVIL ACTION NO.: 01-C-608
(Judge George W. Hill)

E. I. DU PONT DE NEMOURS AND COMPANY, and LUBECK PUBLIC SERVICE DISTRICT,

Defendants.

RESPONSES OF E. I. DU PONT DE NEMOURS AND COMPANY TO PLAINTIFFS' SECOND SET OF REQUESTS FOR ADMISSIONS TO DUPONT

Pursuant to West Virginia Rule of Civil Procedure 36, Defendant, E. I. du Pont de Nemours and Company ("DuPont"), by counsel, responds to "Plaintiffs' Second Set of Requests for Admission to DuPont" ("Second Set of RFAs"), as follows. Any admission made is for the purpose of this pending action only and is not an admission for other purposes, nor may it be used in any other proceeding. Any admission is also subject to all pertinent objections to admissibility interposed at trial. Information provided in these responses is based upon such information as presently is reasonably available to DuPont. DuPont responds and objects as follows:

I. GENERAL OBJECTIONS

DuPont's responses to Plaintiffs' Second Set of Requests for Admissions are subject to the general objections set forth below. These general objections form a part of the response to each and every Request for Admission and are set forth here to avoid duplication and repetition. DuPont's specific responses to each Request for Admission are made subject to, and without waiving, these General Objections, which are incorporated by reference to each of DuPont's responses. The failure to list a specific General Objection in a response should not be construed

as a waiver of that objection. By admitting or denying Plaintiffs' Requests for Admission, DuPont does not concede that the subject matter of such Requests are relevant in the present action or that DuPont's responses are admissible. DuPont reserves the right to amend or supplement its responses

GENERAL OBJECTION 1: DuPont objects to Plaintiffs' Requests for Admissions to the extent that they seek to characterize the contents of documents, which documents speak for themselves.

GENERAL OBJECTION 2: DuPont objects to Plaintiffs' Requests for Admissions to the extent that they imply that DuPont's "acceptable exposure limits" ("AELs") and "community exposure guidelines" ("CEGs") are set at levels that are predictive of adverse human health effects. DuPont's processes for setting AELs and CEGs are analogous to regulatory agency risk assessments. These mathematically based risk assessments encompass a number of typically very conservative assumptions and safety factors, many of which are default versus actual figures. Risk assessments are designed to be overly protective of human health, with a wide margin of safety, are not predictive of any particular health effects, and should not be used in such a manner. Moreover, they cannot be used to support a claim for medical monitoring.

GENERAL OBJECTION 3: DuPont objects to Plaintiffs' Requests for Admissions to the extent that they seek information that is not relevant to the claims or defenses at issue in this litigation.

GENERAL OBJECTION 4: DuPont hereby preserves for trial its objections as to those of Plaintiffs' Requests for Admissions that ask DuPont to authenticate a document, except that DuPont admits to the authenticity of the documents as set forth below.

GENERAL OBJECTION 5: DuPont objects to Plaintiffs' Requests for Admissions to the extent that they are deliberately incomplete and calculated to lead to a false conclusion.

II. OBJECTIONS AND RESPONSES TO REQUESTS FOR ADMISSIONS

REQUEST FOR ADMISSION NO. 1. In 1978, after DuPont had been informed by 3M that 3M's workers exposed to certain fluorinated surfactants had elevated organic fluorine levels in their blood, DuPont's Medical Director, Bruce W. Karrh, M.D., recommended medical surveillance examinations for DuPont's fluorochemical workers consisting of: (1) a health history questionnaire; (2) an examination by or under the supervision of a physician; (3) urinalysis; (4) 12 blood chemistry tests (glucose, BUN, SGOT, LDH, alkaline phosphatase, bilirubin, total protein with albumin and globulin, calcium, phosphorous, creatinine, uric acid, cholesterol); (5) 7 hematology tests (white and red blood cell counts, hemoglobin, hematocrit, and red blood cell indices); (6) vision test; (7) audiogram; (8) 14x17 posterio-anterior chest x-ray; (9) height, weight, blood pressure and pulse; (10) screening pulmonary function tests (FEV_1 and FVC); and (11) electrocardiograms at the routine intervals.

RESPONSE: DuPont objects to this Request for Admission on the ground that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that in 1978, 3M Company notified DuPont that some employees occupationally exposed to some of 3M's fluorinated surfactant compounds showed an increased level of organic fluorinated compounds in their blood, although no adverse health effects were detected among those employees. DuPont also admits that on July 24, 1978, Bruce W. Karrh, M.D., recommended to F. E. French that medical

surveillance for fluorochemical workers should be the regular DuPont periodic physical examination consisting of (1) a health history questionnaire; (2) an examination by or under the supervision of a physician; (3) urinalysis; (4) 12 blood chemistry tests (glucose, BUN, SGOT, LDH, alkaline phosphatase, bilirubin, total protein with albumin and globulin, calcium, phosphorous, creatinine, uric acid, cholesterol); (5) 7 hematology tests (white and red blood cell counts, hemoglobin, hematocrit, and red blood cell indices); (6) vision test; (7) audiogram; (8) 14x17 posterio-anterior chest x-ray; (9) height, weight, blood pressure and pulse; (10) screening pulmonary function tests (FEV_1 and FVC); and (11) electrocardiograms at the routine intervals.

REQUEST FOR ADMISSION NO. 2. Attached hereto at Exhibit A is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 3. By 1979, DuPont had determined that operators at DuPont's Washington Works plant in Wood County, West Virginia, who handle C-8 were showing elevated blood organofluorine levels and liver enzyme activity (6 of 10 operators had high alkaline phosphatase and SGOT levels as compared to the 14% expected).

RESPONSE: Denied, except admitted that in a memorandum to A. A. Wright dated July 30, 1979, DuPont employees noted that operators who handle FC-143 at DuPont's Works plant in Wood County, West Virginia were showing elevated blood organofluorine levels and liver enzyme activity (6 of 10 operators had high alkaline phosphatase and SGOT levels as compared to the 14% expected), and there were no other clinical effects.

REQUEST FOR ADMISSION NO. 4. Attached hereto at Exhibit B is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 5. In 1979, a DuPont epidemiologist, William E. Fayerweather, reviewed liver function test results for DuPont workers with C-8 exposure and myocardial infarction cases and deaths at DuPont's Washington Works plant and preliminarily concluded that C-8-exposed workers may possibly have positive liver function tests more often than the Washington Works plant population as whole, and that the number of active wage roll employees at the Washington Works plant having myocardial infarctions from 1974 through 1977 was somewhat higher than was expected based on company-wide experience.

RESPONSE: DuPont objects to this Request for Admission on the ground that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that on August 28, 1979, a DuPont epidemiologist, William E. Fayerweather, reviewed liver function test results for DuPont workers with C-8 exposure. DuPont also admits that on August 28, 1979, Dr. Fayerweather reviewed myocardial infarction cases and deaths at DuPont's Washington Works plant. DuPont expressly denies any implication that the data related to the myocardial infarction cases and deaths at DuPont's Washington Works plant was limited to DuPont workers with C-8 exposure. DuPont admits that Dr. Fayerweather's preliminary results suggested that C-8-exposed workers may possibly have had positive liver function tests more often than the Washington Works plant population as whole. DuPont notes that these preliminary results were subsequently invalidated by a

report by Dr. Fayerweather dated January 15, 1981 entitled "Liver Study of Washington Works Employees Exposed to C-8: Results of Blood Biochemistry Testing," (hereinafter referred to as the "Liver Study"). DuPont also admits that the number of active wage roll employees at the Washington Works plant having myocardial infarctions from 1974 through 1977 was somewhat higher than was expected based on company-wide experience.

REQUEST FOR ADMISSION NO. 6. Attached hereto at Exhibit C is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia and except DuPont notes that the document was redacted prior to production to Plaintiffs.

REQUEST FOR ADMISSION NO. 7. A DuPont epidemiologist, William E. Fayerweather, prepared in January of 1981 a study entitled "Liver Study of Washington Works Employees Exposed to C-8: Results of Blood Biochemistry Testing" ("DuPont Liver Study"), the objective of which was to determine whether occupational exposure to C-8 adversely affects liver functions as measured by blood levels of glutamic oxaloacetic transaminase (SGOT), lactic dehydrogenase (LDH), alkaline phosphatase (AP), and bilirubin.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 8. Attached hereto at Exhibit D is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of the business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 9. According to the Liver Study, preliminary DuPont data from 1978 showed that the DuPont Washington Works plant population as a whole had an unusually large percentage of elevated SGOTs, with SGOTs elevated in 19% of the workers, whereas elevations would only have been expected by DuPont in about 5% based upon random statistical variation. AP, bilirubin, and LDH tests also showed plant-wide elevations in 8, 4 and 3% of the DuPont Washington Works plant workers, respectively.

RESPONSE: DuPont objects to this Request for Admission on the ground that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that according to the Liver Study, preliminary DuPont data from 1978 showed that the DuPont Washington Works plant population as a whole had an unusually large percentage of elevated SGOTs, with SGOTs elevated in 19% of the workers, whereas elevations would only have been expected by DuPont in about 5% based upon random statistical variation. DuPont admits that in the preliminary DuPont data from 1978, AP, bilirubin, and LDH tests also showed plant-wide elevations in 8, 4 and 3% of the DuPont Washington Works plant workers, respectively. DuPont expressly denies that the 1978 preliminary data were validly measured, and notes that the Liver Study indicates that the 1978 SGOT data was systematically higher than true blood levels and the observed range for "normal" SGOT data was considerably higher than the stated normal range.

REQUEST FOR ADMISSION NO. 10. According to the Liver Study, some of the SGOT data for the DuPont Washington Works suggested that there might be a liver effect among certain C-8-exposed workers, that the mean SGOT for the TFE process operators was significantly ($p < 0.05$) higher than the non-Teflon area control mean, that the TFE process

operators as a group had considerably higher organic fluoride blood levels than other Teflon-area workers, and that workers in the highest organic fluoride decile had a significantly higher SGOT mean than workers in the lower nine deciles.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a), and that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving these objections, DuPont denies this Request for Admission, except as follows: DuPont admits that according to the Liver Study, after the data was evaluated, no association was found between exposure to C-8 and clinical end-points in man, although some of the SGOT data for the DuPont Washington Works suggested that there might be a liver effect among certain C-8-exposed workers, that the mean SGOT for the TFE process operators was significantly ($p < 0.05$) higher than the non-Teflon area control mean, that the TFE process operators as a group had considerably higher organic fluoride blood levels than other Teflon-area workers, and that workers in the highest organic fluoride decile had a significantly higher SGOT mean than workers in the lower nine deciles.

REQUEST FOR ADMISSION NO. 11. According to the Liver Study, mean AP was significantly ($p < 0.05$) higher among DuPont Washington Works FEP service and FEP process operators.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont denies this Request for Admission except as follows: DuPont admits that according to the Liver Study, after the data was evaluated, no association was found between exposure to C-8 and clinical end-points in man, and although mean AP was

significantly ($p < 0.05$) higher among DuPont Washington Works FEP service and FEP process operators, none of the other blood tests were elevated among these workers, and AP did not correlate with blood organic fluoride levels.

REQUEST FOR ADMISSION NO. 12. For purposes of the Liver Study, DuPont compared results of workers from "Teflon area jobs" at DuPont's Washington Works plant with a group defined as a "non-exposed control group" that included other DuPont Washington Works plant employees.

RESPONSE: Denied, except admitted that for purposes of the Liver Study, DuPont compared results of workers from "Teflon area jobs" at DuPont's Washington Works plant with a group defined as a "non-exposed control group" which "consisted of a 10% systematic sample of all active WW employees who, as of August, 1979, had never worked in the Teflon area."

REQUEST FOR ADMISSION NO. 13. In 1978 - 1980, the DuPont Washington Works employees working in "Teflon area jobs," as defined in the Liver Study, were not the only DuPont Washington Works employees who were potentially-exposed to C-8.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion, and that the phrase "potentially-exposed to C-8" is vague and ambiguous. Subject to and without waiving these objections, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 14. In 1978 - 1980, all DuPont Washington Works employees were potentially-exposed to C-8 by virtue of the presence of C-8 in the DuPont Washington Works plant air emissions.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion, and that the phrase

"potentially-exposed to C-8" is vague and ambiguous. Subject to and without waiving these objections, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 15. The workers included within the "non-exposed control group" used in the Liver Study were not individuals who had no potential exposure to C-8.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion, and that the phrase "not individuals who had no potential exposure to C-8" is vague and ambiguous. Subject to and without waiving these objections, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 16. In 1980, upon review of a draft of the Liver Study, DuPont's Assistant Medical Director, Vann A. Brewster, M.D., expressed concern that a draft of the Liver Study implied that DuPont's Medical Division would not continue the study of liver tests on those DuPont employees potentially-exposed to C-8 and recommended that, because DuPont still could not explain why the mean SGOT was significantly higher among DuPont's TFE process workers at the Washington Works plant and that the mean AP was significantly higher among DuPont's FEP process and service workers at DuPont's Washington Works plant, DuPont should include language in the Liver Study to indicate that "it was recommended that the study of liver tests continue" and recommended that DuPont should include in the Liver Study a recommendation to "continue to evaluate the liver tests of employees with potential exposure to C-8."

RESPONSE: DuPont objects to this Request for Admission on the grounds that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a), and that the cited document speaks for itself. Subject to and without waiving these objections,

DuPont denies this Request for Admission, except as follows: DuPont admits that in a memorandum to L. F. Percival dated June 9, 1980 (hereinafter referred to as the "June 9 Memorandum"), DuPont's Assistant Medical Director, Vann A. Brewster, M.D., commented on the Draft Washington Works Communication entitled "Fluorosurfactants in Blood" (hereinafter referred to as the "Draft Communication"). DuPont admits that in the June 9 Memorandum, Dr. Brewster expressed his concern that the Draft Communication implied that DuPont's Medical Division would not continue the study of liver tests on those DuPont employees potentially-exposed to C-8. DuPont admits that in the June 9 Memorandum, Dr. Brewster suggested various revisions to the Draft Communication to correct this implication.

REQUEST FOR ADMISSION NO. 17. Attached hereto as Exhibit E is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 18. In April of 1981, DuPont's Medical Division prepared and circulated a proposal to study whether pregnancy outcome among female employees of DuPont's Washington Works plant is causally related to their occupational exposure to, among other things, C-8 and to determine whether pregnancy outcome among wives of DuPont's Washington Works male employees is causally related to their husbands' exposure to, among other thing, C-8.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 19. In July of 1981, the pregnancy outcome studies proposed by DuPont's Medical Division in April of 1981 were put "on hold" until further notice.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that in July 1981, the pregnancy outcome study proposed by DuPont's Medical Division in April of 1981 was put "on hold" pending the results of more definitive animal teratogenicity studies, and ultimately in 1982, upon completion of such studies, including teratogenicity results, the Medical Division determined that it was no longer necessary to undertake such a pregnancy outcome study.

REQUEST FOR ADMISSION NO. 20. Attached hereto as Exhibit F is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 21. In a January 1983 update to DuPont's 1981 Liver Study, DuPont compared test results of DuPont workers who allegedly had been exposed to C-8 at DuPont's Washington Works plant to the test results of other DuPont Washington Works employees, and not to a control group consisting of individuals who never had had any potential exposure to C-8.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion, that it is vague and ambiguous, and that it sets forth more than one matter to be admitted or denied in derogation

of W.Va. R. Civ. P. 36(a). Subject to and without waiving these objections, DuPont denies this Request for Admission, except it is admitted that in a draft report dated January 28, 1983, William E. Fayerweather provided an update to the 1981 Liver Study, and in that 1983 draft report, the study group was comprised of the same individuals as from the 1981 Liver Study, less 24 employees who left the Teflon ® area, and the control group consisted of the same individuals as from the 1981 Liver Study, less 21 employees who left the plant or had since worked in the Teflon ® area.

REQUEST FOR ADMISSION NO. 22. Attached hereto as Exhibit G is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 23. In March of 1990, H.A. Smith of DuPont estimated the drop-off rate for C-8 in human blood to have a half-life of approximately 4-5 years or more and concluded that there is a correlation between C-8 exposure levels and the level of C-8 in human blood.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion, and that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving these objections, DuPont denies this Request for Admission, except as follows: DuPont admits that in a March 19, 1990 memorandum from H. A. Smith to J. G. Loschiavo, R. D. Lanyon and W. E. Crawley (hereinafter referred to as the "March 19 Memorandum"), H. A. Smith reviewed personnel air modeling data taken over the period April 1988 through September 1989 and all personnel C-8 blood data going back to 1979-80.

DuPont admits that in the March 19 Memorandum, H.A. Smith noted that the blood data base only included those employees who had been in the indicated job for years, had not moved all over the Fluoropolymers area, and are still in the jobs, and also that interpretation of the data was complicated by the fact that the air monitoring data was recent while the blood data essentially reflected exposure dating back to the "early days." DuPont admits that in the March 19 Memorandum, H.A. Smith concluded from his review of the blood and air monitoring data that, among other things, there was a correlation between C-8 personnel air levels and C-8 in blood levels, and between skin contact and C-8 in blood levels. DuPont admits that in the March 19 Memorandum, H.A. Smith concluded from his review of the blood and air monitoring data that, among other things, the drop-off rate for C-8 in the blood is a half life of about 4-5 years or more, based on a very small amount of data on pensioners and on the observation that there is a slight perceived decline in workers in the various jobs.

REQUEST FOR ADMISSION NO. 24. Attached hereto as Exhibit H is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 25. In October of 1991, W.P. Anderson, Jr. of DuPont's Polymer Products and Gerald F. Kennedy of DuPont's Haskell Laboratory requested the authority to conduct a cross-sectional study of liver enzymes among DuPont Washington Works employees with potential exposure to C-8 to determine whether occupational exposure to C-8 adversely affects the liver, as measured by blood levels of SGOT, LDH, AP, and bilirubin (the "1991 Liver Study Update"), recognizing that it had been 10 years since the 1981 DuPont Liver Study.

RESPONSE: DuPont objects to this Request for Admission on the ground that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving this objection, DuPont denies this Request for Admission, except it is admitted that in October of 1991, W. P. Anderson, Jr. of DuPont's Polymer Products and Gerald L. Kennedy of DuPont's Haskell Laboratory requested the authority to conduct a cross-sectional study of liver enzymes among DuPont Washington Works employees with potential exposure to C-8 to determine whether occupational exposure to C-8 adversely affects the liver, as measured by blood levels of SGOT, LDH, AP, and bilirubin (the "1991 Liver Study Update").

REQUEST FOR ADMISSION NO. 26. Attached hereto as Exhibit I is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 27. During a meeting in October of 1991, Mr. Anderson's and Mr. Kennedy's request for the 1991 Liver Study Update was rejected by DuPont.

RESPONSE: Denied, except admitted that during a meeting held in October of 1991, Mr. Anderson's and Mr. Kennedy's request for the 1991 Liver Study Update was reviewed by Karrh and Ligo, and it was decided that the 1991 Liver Study Update would not be pursued at the time, but that the need for a study would be looked at again in 1993.

REQUEST FOR ADMISSION NO. 28. Attached hereto as Exhibit J is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 29. In November of 1993, Dr. Younger L. Power of DuPont's Washington Works recommended to Dr. Benjamin Ramirez with DuPont in Wilmington, Delaware that DuPont perform liver function tests of its Washington Works employees to discover any potentially unknown liver toxicity among those employees exposed to C-8.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 30. Attached hereto as Exhibit K is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 31. Attached hereto at Exhibit L is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 32. In February of 1995, William J. Brock, Ph.D., Toxicology Consultant to DuPont, contacted Dr. Lance L. Simpson of the Jefferson Clinical Center in Environmental Medicine, Jefferson Medical College, to pursue discussions relating to establishing a corporate policy on medical surveillance for DuPont employees, particularly for the blood monitoring of telomeric acid fluorides, including C-8, mentioning concern about the potential long-term human health effects of these materials, and requesting Dr. Simpson's assistance in designing, conducting, and interpreting a monitoring program for DuPont's employees, including a blood monitoring program design which includes relevant test batteries.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 33. Attached hereto at Exhibit M is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 34. DuPont representatives, including Gerry Kennedy, Judy Walrath, Charles Reinhardt, and William Brock, met with Dr. Lance L. Simpson and E. Mercer of Jefferson Medical College on August 14, 1995 to discuss approaches for developing a medical surveillance program for C-8 and/or HFPO among DuPont's workers, during which DuPont representatives were requested to submit additional data to Jefferson Medical College, which was to then come back with a proposal and guidelines for developing a research and surveillance program.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 35. Attached hereto as Exhibit N is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 36. Upon review of DuPont's 1995 C-8 blood sampling of DuPont's Washington Works employees and pensioners, DuPont noted that the results from the C-8 blood testing indicated an average half-life for C-8 in human blood of approximately 4 years.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without

waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that upon review of DuPont's 1995 C-8 blood sampling of a limited number DuPont's Washington Works employees and pensioners, Anthony Playtis noted the serious limitations on the usefulness of the data, including the small size of most of the data sets, the frequent transfer of site employees from one job to another, and the slow rate at which C-8 blood levels decrease after exposure stopped. DuPont also admits that given these limitations, he concluded that results from the sampled pensioners indicated an average half life for C-8 in blood of about four years.

REQUEST FOR ADMISSION NO. 37. Attached hereto as Exhibit O is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 38. On May 16, 1996, DuPont employees, including William J. Brock, Ph.D., Benjamin Ramirez, and Anthony Playtis, participated in a meeting to discuss a proposed medical surveillance program for DuPont's fluoroproducts employees during which an objective was to obtain agreement by participants that a program needs to be established to gain an understanding of the health risks to employees potentially exposed at fluoroproducts plant sites and to develop a program that best allows DuPont to evaluate these potential health risks in a cost-effective way, with a proposed medical surveillance program for discussion that included aliquots used for liver and kidney function tests, hematology and other parameters.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 39. Attached hereto as Exhibit P is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 40. In August of 1996, Dr. Younger Power of DuPont's Washington Works reviewed data developed from medical records on 51 DuPont Washington Works employees with the highest measured levels of C-8 in their blood and found several employees with frequent elevations of blood tests (SGOT-7, Alkaline Phosphatase-10, LDH-7), two cases of kidney disease, and one case of thrombocytopenia/leukopenia.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion, and that it sets forth more than one matter to be admitted or denied in derogation of W. Va. R. Civ. P. 36(a). Subject to and without waiving these objections, this Request for Admission is denied, except as follows: It is admitted that in a memorandum to William J. Volger dated August 5, 1996, Dr. Younger L. Power stated that he reviewed medical records on 51 DuPont Washington Works employees with the highest measured levels of C-8 in their blood, and found, in his opinion, very little evidence of disease due to C-8. Dr. Power also stated that while there were several employees with frequent elevations of blood tests (SGOT-7, Alkaline Phosphatase – 10, LDH – 7), there was no evidence of liver disease, and that there were also 2 cases of kidney disease and one case of thrombocytopenia/leukopenia that could not be attributable to some other cause.

REQUEST FOR ADMISSION NO. 41. Attached hereto as Exhibit Q is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 42. In September of 1996, Dr. Benjamin Ramirez, Associate Medical Director for DuPont, received information from 3M regarding the medical surveillance that 3M had performed in connection with employees working in the manufacture of C-8, which 3M medical surveillance included a medical questionnaire, pulmonary function test, chemistry test (P12), hematology test (CBC), urinalysis, and serum fluorine test.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 43. Attached hereto as Exhibit R is an authentic and accurate copy of a document received from 3M in or about September of 1996.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 44. In November of 1996, Dr. Benjamin Ramirez, Associate Medical Director for DuPont, and Charles F. Reinhardt, Director of DuPont's Haskell Laboratory, recommended to J.M. Smith of DuPont fluoroproducts that DuPont perform pre-assignment and post-assignment examinations of its fluoroproducts employees, including: (1) medical history questionnaire, including smoking history; and (2) blood tests (complete blood count, SMA-12, and fluorine-in-blood test).

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 45. Attached hereto as Exhibit S is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 46. In February of 1997, Dr. Benjamin Ramirez, Associate Medical Director for DuPont, and R.W. Rickard, Director of DuPont's Haskell Laboratory, recommended to J.M. Smith of DuPont fluoroproducts that DuPont perform pre-assignment and post-assignment examinations of its fluoroproducts employees, including: (1) medical history questionnaire, including smoking history; and (2) blood tests (complete blood count, SMA-12, and fluorine-in-blood test).

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 47. Attached hereto as Exhibit T is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 48. By January of 1999, employees at DuPont's Chambers Works Facility in New Jersey (the "Chambers Works") learned that Chambers Works might be cleaning some C-8 materials for DuPont's Washington Works plant and had contacted Anthony Playtis and Dr. Younger Power at DuPont's Washington Works plant, who recommended a pre- and post- (or annual) campaign medical surveillance program for workers

who would be involved with the C-8 materials and commented that DuPont's Washington Works had been looking at worker blood for C-8 levels and had done liver function studies.

RESPONSE: DuPont objects to this Request for Admission on the ground that it sets forth more than one matter to be admitted or denied in derogation of W.Va. R. Civ. P. 36(a). Subject to and without waiving this objection, DuPont denies this Request for Admission, except as follows: DuPont admits that John J. Plum, an employee at DuPont's Chambers Works Facility in New Jersey (the "Chambers Works"), learned that Chambers Works might be cleaning some C-8 materials for DuPont's Washington Works plant, and in January 1999, contacted Anthony Playtis, who forwarded John Plum's letter to Dr. Younger Power at DuPont's Washington Works plant. DuPont also admits that based upon the January 1999 letter from John Plum, Dr. Power recommended that Chambers Works establish a baseline for industrial hygiene purposes, and therefore recommended a pre- and post- (or annual) campaign surveillance program for operators, mechanics and laboratory technicians who would be involved with the C-8 materials, and also stated that DuPont's Washington Works had been looking at worker blood for C-8 levels and had done liver function studies.

REQUEST FOR ADMISSION NO. 49. Attached hereto as Exhibit U is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 50. By March of 1999, Robin C. Leonard of DuPont had forwarded to Barbara J. Dawson at DuPont's Chambers Works a draft proposal for the surveillance for exposure, biopersistence, and potential liver affects from workplace exposures to C-8. (Hereinafter "C-8 Medical Surveillance Proposal").

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 51. Attached hereto as Exhibit V is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 52. DuPont's Medical Surveillance Proposal indicated that changes in liver function may be a means of detecting human biological response to C-8 and set forth a proposed project that included among its objectives correlating data on biomarkers of effect (referenced as serum liver enzymes levels) with the biomarkers of exposure (referenced as fluoride ion in blood and blood perfluorooctanoate level).

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 53. DuPont's C-8 Medical Surveillance Proposal suggested a protocol to prescribe data collection at monthly intervals for liver enzyme measurements and area or personal monitoring at either weekly or biweekly intervals, for a period of one year.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 54. In May of 1999, DuPont's Chambers Works prepared a "C-8 Hazard Communication."

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 55. Attached hereto at Exhibit W is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except DuPont notes that this document was redacted prior to production to Plaintiffs.

REQUEST FOR ADMISSION NO. 56. In 1999, DuPont's Chambers Works conducted baseline medical surveillance exams on DuPont employees who DuPont had identified as workers who might be involved in work to recover C-8 salt from a solution from material delivered to DuPont Chambers Works from DuPont's Washington Works facility (the "Chambers Works C-8 Workers").

RESPONSE: Denied, except admitted that in 1999, DuPont's Chambers Works conducted a baseline medical surveillance program on DuPont's Chambers Works employees who were identified as working in jobs with potential for accidental exposure to C-8.

REQUEST FOR ADMISSION NO. 57. The baseline medical surveillance exams conducted by DuPont for its Chambers Works C-8 Workers included: (1) medical history questionnaire; (2) automated chemistry profile (including SMA-12 (including HDL, cholesterol, glucose, uric acid, BUN, calcium, phosphorus, total protein, albumin, bilirubin, alkaline phosphatase, LDH, AST (SGOT), total cholesterol, creatinine, and ALT (SGPT)); (3) complete blood count; (4) perfluorooctanoic acid (PFOA) in blood; and (5) total fluorine in blood.

RESPONSE: Denied, except admitted that the baseline medical surveillance program conducted by DuPont for its Chambers Works C-8 Workers included the following three elements typical of all DuPont medical surveillance: medical history questionnaire, automated chemistry profile (including SMA-12 (including HDL, cholesterol, glucose, uric acid, BUN, calcium, phosphorus, total protein, albumin, bilirubin, alkaline phosphatase, LDH, AST (SGOT), total cholesterol, creatinine, and ALT (SGPT)) and complete blood count, as well as

two elements related to C-8: perfluorooctanoic acid (PFOA) in blood and total fluorine in blood. DuPont notes that the medical history questionnaire, automated chemistry profile and complete blood counts were standard elements of DuPont's annual physical examinations which were conducted until the early 1990's of all DuPont employees.

REQUEST FOR ADMISSION NO. 58. DuPont's Chambers Works C-8 Workers were advised that C-8 was to be handled as a "no contact" chemical.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 59. In May of 1999, DuPont's Chambers Works identified human health effects of overexposure to C-8 (ammonium perfluorooctanoate (salt)) by inhalation, ingestion, or skin or eye contact as including skin irritation with discomfort or rash; eye irritation with discomfort, tearing, or blurring of vision; irritation of the upper respiratory passages; abnormal blood forming system function with anemia; or abnormal liver function as detected by laboratory tests.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 60. In May of 1999, DuPont's Chambers Works stated that human health effects of overexposure to C-8 (ammonium perfluorooctanoic acid) by inhalation includes irritation of the upper respiratory tract, that contact with the skin may result in severe irritation and burns of the skin on direct contact, that the material causes severe eye burns upon contact with liquid vapors and/or mists, and that the material can cause gastric burns on ingestion.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 61. DuPont's Chambers Works facility began its baseline medical surveillance exams of the Chambers Works C-8 Workers in June of 1999.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 62. Attached hereto at Exhibit X is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except DuPont notes that this document was redacted prior to production to Plaintiffs.

REQUEST FOR ADMISSION NO. 63. In 1999, DuPont's Chambers Works facility identified liver disorders as the primary concern with respect to pre-existing conditions that would put DuPont Chambers Works C-8 Workers at risk for working with C-8.

RESPONSE: Denied, except admitted that a liver disorder would have been one of the preexisting conditions that would have resulted in disapproval of a DuPont Chambers Works C-8 Worker for working with C-8.

REQUEST FOR ADMISSION NO. 64. Attached hereto at Exhibit Y is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 65. In connection with the baseline medical surveillance exams of the DuPont Chambers Works C-8 Workers in 1999, those DuPont employees who participated in such exams and were determined to have abnormal liver test results through such exams were advised by DuPont that they were not approved for work with C-8.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 66. Attached hereto at Exhibit Z is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 67. In June of 1999, DuPont's Chambers Works determined that at least three of the workers who participated in the baseline medical surveillance exams for C-8 were not approved for work with C-8 at that time based upon the results of the tests conducted in connection with the baseline medical surveillance exams.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 68. Attached hereto at Exhibit AA is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except DuPont notes that this document was redacted prior to production to Plaintiffs.

REQUEST FOR ADMISSION NO. 69. Attached hereto at Exhibit BB is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 70. Attached hereto at Exhibit CC is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 71. In February of 2000, Barbara J. Dawson of DuPont's Chambers Works recommended that DuPont implement a medical surveillance program consisting of medical/work histories and blood chemistry profile (including AST and ALT) for the DuPont Chambers Works employees who worked with any fluorine-based chemicals, not just C-8.

RESPONSE: Denied, except admitted that on February 29, 2000, Barbara J. Dawson of DuPont's Chambers Works inquired of Raymond Strocko and Robert Ibbetson whether it would be appropriate for DuPont to implement a medical surveillance program consisting of medical/work histories and blood chemistry profile (including AST and ALT) for the DuPont Chambers Works employees who work with any fluorine-based chemicals, not just C-8.

REQUEST FOR ADMISSION NO. 72. Attached hereto at Exhibit DD is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 73. Attached hereto at Exhibit EE is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Denied, except admitted that each page is a separate business record of Dupont prepared and kept in the regular course of business of DuPont.

REQUEST FOR ADMISSION NO. 74. DuPont has recognized that DuPont's Chambers Works employees have an increased risk for bladder cancer.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 75. Attached hereto at Exhibit FF is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 76. DuPont has recognized that DuPont's Chambers Works employees have an increased risk for lung cancer.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont denies this Request for Admission, except admitted that an increased risk for lung cancer was identified in male salaried Chambers Works employees in 1987, but no workplace exposures could be linked to the disease, and some cases were attributed to smoking and/or asbestos exposure.

REQUEST FOR ADMISSION NO. 77. DuPont has recognized that DuPont's Washington Works employees have an increased risk for buccal cavity and pharyngeal cancer.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont denies this Request for Admission, except admitted that there appears to have been an increased risk for buccal cavity and pharyngeal cancer in Washington Works employees between the years 1956 and 1983, and such increase appears to have been related to the use of tobacco.

REQUEST FOR ADMISSION NO. 78. Although DuPont had received by June of 1999 the results of the testing of the Chambers Works C-8 Workers for C-8 in their blood, DuPont did not include those test results in its June 23, 2000 Voluntary Use and Exposure Information Profile for C-8 that it submitted to the United States Environmental Protection Agency.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits that it had received by June of 1999 the results of the baseline testing of the Chambers Works employees prior to their being exposed to C-8 in the workplace at Chambers Works, and DuPont did not include those baseline test results in its June 23, 2000 Voluntary Use and Exposure Information Profile for C-8 that it submitted to the United States Environmental Protection Agency because the Chambers Works C-8 Workers were not yet being exposed to C-8 in the workplace at that time.

REQUEST FOR ADMISSION NO. 79. Attached hereto at Exhibit GG is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 80. In August of 2000, Anthony J. Playtis of DuPont's Washington Works estimated, based on test results of C-8 in blood of DuPont Washington Works pensioners tested in 1995 and 2000, that the half-life for C-8 in human blood was approximately four years.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without

waiving this objection, this Request for Admission is denied, except as follows: DuPont admits that based on test results of C-8 in blood of DuPont Washington Works pensioners tested in 1995 and 2000, and given the serious limitations on the accuracy of the data, including the small size of most of the data sets, the frequent transfer of site employees from one job to another, and the slow rate at which C-8 blood levels decrease after exposure stops, Anthony Playtis estimated that results from pensioners indicated an average half life for C-8 in blood of about four years.

REQUEST FOR ADMISSION NO. 81. Attached hereto at Exhibit HH is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 82. In August of 2000, DuPont was prepared to offer testing for C-8 in blood of citizens residing of the area of the DuPont Washington Works plant, with collection of blood at the Washington Works plant and use of the same laboratory that DuPont used for analysis of DuPont's Washington Works employees' blood for C-8.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 83. Attached hereto at Exhibit II is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 84. Attached hereto at Exhibit JJ is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 85. In 2000, DuPont's Chambers Works commenced follow-up medical surveillance for the DuPont Chambers Works employees who had participated in the baseline medical surveillance exams for C-8 at DuPont's Chambers Works in 1999 (the "Chambers Works Follow-Up Exams").

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 86. Attached hereto at Exhibit KK is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted, except DuPont notes that this document was redacted prior to production to Plaintiffs.

REQUEST FOR ADMISSION NO. 87. The DuPont Chambers Works Follow-up Exams included: medical history questionnaire; automated chemistry profile (SMA-12 (including HDL, cholesterol, glucose, uric acid, BUN, calcium, phosphorus, total protein, bilirubin, alkaline phosphatase, LDH, AST(SGOT), total cholesterol, creatinine, and ALT (SGPT)); complete blood count; perfluorooctanoic acid (PFOA) in blood; and total fluorine in blood.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 88. In 2001, DuPont's Chambers Works received the results of C-8 blood testing done during the Chambers Works Follow-Up Exams.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 89. Attached hereto at Exhibit LL is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 90. Attached hereto at Exhibit MM is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 91. Attached hereto at Exhibit NN is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 92. DuPont's current community exposure guideline for C-8 in community water is 1 ppb, if the community at issue also is exposed to C-8 in air.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 93. DuPont's current community exposure guideline for C-8 in community water is 3 ppb, if the community at issue is not exposed to C-8 in air.

RESPONSE: Denied, except admitted that DuPont established a "community exposure guideline" for water of 3 parts per billion based on the assumption that 100% of an individual's exposure would come from water.

REQUEST FOR ADMISSION NO. 94. DuPont's current community exposure guideline for C-8 in community air is 0.3 ug/m3.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 95. The levels of C-8 in air exceeded 0.3 ug/m3 at the fenceline of DuPont's Washington Works plant according to calculations made by DuPont in 1987 using data from 1984 and 1986.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion and that it is vague and ambiguous. Subject to and without waiving these objections, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 96. According to DuPont's air emissions modeling calculations, the level of C-8 in air of some residents living near DuPont's Washington Works plant exceeded 0.3 ug/m3 prior to DuPont's installation of new scrubber equipment at the Washington Works plant during 2002.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is deliberately incomplete and calculated to lead to a false conclusion and that it is vague and ambiguous. Subject to and without waiving these objections, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 97. Attached hereto at Exhibit OO is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 98. According to DuPont's air emissions modeling calculations, the level of C-8 in the air of some residents serviced by the Little Hocking Water Association exceeded 0.3 ug/m3, based on DuPont's year 2000 modeled emission levels from DuPont's Washington Works plant.

RESPONSE: DuPont lacks sufficient information to admit or deny this Request for Admission; therefore DuPont denies this Request for Admission.

REQUEST FOR ADMISSION NO. 99. According to DuPont's air emissions modeling calculations, the level of C-8 in the air of some residents serviced by the Little Hocking Water Association exceeded 0.3 ug/m3 prior to installation of new scrubber equipment at DuPont's Washington Works plant during 2002.

RESPONSE: DuPont lacks sufficient information to admit or deny this Request for Admission; therefore DuPont denies this Request for Admission.

REQUEST FOR ADMISSION NO. 100. C-8 has in the past been present in the Lubeck Public Service District's public drinking water at a concentration above 1 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except it is admitted that samples of the Lubeck Public Service District's public drinking water have been analyzed for C-8 content, and some of those analysis results have indicated a concentration of C-8 of greater than one part per billion.

REQUEST FOR ADMISSION NO. 101. Attached hereto at Exhibit PP is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 102. C-8 is present in Lubeck Public Service District's drinking water at a concentration above 1 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 103. Some residents obtaining drinking water from the Lubeck Public Service District are potentially exposed to air emissions of C-8 from DuPont's Washington Works plant.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 104. C-8 has in the past been present in the Little Hocking Water Association's drinking water at a concentration above 1 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 105. C-8 is present in Little Hocking Water Association's drinking water at a concentration above 1 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 106. C-8 has in the past been present in the Little Hocking Water Association's drinking water at a concentration above 3 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for

Admission, except it is admitted that water sampling performed in October 2002 indicated that at that time, the water system point had a concentration of C-8 of 4.29 ppb.

REQUEST FOR ADMISSION NO. 107. C-8 is present in the Little Hocking Water Association's drinking water at a concentration above 3 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except it is admitted that water sampling performed in October 2002 indicated that at that time, the water system point had a concentration of C-8 of 4.29 ppb.

REQUEST FOR ADMISSION NO. 108. C-8 is present in the Little Hocking Water Association's drinking water at a concentration above 4 ppb.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except it is admitted that water sampling performed in October 2002 indicated that at that time, the water system point had a concentration of C-8 of 4.29 ppb.

REQUEST FOR ADMISSION NO. 109. Some individuals obtaining drinking water from the Little Hocking Water Association are potentially exposed to air emissions of C-8 from DuPont's Washington Works plant.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 110. DuPont's operations have resulted in the presence of C-8 in private drinking water wells near DuPont's Washington Works plant.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 111. Attached hereto at Exhibit QQ is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 112. Attached hereto at Exhibit RR is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 113. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the Lubeck Public Service District in West Virginia.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 114. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by Little Hocking Water Association of Ohio.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 115. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the City of Belpre, Ohio.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except DuPont admits that in February, March and April 2002, C-8 was detected at levels from 0.0818 ppb to 0.12 ppb in drinking water supplied by the City of Belpre, Ohio, and at this time, DuPont is unable to identify any alternative sources of C-8 that have resulted in the presence of C-8 in drinking water supplied by the City of Belpre, Ohio.

REQUEST FOR ADMISSION NO. 116. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by Blennerhassett Island.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except DuPont admits that in January 2002, C-8 was detected at a level of 0.165 ppb in drinking water supplied by Blennerhassett Island, and at this time, DuPont is unable to identify any alternative sources of C-8 that have resulted in the presence of C-8 in drinking water supplied by Blennerhassett Island.

REQUEST FOR ADMISSION NO. 117. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the General Electric Plastics plant in Wood County, West Virginia.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 118. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by DuPont's Washington Works plant.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont admits this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 119. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the Tuppers Plains Public Service District in Ohio.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except DuPont admits that in February, March, April, August and October 2002, C-8 was detected at levels from 0.246 ppb to 0.363 ppb in drinking water supplied by the Tuppers Plains Public Service District in Ohio, and at this time, DuPont is unable to identify any alternative sources of C-8 that have resulted in the presence of C-8 in drinking water supplied by the Tuppers Plains Public Service District in Ohio.

REQUEST FOR ADMISSION NO. 120. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the Mason County Public Service District in West Virginia.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except DuPont admits that in January, March and April 2002, C-8 was detected at levels from non-quantifiable (below 0.050 ppb) to 0.102 ppb in drinking water supplied by the Mason County Public Service District in West Virginia, and at this time, DuPont is unable to identify any alternative sources of C-8 that have resulted in the presence of C-8 in drinking water supplied by the Mason County Public Service District in West Virginia.

REQUEST FOR ADMISSION NO. 121. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the Village of Syracuse, Ohio.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission as phrased.

REQUEST FOR ADMISSION NO. 122. DuPont's operations have resulted in the presence of C-8 in drinking water supplied by the Village of Pomeroy, Ohio.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except DuPont admits that in March and April 2002, C-8 was detected at levels from 0.0628 ppb to 0.0659 ppb in drinking water supplied by the Mason County Public Service District in West Virginia, and at this time, DuPont is unable to identify any alternative sources of C-8 that have resulted in the presence of C-8 in drinking water supplied by the Mason County Public Service District in West Virginia.

REQUEST FOR ADMISSION NO. 123. In 2001, DuPont's Haskell Laboratory developed a simple, conservative compartmental model (hereinafter "Compartmental C-8 Model") to relate ammonium perfluorooctanoate (APFO) exposure to estimates of perfluorooctanoate (PFO) blood levels in humans.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-

compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 124. Attached hereto at Exhibit SS is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Denied that the exhibit as attached at Exhibit SS, EID166599 - EID166608, is an accurate copy, because page EID166603 is illegible. However, DuPont has appended herein at Exhibit 1 a complete and legible copy of the same document, EID166599 - EID166608, and as to Exhibit 1, this Request for Admission is admitted, except denied as to marginalia.

REQUEST FOR ADMISSION NO. 125. DuPont used its Compartmental C-8 Model to create a table relating APFO exposures through air and drinking water to estimated steady-state PFO blood concentrations.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, this Request for Admission is denied, except it is admitted that DuPont's Haskell Laboratory ran a series of model simulations pursuant to its Compartmental

C-8 Model to estimate the steady-state human PFO blood levels resulting from drinking water containing APFO, breathing air containing APFO or combinations of the two, and created a table (hereinafter referred to as the "Compartmental Model Table") reflecting these results, and DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 126. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 1 ppb APFO with no APFO in their inhaled air would be estimated to have resulting steady-state PFO concentration in their blood of 0.30 parts per million (ppm).

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 127. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 1 ppb APFO with 0.30 ug/m3 APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 1.20 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 128. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 1 ppb APFO with 0.20 ug/m3 APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 0.90 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 129. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 3 ppb APFO with no APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 0.90 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 130. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 3 ppb APFO with 0.20 ug/m3 APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 1.80 ppm.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 131. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 4 ppb APFO with no APFO present in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 1.20 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is

constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 132. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 4 ppb APFO with 0.20 ug/m3 APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 1.80 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is

constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 133. According to DuPont's Compartmental C-8 Model, those consuming drinking water containing 4 ppb APFO with 0.30 ug/m3 APFO in their inhaled air would be estimated to have a resulting steady-state PFO concentration in their blood of 2.10 ppm.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is deliberately incomplete and calculated to lead to a false conclusion. Subject to and without waiving this objection, DuPont admits this Request for Admission, except DuPont notes that, for accuracy, the Compartmental C-8 Model and its corresponding tables must be read in accordance with the assumptions and caveats set forth in the Model itself, namely that (1) the Model is not unique to PFOA, but could be used unchanged for any chemical with a half-life of one year; (2) the Model is intended to be overly simplified for ease of use and therefore is more theoretical and less realistic and practical; (3) the Model is constructed to be conservative and theoretical, and not as a substitute for a more complex and realistic model more closely approximating the physiology and function of the human body; (4) although the Model is constructed as a two-compartment model, i.e., a human blood compartment and a human body compartment, only the blood compartment is "run" to compute the simulated results; (5) the Model is based on general kinetic principles, but it does not simulate actual body mechanisms or functions; (6) the Model is based on standard estimates of volumes of daily water and air consumption, and PFOA exposures are considered by the Model to occur daily; (7) the Model is constructed to simulate the highest possible intake of PFOA through ingestion and inhalation (i.e., it does not diffuse, and is completely and instantly absorbed); and (8) the Model is

constructed to provide a conservative, i.e., highly theoretical estimates of possible concentrations of PFOA in the blood.

REQUEST FOR ADMISSION NO. 134. DuPont has estimated the mean concentration of APFO in the blood of its employees in jobs with potential for APFO exposure who had their blood tested in 1989-90 to be 1.96 ppm.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 135. Attached hereto at Exhibit TT is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 136. DuPont estimated the mean concentration of APFO in the blood of its employees in jobs with potential for APFO exposure who had their blood tested in 1995 to be 1.56 ppm.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 137. DuPont estimated the mean concentration of APFO in the blood of its employees in jobs with potential for APFO exposure who had their blood tested in 2000 to be 1.53 ppm.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 138. Attached hereto at Exhibit UU is an authentic and accurate copy of a business record of DuPont prepared and kept in the regular course of business of DuPont.

RESPONSE: Admitted.

REQUEST FOR ADMISSION NO. 139. 3M has reported to the United States Environmental Protection Agency that it detected a median concentration of 5.1 parts per billion ("PPB") PFOA in human sera from pooled samples drawn in 1995 from 599 individuals from 23 different states in the United States in the age span of 2-12 years old.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is vague and ambiguous, and that it apparently refers to a third-party document not prepared by DuPont, which speaks for itself.

REQUEST FOR ADMISSION NO. 140. 3M has reported to the United States Environmental Protection that it detected a median concentration of 4.7 ppb PFOA in human sera from pooled samples drawn in 2000 from over 600 individuals from 6 blood banks from across the United States, focusing in the age span 20-69 years old.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is vague and ambiguous, and that it apparently refers to a third-party document not prepared by DuPont, which speaks for itself.

REQUEST FOR ADMISSION NO. 141. In May of 1999, 3M reported to the United States Environmental Protection Agency that it had detected an average concentration of 3 ppb PFOA in over 35 lots of individual pooled human sera samples purchased from chemical or biological supply companies.

RESPONSE: DuPont objects to this Request for Admission on the grounds that it is vague and ambiguous, and that it apparently refers to a third-party document not prepared by DuPont, which speaks for itself.

REQUEST FOR ADMISSION NO. 142. Individuals who were exposed to C-8 in drinking water supplied by the Lubeck Public Service District have been significantly exposed

to C-8 in comparison to the levels of C-8 to which the general population of the United States is exposed.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 143. Those individuals who are exposed to C-8 in drinking water supplied by the Lubeck Public Service District have been significantly exposed to C-8 in comparison to the levels of C-8 to which the general population of the United States is exposed.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 144. Individuals who have been exposed to C-8 in drinking water supplied by the Little Hocking Water Association have been significantly exposed to C-8 in comparison to the levels of C-8 to which the general population of the United States is exposed.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 145. Those individuals who are exposed to C-8 in drinking water supplied by the Little Hocking Water Association have been significantly exposed to C-8 in comparison to the levels of C-8 to which the general population of the United States is exposed.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 146. Those individuals whose air and drinking water have been contaminated with C-8 from DuPont's Washington Works plant have been significantly exposed to C-8 in comparison to the levels of C-8 to which the general population of the United States is exposed.

RESPONSE: Denied.

REQUEST FOR ADMISSION NO. 147. Overexposure to C-8 is toxic to humans.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except to the extent that it admits that any substance can have some degree of adverse consequence in humans at a sufficiently high dose.

REQUEST FOR ADMISSION NO. 148. Overexposure to C-8 is hazardous to humans.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except to the extent that it admits that any substance can have some degree of adverse consequence in humans at a sufficiently high dose.

REQUEST FOR ADMISSION NO. 149. Physicians employed by or on behalf of DuPont have recommended that testing be performed of those exposed to C-8 to determine, among other things, whether there are health effects from such C-8 exposure.

RESPONSE: DuPont objects on the ground that this Request for Admission is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except it admits that certain physicians employed by or on behalf of DuPont have recommended that testing be performed on employees exposed to C-8.

REQUEST FOR ADMISSION NO. 150. DuPont is aware of C-8 having been detected at levels exceeding 10 ppb in the blood of individuals living in Wood County, West Virginia, who had never worked for DuPont.

RESPONSE: DuPont admits that it is aware of certain information relating to blood testing for C-8 of certain individuals living in Wood County, West Virginia to which a

confidentiality agreement applies, but this information does not provide DuPont with sufficient information to admit or deny this Request for Admission as phrased; therefore, DuPont denies this request for admission.

REQUEST FOR ADMISSION NO. 151. DuPont is providing medical monitoring to persons residing in West Virginia and Ohio who are non-DuPont employees who claim to have been exposed to C-8.

RESPONSE: DuPont objects to this Request for Admission on the ground that it is vague and ambiguous. Subject to and without waiving this objection, DuPont denies this Request for Admission, except it admits that DuPont has conducted blood testing for the presence of C-8 for certain non-DuPont employees in West Virginia and Ohio.

Respectfully submitted,

E. I. DU PONT DE NEMOURS AND COMPANY

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A Simple, Conservative Compartmental Model to Relate Ammonium Perfluorooctanoate (APFO) Exposure to Estimates of Perfluorooctanoate (PFO) Blood Levels in Humans

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Abstract

A simple and conservative compartmental model was developed to relate ammonium perfluorooctanoate (APFO) exposures to estimates of perfluorooctanoate (PFO) concentrations in human blood. The model was based on kinetic principles, but it did not include mechanistic or physiological descriptions. Further, the model was not intended to replace the need for more robust models that include mechanistic and appropriate physiological descriptions. The model included zero-order mathematical descriptions of oral and inhalation input and a first order elimination description. Standard estimates of the volumes of daily water consumption and air breathed were used to relate daily intake of APFO to concentrations of APFO in air and drinking water. The model was exercised under a variety of exposure conditions and used to create a table relating APFO intake via drinking water and/or air to PFO blood concentrations. The simplicity and utility of this model provide decision-makers with an easily applied tool to relate APFO exposures to estimates of resulting PFO concentrations in human blood.

Introduction

A simple compartmental model was developed and used to estimate the concentration of perfluorooctanoate (PFO) in blood following inhalation or ingestion of ammonium perfluorooctanoate (APFO). The model presented is intended to complement various consequence analysis and planning activities and is not intended to be a substitute for a robust, mechanism based physiological model. It order to realize both the strengths and limitations of the model, it is important to carefully consider the assumptions and caveats relevant to the model development and application.

Approach

Model Development:

The model developed for this application was a two-compartment open model with one compartment defined as the blood compartment and the other as the body compartment. While the model is constructed as a two-compartment model, transfer of PFO is confined to only one compartment (blood compartment) in order to provide a conservative estimate of PFO concentrations in blood following APFO exposure. Functionally, this reduces to a one-compartment open model with two zero-order-input processes and one first-order elimination process. In other words, PFO is confined to the blood compartment and the PFO concentration in blood cannot be reduced by the distribution of PFO into other body tissues. In order to contribute to the conservative estimates produced by this model, any APFO that is ingested or inhaled is not subject to diffusional resistance and is assumed to be completely and instantly absorbed into the blood compartment. Since PFO is not metabolized, elimination from the blood is via renal excretion. In this model the elimination is described as a pseudo first-order process. A schematic of the model is shown in Figure 1.

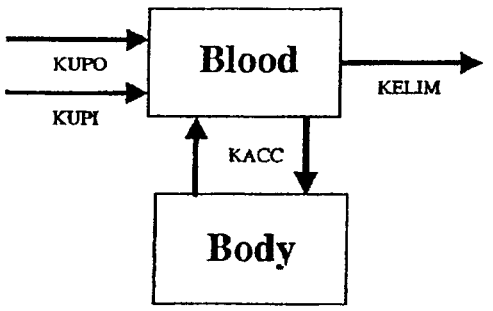


Figure 1. Schematic of PFO Compartmental Model.

In Figure 1, KACC is the distribution coefficient for transfer of PFO between the blood and body compartments. It has the units of day^{-1}, but as discussed earlier, it is set to zero

in order to create a conservative one-compartment model. KUPO is a zero-order term to describe PFO input into the blood compartment (ug/day) via the oral route. KUPI is a zero-order term to describe PFO input into the blood compartment (ug/day) via the inhalation route. KELIM is a pseudo first-order elimination coefficient (day^{-1}) that describes removal of PFO from the blood compartment via renal excretion. Differential rate equations were developed from the schematic in Figure 1 and the equations were solved using Advanced Continuous Simulation Language (ACSL, Aegis Corp.). The mathematical equations used to describe the concentration of PFO in the blood compartment (CBLOOD) are shown in the series of equations below.

$$\frac{dAB}{dt} = KUPO + KUPI - KELIM * CBLOOD * VOL - RAF \quad (1)$$

$$dAB = (KUPO + KUPI - KELIM * CBLOOD * VOL - RAF)dt \quad (2)$$

$$\int_{AB=0}^{AB} dAB = \int_{t=0}^{t} (KUPO + KUPI - KELIM * CBLOOD * VOL - RAF)dt \quad (3)$$

$$AB = \int_{t=0}^{t} (KUPO + KUPI - KELIM * CBLOOD * VOL - RAF)dt \quad (4)$$

$$CBLOOD = AB / VOL \quad (5)$$

In the equations above, AB is the amount (ug) of PFO in blood, t is time (days), VOL is the volume (ml) of the blood compartment and RAF (ug/day) is the rate of PFO movement between the blood and body compartments (RAF=0 in this model). The ACSL coding of the above equations is given immediately below and in Appendix 1. The corresponding ACSL command file is provided in Appendix 2.

```
RA=KUPO + KUPI - KELIM*CBLOOD*VOL - RAF          (6)
CBLOOD=INTEG(RA,0.)/VOL                          (7)
```

Model Input Assumptions/Descriptions:

Blood Compartment Volume: The blood volume of 3.5 L used in the model was that of a 50-Kg human (average human female weight). The female weight was selected to maintain the conservative approach desired for this model. Obviously, blood volume is a function of body weight so larger body weights will equate to larger blood volumes. PFO concentrations in blood will therefore decrease for a given APFO exposure as body weights increase.

Elimination Rate Constant: The elimination rate constant, KELIM, was assigned a value of 0.0019/day. This was derived assuming a PFO half-life ($t_{1/2}$) in humans of 365 days and that first order kinetics apply. While current human half-life estimates are placed in the 200-300 day range, the 365-day half-life is a conservative value for initial model conditions. The actual value for KELIM was derived using the relationship between the half-life and the elimination rate constant where first order kinetics are obeyed.

$$KELIM = \frac{\ln 2}{t_{1/2}} \quad (8)$$

Input of APFO via Drinking Water: Drinking water concentrations of APFO were converted to micrograms (ug) of APFO ingested per day using the assumption that approximately 2L of the water are consumed per day. An example follows where drinking water containing 1 part per billion (ppb) APFO was consumed:

$$1\ ppb = \frac{1ug}{L} \quad so \quad \frac{1ug}{L} \times \frac{2L}{day} = \frac{2ug}{day} \tag{9}$$

Input of APFO via Inhalation: Inhaled concentrations of APFO were converted to micrograms of APFO absorbed into the blood using the assumption that approximately 20 m^3 of air are breathed per day. An example follows where air containing 1 ug/m^3 APFO was inhaled.

$$\frac{1ug}{m^3} \times \frac{20m^3}{day} = \frac{20ug}{day} \tag{10}$$

General Assumptions:

The simple model described here is designed to be conservative and is not intended to be a substitute for a more robust, mechanism based physiological model. Consistent with the design of this model, several general assumptions have been made.

(1) The PFO is distributed only in the human blood compartment.

(2) There is no metabolism of PFO.

(3) No binding or mechanistic descriptions are included in the model.

(4) Elimination occurs by a single first-order pathway. It is likely that elimination actually displays biphasic elimination with an initial rapid elimination phase followed by a slower or terminal phase elimination. In order to be consistent with the conservative nature of the model, only the slow (terminal) phase elimination is included in the model.

(5) All APFO inhaled or ingested in drinking water is instantly and completely absorbed into the blood compartment.

(6) APFO exposures occur every day throughout the exposure period modeled.

Results

The simulated PFO levels in human blood resulting from repeated ingestion of 6 ug/day APFO are shown in Figure 2. As would be expected based on the estimated half-life of PFO in the human body, the simulation illustrates that steady-state PFO blood levels are reached only after repeated exposure for over 6 years. Figure 3 is a simulation of the elimination of PFO from the blood once PFO levels are at steady state and PFO exposure is terminated.

Figure 2. Simulated PFO Concentration in Human Blood Following Continuous Intake of 6 ug/day

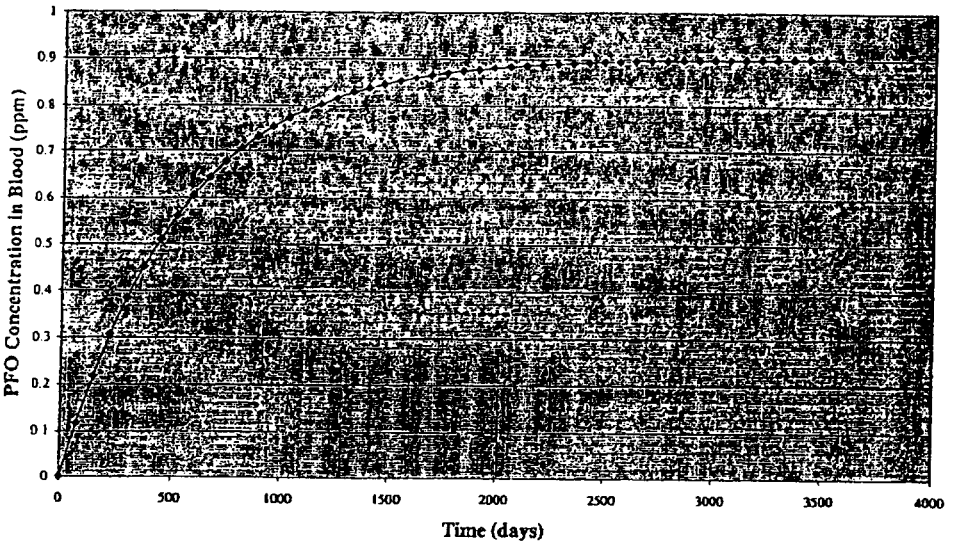
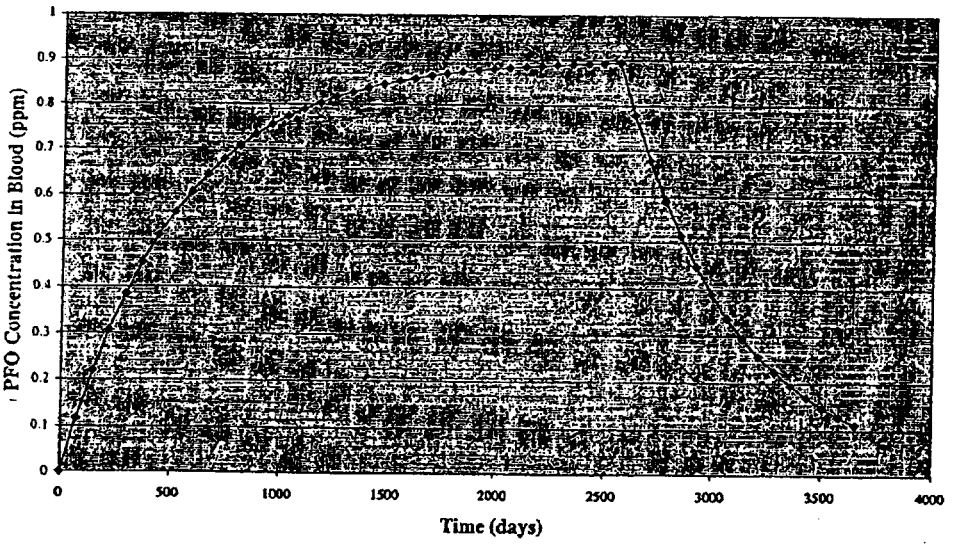


Figure 3. Simulated PFO Concentration in Human Blood During and After 2600 Days of Exposure to 6 ug/day APFO



A series of model simulations were run to estimate the steady-state human PFO blood levels resulting from drinking water containing APFO, breathing air containing APFO or combinations of the two. The resulting estimates of PFO concentrations in human blood are shown in Table 1. Table 1 can be used under the conditions described in the text, to assign a PFO blood concentration to a particular exposure. Example 1: If drinking water containing 1 ppb APFO was consumed and no APFO was present in the inhaled air, the resulting steady-state PFO concentration estimate in human blood would be 0.30 ppm. Example 2: If no APFO was present in the drinking water and 0.05 ug/m^3 APFO was in the inhaled air, the resulting steady-state PFO concentration estimate in human blood would be 0.15 ppm. Example 3: If APFO was present in the drinking water at 1ppb and in the air at 0.3 ug/m^3, the resulting steady-state PFO concentration estimate in human blood would be 1.20 ppm.

Table 1. Estimated human steady-state PFO blood levels (ppm) following exposure to APFO via air and/or drinking water. *

µg/m^3 APFO in air \ Parts per billion APFO in drinking water	0	1	2	3	4	5	6	7	8	9	10	15	30	40
0.00	0.00	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.01	4.51	9.02	12.02
0.05	0.15	0.45	0.75	1.05	1.35	1.65	1.95	2.25	2.55	2.85	3.16	4.66	9.17	12.17
0.10	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.31	4.81	9.32	12.32
0.15	0.45	0.75	1.05	1.35	1.65	1.95	2.25	2.55	2.85	3.16	3.46	4.96	9.47	12.47
0.20	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.31	3.61	5.11	9.62	12.62
0.30	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.31	3.61	3.91	5.41	9.92	12.92
0.40	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.31	3.61	3.91	4.21	5.71	10.22	13.22
0.50	1.50	1.80	2.10	2.40	2.70	3.00	3.31	3.61	3.91	4.21	4.51	6.01	10.52	13.52
1.00	3.00	3.31	3.61	3.91	4.21	4.51	4.81	5.11	5.41	5.71	6.01	7.51	12.02	15.02
2.00	6.01	6.31	6.61	6.91	7.21	7.51	7.81	8.11	8.41	8.71	9.01	10.52	15.02	18.03
3.00	9.01	9.31	9.62	9.92	10.22	10.52	10.82	11.12	11.42	11.72	12.02	13.52	18.03	21.03
4.00	12.02	12.32	12.62	12.92	13.22	13.52	13.82	14.12	14.42	14.72	15.02	16.53	21.03	24.04

PFO Blood levels less than or equal to 5 ppm
PFO Blood levels greater than 5 ppm but less than or equal to 10 ppm

* Use of this table requires careful consideration of assumptions and limitations described in the text.

Discussion

A relatively simple and conservative compartmental model was developed and exercised to create an estimate of the PFO concentration in human blood following exposure to APFO in drinking water and/or inhaled air. The model was then used to create a table relating APFO exposures to estimates of steady-state PFO blood concentrations. Within the constraints of the assumptions and descriptions provided in this report, a variety of

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exposure combinations could be evaluated using the model. Given a specific PFO concentration in blood, the model could also be used to create a plausible exposure scenario that could produce the observed PFO blood level. For example, if one had a hypothetical steady-state PFO concentration of 5 ppb in blood, the corresponding APFO exposure estimate using the model would be approximately 16 parts per trillion (ppt).

The model and approach presented in this report may be valuable for consequence analysis or planning activities, however, it should not serve as a substitute for more robust mechanistic, physiologically based models as they become available. The model presented here is based on sound compartmental analysis principles and is exclusive of mechanistic or physiological descriptions. As discussed earlier, this model is based on conservative assumptions and therefore is likely to provide high estimates of PFO concentrations in blood following ingestion or inhalation of PFO. Nevertheless, the simplicity and utility of this model provide decision-makers an easily applied tool to relate APFO exposures to estimates of resulting PFO concentrations in human blood.

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Appendix 1: ACSL Model Code

```
PROGRAM
!MODEL TO SIMULATE PFO BLOOD LEVELS FOLLOWING ORAL AND
!INHALATION OF APFO
VARIABLE TIME

INITIAL

!CONSTANTS CAN BE GIVEN VALUES TO SIMULATE EXPOSURE AND
!SYSTEM OF INTEREST

CONSTANT KUPI     = 0.    !ZERO ORDER INHALATION UPTAKE (ug/day)
CONSTANT KUPO     = 0.    !ZERO ORDER ORAL UPTAKE (ug/day)
CONSTANT KELIM    = 0.    !FIRST-ORDER ELIMINATION (/day)
CONSTANT KACC     = 0.    !FIRST-ORDER DISTRIBUTION TO BODY (/day)
CONSTANT VOL      = 1.    !BLOOD VOLUME (ml)
CONSTANT VF       = 1.    !BODY VOLUME (ml)

!TIMING COMMANDS

CONSTANT TSTOP    =3650.      !LENGTH OF EXPOSURE (days)
CONSTANT POINTS   =3650.      !NO. OF POINTS IN PLOT
CONSTANT TOFF     =3650.      !END OF EXPOSURE TIME (DAYS)

CINT=TSTOP/POINTS             !COMMUNICATION INTERVAL
END                           !END INITIAL

DYNAMIC

ALGORITHM IALG=2

DERIVATIVE
IF (TIME .GT. TOFF) THEN
KUPI = 0.
KUPO=0.

END

IF TERMT(TIME.GE.TSTOP)

!CONCENTRATION OF PFO IN THE BLOOD COMPARTMENT (ug/day)
RA=KUPO + KUPI - KELIM*CBLOOD*VOL - RAF
CBLOOD=INTEG(RA,0.)/VOL

!CONCENTRATION OF PFO IN THE BODY
RAF = KACC*(CBLOOD*VOL-CF*VF)
CF = INTEG(RAF,0.0)/VF

END    !END DERIVATIVE
END    !END DYNAMIC
END
```

Appendix 2: ACSL Command File for Assigning Appropriate Parameter Values

```
TSTOP=10*365;
POINTS=50;
TOFF=TSTOP+1;
VOL=3500;

KACC=0.;
KELIM=0.0019;
KUPO=2;
KUPI=6;

keyboard
figure;
!!START
line(_time, _cblood, @linestyle="+");
_cblood(POINTS)

xlabel('Time (Days)');
ylabel('Conc. in blood (ug/mL)');
title('BLOOD CONCENTRATION');
```

IN THE CIRCUIT COURT OF WOOD COUNTY, WEST VIRGINIA

JACK W. LEACH, ET AL.,

Plaintiffs,

v.

CIVIL ACTION NO. 01-C-608
(Judge George W. Hill, Jr.)

E. I. DU PONT DE NEMOURS AND COMPANY, and LUBECK PUBLIC SERVICE DISTRICT,

Defendants.

CERTIFICATE OF SERVICE

I, Heather Heiskell Jones, do hereby certify that I have served a true and exact copy **"Responses of E. I. du Pont de Nemours and Company to Plaintiffs' Second Set of Requests for Admissions to DuPont"** upon the following counsel of record in the manner indicated below on this 23rd day of January 2003, addressed as follows:

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