SOLUTIA
Applied Chemistry, Creative Solutions

Solutia Inc.
575 Maryville Centre Drive
St. Louis, Missouri 63141

P.O. Box 66760
St. Louis, Missouri 63166-6760
Tel 314-674-1000

April 26, 2000

Agency for Toxic Substance and Disease Registry
Division of Health Assessment and Consultation
Attn: Chief, Program Evaluation, Records, and Information Services Branch, E-56
1600 Clifton Road, N. E.
Atlanta, GA 30333

re:
Health Consultation
Public Comment Release
Evaluation of Soil, Blood & Air Data from Anniston, Alabama
Monsanto Company
(a/k/a Solutia Incorporated [sic])
Anniston, Calhoun County, Alabama
CERCLIS NO. ALD004019048
February 14, 2000

To whom it may concern:

Solutia Inc. (Solutia) provides the following comments on the draft Health Consultation for Monsanto Company (Monsanto) dated February 14, 2000, which was distributed for public comment on or about that date. Solutia Inc. was formed as a business entity on September 1, 1997, as a spin-off from Monsanto, the former owner and operator of the Anniston, AL, facility, which is the subject (nominally) of the draft Health Consultation. Solutia is the present owner and operator of the facility.

The comments below include both editorial and substantive comments. The comments are presented in the order in which sections of the draft Health Consultation occur to facilitate their location in the Health Consultation. The order of presentation does not reflect the relative importance of the comments.

DSW 143528

DEFENDANT'S
EXHIBIT
701

TITLE

The use of the idiomatic "a/k/a" is inappropriate in a document of this type. In addition, the description of the site in the title is inaccurate and misidentifies the area to which the consultation is addressed. The name of the owner of the site is Solutia Inc. However, the area addressed by the Health Consultation is not the plant site itself but rather is off-site areas in the greater Anniston area. Solutia suggests that the title of the document be changed to the following:

Health Consultation
Evaluation of Soil, Blood & Air Data from Anniston, Alabama
Near-site and Off-site Areas
Solutia Inc.
(formerly the chemical businesses of Monsanto Company)
Anniston, Calhoun County, Alabama
CERCLIS NO. ALD 004 019 048

TABLE OF CONTENTS

This page should be numbered "ii", not "2".

Acronyms and Abbreviations

This list could be made more useful by indicating the equivalencies of various units shown on the list. Specifically, the terms "ppm - parts per million" and "ppt - parts per trillion" should be added. Then, it should be noted that ng/L is equivalent to ppt, that µg/L is equivalent to ppb, and that soil levels are measured in either mg/kg or µg/g which are equivalent to ppm. The abbreviation "ADEM" should be noted to be the Alabama Department of Environmental Management.

Executive Summary

Page 1, first paragraph: The Health Consultation uses the term "West Anniston", when, in fact, there is no such city. In addition, the Solutia facility is actually in Anniston. The "w" in "west" should be lower case here and throughout the document.

Page 1, third paragraph: Solutia believes that ATSDR should note specifically that the use of the term "public health hazard" is a not a risk-based determination but is based on comparison of PCB soil levels in various locations in Anniston with some predetermined concentration levels. Furthermore, it is unclear from this document what levels of PCBs in soil have been used to trigger the designation "public health hazard of cancerous and non-cancerous health effects ..." This failure to elucidate the soil PCB concentrations which ATSDR deems sufficient to trigger the designation could contribute to misunderstanding and unwarranted concern in the community. ATSDR also uses the

term "prolonged exposure", which needs to be defined in the context of the Anniston situation.

ATSDR also claims that exposures of less than one year to PCBs in soil may present a public health hazard for thyroid and neurodevelopmental effects, presumably to children. This statement mischaracterizes the animal and human scientific literature on these potential effects, even if one assumes the validity of the studies. There are several issues which need to be considered before ATSDR suggests, as it does here, that neurodevelopmental effects could result from exposure to PCBs in soils in the Anniston community. Reviews by Dr. Susan Schantz (Schantz, S. L., *Neurotox. Teratol.*, **1996**, 18(3):217-227) and Dr. Richard Seegal (Seegal, R. F., *Crit. Rev. Toxicol.*, **1996**, 26(6):709-737) of the studies of potential neurodevelopmental effects in humans associated with exposure to PCBs and other chemicals discussed in great detail the various criticisms of those studies, noted the small magnitude of the alleged effects, and concluded that the studies, taken as a whole, are inconclusive. Further, even if one were to assume that the various studies reviewed by Schantz and Seegal are valid as reported, the subtle effects were reported to be associated with prenatal exposure to the chemicals, not to postnatal exposures, such as incidental ingestion of surface soil. Solutia believes that the suggestion that thyroid and neurodevelopmental effects could result from exposures to certain soils in the Anniston area is not supported by the scientific literature.

Page 1, fourth paragraph: Solutia takes strong issue with the statement that it is a "fact" that children in Anniston have elevated levels of PCBs in their blood. ATSDR acknowledges that the blood data provided to the Agency by the plaintiff groups are not supported by any quality assurance information. (Although the Agency apparently did contact one of the laboratories used by the plaintiffs' attorney, the laboratory's assertions cannot stand in the place of appropriate quality assurance information.) ATSDR is apparently basing its summary statement on the observation that 2 of 16 children under the age of six had detectable PCBs in their blood and seems to be assuming that any detection of PCBs in the blood of children of that age is elevated. In the first place, there is no information about the test-retest reliability of the determinations of PCBs in the blood of these children. Solutia is aware of at least one child, from the other plaintiff group, whose blood has been tested twice. The results for that child are ND (None Detected <3 ppb) and 12.4 ppb. Solutia also believes that there may be serious errors in Table 5 on Page 9, which, if our analysis is correct, could invalidate ATSDR's interpretation of the PCB blood results for children. (See comments on Page 9, Table 5 below.) Solutia urges ATSDR to be cautious in drawing "factual" conclusions from unvalidated data.

Page 1, fifth paragraph: ATSDR appropriately exercised caution in interpretation of the results of air sampling conducted on Solutia property during the last two years. Solutia remains confident that the air pathway is not a pathway of concern for potential exposure to PCBs for the residents near the Anniston facility. Most of the measurements have shown that air levels of PCBs are at or only slightly above levels observed in other urban locations in the United States. Even when PCB levels have been reported at levels above

typical U.S. background levels, the reported levels have been orders of magnitude below the OSHA Permissible Exposure Limit (PEL) (1,000,000 ng/m^3 for Aroclor® 1242) and the NIOSH recommended limit (1,000 ng/m^3) for occupational exposures. Solutia understands that the OSHA PEL is strictly applicable only to occupational exposures, which are considered to be 40 hours per week. However, even if the OSHA PEL is divided by four to adjust for a worst case, 168-hour-per-week potential residential exposure scenario, the levels measured at the Anniston facility are still orders of magnitude less. They are also well below the NIOSH recommended level, which was based on analytical considerations and is not a risk-based value.

Page 2, first paragraph of 1): This paragraph states that, for the most part, samples were collected in response to a consent order issued by ADEM. In fact, Monsanto and, later, Solutia collected hundreds of samples on a voluntary basis to assess potential impact of PCBs associated with drainage from the Anniston facility.

Page 2, second paragraph of 1): This paragraph briefly describes both air sampling and off-site sediment and soil sampling. It would be clearer if the paragraph were split into two, between "...as total PCBs." and "Since 1996 ..."

Page 2, third paragraph of 1): Attached to these comments is the work plan and protocol for the air sampling conducted by Solutia in 1998 and 1999. (Attachment I) Additional air sampling will continue in 2000, as described in a letter from Robert G. Kaley of Solutia to Wm. Gerald Hardy of ADEM dated November 22, 1999. (Attachment II)

Page 2, first paragraph of 2) continuing to page 3: In the penultimate sentence of the paragraph, ATSDR notes that birth dates were provided for most of the persons whose blood was sampled. Solutia cautions the Agency that the data sheets on which the information was provided were not quality checked by the plaintiffs' attorneys before the information was provided to EPA and, subsequently, to ATSDR. At a meeting in April of 1999, EPA confronted Solutia representatives with their concerns about two less-than-year-old infants with blood levels above 10 ppb. Subsequent reviews by Solutia of the plaintiffs' blood testing results and other information, which had been provided to Solutia during the discovery process in the ongoing litigation, determined that the two persons in question were actually 70 and 80 years old! Their birth years had been mistranscribed onto a summary sheet as 1996, when, in fact, they were 1916 and 1926. The point of this incident is that ATSDR must use caution when relying on this compilation of birth dates and blood levels. Our analysis of Table 5 on Page 9 suggests that a similar error could account for one of the subjects in that table being considered by ATSDR to be a child, when, in fact, he is an adult. (See comments on Page 9, Table 5 below.) Every point of concern must be quality checked before any statement is made or action taken.

Page 3, second paragraph of 2): Solutia again expresses its concern that ATSDR is relying on oral assurances of the validity of the blood sampling and analyses in spite of a total lack of quality assurance and quality control information. There is no information or protocol for how the blood was drawn, what instructions the subjects were given (*e.g.*,

whether they were instructed that the sample should be taken only after fasting), how the samples were stored and shipped, and how the laboratory maintained chain of custody and handled the samples.

Page 3, section 3): The penultimate sentence would be clarified by reordering the words: "The air analytical results reported levels for PCBs only."

Blood PCB measurements

Page 4, first paragraph of this section: Solutia iterates its concerns that errors in the data set provided to EPA by the plaintiff groups compromise ATSDR's ability to draw valid conclusions from the data, especially if those conclusions relate to individuals.

Page 4, footnotes a and b: It might be useful if ATSDR here and elsewhere provided interchangeable units for the blood level measurements. For example, a parenthetical "(ppb)" might be added to the end of footnote "b" to remind readers of the practical equivalence of micrograms per liter and parts per billion.

Page 5, first paragraph: Although this paragraph and table may represent the data as provided to ATSDR and to EPA, Solutia is concerned that erroneous conclusions may be drawn if the agencies take the provided data at face value. For example, the data suggest that one of the community members has a PCB blood level of 2112 ppb. However, this plaintiff is known to be a former Monsanto employee who worked in the Aroclor® (PCB) department of Monsanto's Anniston plant. Although ATSDR may not have had this information readily available, attempts should have been made to ascertain whether this reported blood level had some explanation other than community exposure. Additionally troubling is the inclusion of this blood level in the calculation of the average blood level for this data set. The appropriate exclusion of this one outlier would have resulted in an average blood level nearly 1 ppb lower than that calculated including the former worker's blood level. There may very well be additional former workers included in the data set provided to ATSDR.

Page 5, **Table 1**: Solutia is concerned that there may be errors in this table because of errors in the data set. We mentioned above that the inappropriate inclusion of the reported PCB level of 2112 ppb affects both the range and average reported in the table. Although we have been unable to quality check the age data comprehensively, it seems unlikely that a 3-day old infant had its blood sampled for PCBs. Such a drawing of blood from an infant would be highly irregular. It also seems unlikely that the average blood level and the 75th percentile blood level are so close to one another (14.2 ppb vs. 14.8 ppb). Although the skewed nature of the data set may provide an explanation for this close correspondence, Solutia encourages the Agency to recheck those calculations and to calculate the values after removal of reported PCB blood levels determined to be outliers, such as the 2112 ppb level.

DSW 143532

Page 5, second paragraph, last 2 sentences: Solutia does not believe it is appropriate for ATSDR to speculate about the reduction in the 95th percentile value for PCBs in blood of persons exposed in a manner "typical" for the U. S. populations. In the first place, we do not believe it is appropriate to rely on the DRAFT "Toxicological profile for polychlorinated biphenyls", Reference 12, to suggest that there are recent data to support ATSDR's speculative assessment of the current 95th percentile level. As the authors of this document are aware, the Agency is currently involved in a comprehensive peer review process and rewrite of the DRAFT toxicological profile. Reference should not be made to this document until it is finalized. Although environmental levels of PCBs have declined in the last decade and although there is a paucity of recent determinations of PCB levels in "typically" exposed persons, ATSDR should be constrained to rely on published, peer-reviewed scientific literature to support the information provided to the public in documents such as this Health Consultation. While ATSDR here admits that the 10 μg/L value for the 95th percentile levels is merely its estimate, the Agency continues to rely on this "reference value" throughout the Health Consultation to bolster its contention that exposures to the persons represented in these data sets are or have been unusually high. Until such peer-reviewed studies are available on which to base new estimates of the 95th percentile level, Solutia believes the Agency should continue to rely on the 20 μg/L value.

Page 6, first paragraph and **Table 2**: This paragraph and table provide examples in which ATSDR has relied on their estimate of the 95th percentile value to characterize the present data set. Solutia urges the Agency to rely on peer-reviewed information which is available to all interested parties to estimate values such as the 95th percentile. Also, we encourage the Agency to avail itself of all potential sources of information about the persons represented in the data set to determine if occupational or other exposures have contributed to the elevated levels of PCBs in blood reported for some members of the plaintiff group. (We have previously noted that the person whose blood level is reported as 2112 ppb is a former Monsanto employee.)

Page 6, second paragraph: Here again, ATSDR relies on the 10 μg/L estimate of the 95th percentile level as some kind of "reference value" to which to compare the levels reported for the plaintiff group. In this paragraph, ATSDR also makes reference to two children less than 6 years old whose blood levels were reported to be between 10 and 20 μg/L and a 12-year-old with a blood level of 26 μg/L. Based on our analysis of the information in Table 5 on Page 9, we believe that this reference to children's blood levels is incorrect. (See comments on Page 9, Table 5 below.) Again, we remind the Agency that the data set upon which it is relying is known to contain transcription or other errors and that statements about individuals whose blood levels are included in the data set should be made only after the validity of their entries has been established.

Page 7, **Table 4** and first paragraph: Here again, ATSDR relies on the 10 μg/L estimate of the 95th percentile level as some kind of "reference value" to which to compare the levels reported for the plaintiff group. Additionally, the Agency specifically characterizes

persons with reported blood levels above 10 μg/L as having "high blood levels". Solutia does not believe this is an appropriate characterization.

Page 7, second paragraph: In the fourth sentence, the document refers to "hot spots for PCB contamination" reported by the plaintiff groups. Solutia asks the Agency to remove the inflammatory wording from this sentence and to clarify what reference level for PCBs in soil the Agency is using to identify areas with so-called elevated levels of PCBs. In the last sentence, ATSDR states that it is "prudent" to assume that additional persons in Anniston might have "high blood PCB levels". It is not clear what actions the Agency is implying by such "prudence".

Page 8, first, second, and third paragraphs: While Solutia does not agree that this discussion of half-lives is appropriate in this document, the following comments are offered. The discussion is frankly somewhat schizophrenic, in that it discusses half-lives based on data for individual congeners but then suggests that back extrapolations from current data can be done for values for total PCBs. ATSDR should clarify the discussion to distinguish between half-lives based on individual congeners and those based on total PCBs, as some of the older literature describes. With regard to the citations provided for this discussion in reference 14, Solutia suggests that there may be more recent references for PCB half-lives. However, since dates are not provided for the cited references, it is difficult to suggest more recent information. (Later comments will address the reference section more generally.)

The suggestion that back extrapolations can be used to estimate historical PCB body burdens in Anniston residents is over-simplified. This discussion must be expanded to elaborate on the uncertainties involved in and introduced by this speculative process. In the first place, as mentioned above, PCB half-lives are congener specific. Although some earlier literature has tried to estimate half-lives for total PCBs or for specific Aroclor® products, the uncertainties in these values are wide. Therefore, if the calculations are to be done at all, they must be done with great caution and with clear discussions of the uncertainties. Also, in the present discussion, the Agency does not note that, if such back extrapolations are to be done at all, the PCB blood levels must be corrected for background levels of PCBs in the population. The calculations suggested by the Agency in the second paragraph on this page implicitly rely on the assumption that the background level of PCBs is zero, which is clearly incorrect.

In the third paragraph, the document cites reference 15 as the source of levels of PCB congeners in the blood of residents in Anniston. These data were not presented in the cited Alabama Department of Public Health (ADPH) exposure investigation. Further, Solutia has the same concerns about the validity of these data as about the validity of other data sets. It is Solutia's understanding that ATSDR arranged for the congener-specific analyses of the blood of these Anniston residents. If so, Solutia would appreciate being provided the results and supporting documentation for these analyses. It is also Solutia's understanding that the ADPH chose not to rely on these data. Therefore,

ATSDR's reliance on the data in this Health Consultation should be supported by validated information.

At this end of the third paragraph, ATSDR suggests that congener-specific analysis of the blood of Anniston residents could be used in conjunction with physiologically-based pharmacokinetic (PBPK) modeling to determine whether exposures are still occurring. It seems that this experiment would be very costly, fraught with uncertainties, and unlikely to provide useful information to the Agency or the community on which to base recommendations for further actions. Since this potential experimental procedure is carried forward as Recommendation 5 in the **RECOMMENDATIONS,** Solutia urges that any such program be implemented only after careful, thoughtful peer-review by qualified scientists and only after careful consideration of potential uses of the outcome of the modeling process.

Page 8, footnote d: Based on Solutia's analysis of data provided by the plaintiffs' attorneys in discovery in the ongoing litigation, we believe that the child whose blood level is noted in this footnote, and who is also Subject 2 in Table 5 on page 9, can be identified. The Agency notes that PCBs were not detected in the blood of the child's mother, and, if our identification of the child is correct, the data made available to us indicate that PCBs were not detected in the blood of any of the child's three older siblings either. Since these children would have had similar opportunities for exposure as the 2-year-old, and for longer periods of time, it is certainly conceivable that the reported blood level of 17.2 ppb is erroneous. This family declined to participate in the Monsanto Property Purchase Program and moved away from manufactured housing on the property (which is adjacent to our remediated property north of the plant site). However, the family has recently moved newer manufactured housing onto the property and is living there once more. We have no knowledge of the process which the family used to make this decision, but Solutia continues to be willing to purchase this property under the terms of the Property Purchase Program, which would allow the family to purchase an alternate lot on which to locate their manufactured housing. The company would then integrate the property into the existing cover on the north side, consistent with the approved interim measures for the remediation of this area.

Page 9, **Table 5**: Based on Solutia's analysis of data provided by plaintiffs' attorneys in discovery in the ongoing litigation, we believe this table contains serious errors which compromise ATSDR's entire interpretation of the reported results for blood levels in children. These errors, if we are correct, are symptomatic of problems with the data set provided to EPA and, subsequently, ATSDR by the attorneys for one of the plaintiff groups. Although our comments on this table do not identify the particular persons who we believe are the subjects of the table, we will provide the Agency with this information on a confidential basis, if we are requested to do so and if that information would assist the Agency in conducting further investigation to determine the accuracy of the information used to construct the table.

Subject 1 was reported to be 2 years old at the time of sampling and the blood level was reported to be 11.1 ppb. Based on the information provide in the last paragraph on Page 9

and additional information in litigation discovery materials, it appears that this subject was in fact born in 1949, not 1994; in other words, the last two digits of the birth year appear to have been reversed. The source of this error is not known, but the information provided by the plaintiffs' attorneys seems to have the correct birth year of 1949. Our confidence that this is the situation is increased by the location of the subject's residence, which is one of those shown on Figure 6 of the Health Consultation (the one west of the facility), and by the fact that there are two other adults at that address, a female with a reported blood level of 19.2 ppb (birth year 1951) and a male with a reported blood level of ND (birth year 1972). The subject residing at that address whose blood level is reported to be 11.1 ppb is a male whose correct birth year is 1949. The records contain no blood levels for a child at that address.

Subject 2 is the same child to whom reference is made in Footnote d on Page 8 and who was discussed above. There is no quality assurance or quality control information to help determine whether the reported blood level for this child of 17.2 ppb is correct or not. However, the fact that the blood levels of her mother and her three siblings, if we have correctly identified this child, are all below the detection limit of the analytical method would seem to argue that there may be an error in the analytical result for the child.

Subject 3 appears to be a child who lives in San Bernadino, California. Based on information provided by the plaintiffs' attorneys in discovery in the ongoing litigation, this child and an older sibling have resided in California since birth. Further, PCBs were not detected in the blood of the older sibling. (Our information does indicate that both children may have spent several weeks in Anniston each summer.) There is no quality assurance or quality control information to help determine whether the reported blood level for this child of 11.8 ppb is correct or not. In any case, the child is not currently being exposed to PCBs in the Anniston area.

Subject 4 appears to be an adult whose birth year is actually 1956, not 1986. However, there also seems to have been some error in the transcription of his reported blood level. Based on the information available in the discovery materials provided by the plaintiffs' attorneys, a male subject who was born in 1956 had a blood PCB level reported to be 36.3 ppb, not 26.3 ppb as reported in Table 5. Based on the coincidence of the last two digits of the discrepant blood levels, the apparent error in birth year, and our inability to locate other potential matches for Subject 4 in the information available to us, we believe this subject is an adult, not a child.

If our analysis of this table is correct, we believe its presence in this Health Consultation and its publication with the Health Consultation on the Internet present very serious difficulties. It is also Solutia's understanding that a poster based on the Health Consultation was presented publicly at a meeting at the University of Kentucky in April. ATSDR has relied on this table and the information therein throughout this Health Consultation to argue that some "children" in Anniston have high exposures to PCBs and that those exposures may be still occurring. Our analysis of this table raises serious doubts about such conclusions. Solutia feels very strongly that if the Agency's review of

the information in Table 5 on Page 9 confirms the analysis above, ATSDR has an obligation to inform all of the stakeholders in Anniston and elsewhere about the errors (if there are errors) in the table.

Throughout these comments, Solutia has cautioned the Agency against taking the information presented by the plaintiffs' attorneys at face value. These admonitions are not intended to suggest that the errors in the data are intentional. In fact, it would be incredible if there were not errors in compiling such a large set of data and in transcribing that data from one report to another. However, since ATSDR is relying on those data for many of the conclusions reached and publicized in the Health Consultation, the Agency has an obligation to verify the information on which it is relying so heavily, especially with regard to the important and sensitive area of children's health.

Page 9, first paragraph, last line: As mentioned previously, Solutia is aware that some of the persons for whom PCB blood levels were reported had occupational exposure to PCBs. We urge the Agency to avail itself of all sources of information to address the concerns noted in this sentence.

PCB levels in children younger than 6 years old ...

Page 9, first paragraph of this section: ATSDR notes that 648 children live within a one-mile radius of the facility. This number does not agree with the number used in the third paragraph on page 25 (658). One of these should be corrected. More importantly, the significance of selecting a 1-mile radius around the facility is unclear. Such a "circle" includes large areas which are not in the drainage patterns from the facility and in which PCBs have not been detected in soils above the 1 ppm level, defined by the U. S. EPA as clean, and other areas separated from the Solutia facility by mountains. Solutia believes the Agency's apparent focus on a 1-mile radius exaggerates the areas in which PCBs potentially associated with the Solutia Anniston facility have been detected and overemphasizes the potential impact on children in west Anniston. We refer to previous comments regarding the validity of the PCB blood level data in general and the particular need to validate data for individual children on whom the Agency bases special concerns, especially in light of our comments with regard to Table 5 on Page 9 above. (This comment also applies to the next paragraph in this section.) Finally, Solutia is concerned that the authors of this Health Consultation are basing some of their conclusions on what they "expect" reference levels for both children and adults to be rather than on validated, peer-reviewed and published studies.

Blood dioxin measurements

Page 10, first paragraph: This introductory paragraph states that ATSDR received the blood dioxin analyses from the EPA, which could be misinterpreted to suggest that the analyses were done by a government Agency. These analytical results were obtained as part of the litigation strategy of the attorneys for one of the plaintiff groups in west Anniston. ATSDR notes that the criteria for the selection of these ten persons were not provided. However, the Agency goes on to note that they were not necessarily the

persons with the highest blood levels among the 2970 persons tested. The Agency has failed to note that these analyses were performed in 1997, while most of the plaintiffs' blood levels were not measured until later. At the time these dioxin blood measurements were done, it is likely that the ten persons were those with the highest PCB blood levels as measured by the plaintiffs.

These dioxin blood measurement were done by a laboratory in Germany. No quality control or quality assurance information has been provided, either to the agencies, or to Solutia in discovery in the litigation involving these ten plaintiffs. No one has any information on which to base conclusions about either the accuracy or precision of the reported numbers for either the polychlorinated dibenzo-*p*-dioxin/polychlorinated dibenzofuran (PCDD/PCDF) measurements or the coplanar PCB measurements. As the Agency is aware, analyses for coplanar PCBs in blood are particularly troublesome. Solutia urges ATSDR to exercise caution in using these unvalidated results.

Page 10, **Table 6**: This table apparently provides ATSDR's summary of the blood dioxin analytical results, arranged by declining PCB blood level. Although these data will be more fully commented on below, several details should be noted. ATSDR indicated that years of birth were unavailable for two persons. Based on information provided to Solutia in discovery in litigation, the year of birth for Person 3 is 1926 and that for Person 6 is 1936. Examination of the birth dates clearly shows that this is an elderly group of persons; the youngest was 51 at the time of sampling and analysis, while the oldest, who had the highest total PCB level, was 84. The significance of the ages of these people will be discussed below. Person 1 has already been discussed in previous comments. This person is a former Monsanto worker who worked in the Aroclor® department at the Anniston facility. He also has the highest level of "dioxin equivalents" (TEQs) among the group. Examination of the data sheet for this person shows that his TEQ level is dominated by TEQs for penta- and hexachlorinated dibenzofurans, which is exactly what would be expected for someone with an elevated PCB blood level. (Low levels (typically a few ppm) of PCDFs were produced as unintentional byproducts during the production of PCBs.) It is inappropriate to present the results for this individual in such a way that implies his PCB and PCDD/PCDF levels are somehow related to potential exposures in the community. It is also inappropriate to include the results for Person 1 in the summary table, Table 7 on page 12. His results severely bias the average levels of PCDFs in that table. Another example is the octachlorodibenzo-*p*-dioxin (OCDD) level for Person 9, which was almost five times higher than that for any other of the ten persons (5910 ppt). In the first place, PCDDs are not produced as byproducts of the manufacture of PCBs nor are they formed by thermal stress of PCB fluids. Therefore, the PCDD levels in persons in this community cannot be associated with their potential exposure to PCBs. In the second place, the magnitude of the OCDD level in Person 9 clearly suggests that she has had some unique exposure to OCDD, assuming, of course, that the data point is valid, for which there is no evidence. In any case, it is also inappropriate that this value be included in calculations of average values for OCDD levels and TEQs.

The point of the foregoing is that ATSDR has assumed for the purposes of calculations of tabulated values and for presentation in the Health Consultation that each of the ten

persons for whom PCDD/PCDF blood levels are available is an appropriate "representative" of the Anniston community. Such is clearly not the case. This group of ten is a relatively elderly group with among the highest PCB levels and includes a former worker, whose PCB and PCDF levels bias the averages and ranges presented in Table 7. Solutia urges the Agency to avail itself of all sources of information about individuals upon whose blood measurements the Agency is relying for various of its comments and conclusions.

Page 10, last paragraph: This paragraph summarizes the results of the combination of analytical measurements from five studies of levels of PCDDs and PCDFs in persons in the United States without known exposures to the compounds. The process is described in **Appendix B** of this Health Consultation. Although the Agency claims in **Appendix B** that the report of their findings will be submitted to a peer-reviewed scientific journal for publication, that publication has not appeared. Solutia does not believe it is appropriate for the Agency to rely on unpublished information which is not available to the public or to the company. The Agency has provided no description of the makeup of the five groups which were included, so it is impossible to determine if those groups are in any way comparable to the Anniston community. For example, the age of the persons whose PCDD/PCDF blood levels are reported in the Health Consultation has already been mentioned. It seems extremely unlikely that the age distribution upon which ATSDR is basing its 'reference' 95th percentile levels for the U. S. population is at all comparable to the small Anniston group, of which the average age is 67. The significance of this fact is demonstrated by reference to the U. S. EPA's 1991 report of the results of the 1987 National Human Adipose Tissue Survey (NHATS), which is the last published report of the PCDD and PCDF levels in a large group of U. S. citizens. (U. S. EPA, *Chlorinated Dioxins and Furans in the General U. S. Population: NHATS FY1987 Results*, **1991**, EPA-560/5-91-003, Washington, DC.) On page 17 of that reference document, the EPA reports the average concentrations for various PCDDs and PCDFs by age group. If the results for the 45+ age group are compared to the overall average values on page 15, it is clear that the older population has levels that are 150% to 200% of the overall averages. Since the average age of the Anniston sample is over 20 years older than this breakpoint, the levels in that sample would be expected to be proportionately higher still. Therefore, unless ATSDR can demonstrate that their unpublished study provides a suitable population upon which to base comparisons, it is inappropriate for the Agency to present data such as that presented in Table 7 on page 12. Solutia requests that the Agency remove this table until and unless the results upon which its estimates of the 95th percentile levels are based are peer-reviewed and published in the scientific literature.

Further, Solutia again reminds the Agency that the information upon which Tables 6 and 7 are based is unvalidated and lacks evidence of quality control and quality assurance. For example, the coplanar PCB levels for Person 7 appear to be far out of line based on his total PCB level. It is impossible to know whether those data represent bias, error, or actual residue levels. And again, Person 1 is a former Monsanto worker whose PCB and PCDF levels are not representative of the potential for community exposure. His results should be removed from the calculations reported in the tables. It is clear from the last paragraph on page 11 that ATSDR recognizes that there are problems with these data and

that the PCDD, PCDF, and coplanar PCB results do not correlate with PCB levels, except for the former employee. Accordingly Solutia urges the Agency to be straightforward about the limitations of these data and to avoid alarming rhetoric based on these unvalidated results.

Page 12, **Table 7**: The criticisms of this table and the information upon which it is based have been discussed above. Solutia refers the Agency to the relevant paragraphs.

Air monitoring

Page 12, first paragraph: The reference to "Table 7" in the fourth line should be "Table 8", which is on Page 14.

Page 14, **Table 8**: This table appears to report accurately the air monitoring results for the sampling conducted by the EPA and Solutia, although the entries were not checked for the purposes of these comments. The third entry under **"West of the Solutia facility"** reports the average of three values ranging from ND to 6.5 ng/m^3 as "<6.5". Why was this particular entry treated differently than others containing "ND"?

Page 14, last paragraph: As ATSDR is aware, beginning in January of 2000, Solutia has changed the locations of the air sampling stations to more accurately represent conditions at the fence line of the facility. Attached to these comments is a letter dated April 19, 2000, from Solutia to ADEM reporting the results for the first two semimonthly sampling events at these new locations. (Attachment III) The attachment also includes a map showing the locations of the samplers. Solutia will continue to send ATSDR copies of the results, which are being reported to ADEM on a bimonthly (every other month) basis.

It is unclear how the reference to Table 9 in the second sentence of this paragraph relates to the text describing the relationship of the air sampler locations to areas which are reported to be local areas of soil contamination. This parenthetical reference should be deleted.

Soil sediment, and dust sampling

Page 15, first paragraph of this section: The second sentence of this paragraph is unclear.

Page 17, **Table 10**: This table purports to summarize addresses at which PCBs are present in soils at levels greater than 10 ppm, 20 ppm, or 100 ppm. The significance of these "reference" soil levels is not clear. While the table does note in a footnote that the properties on Boynton Avenue and Crawford Street on which PCBs were detected at greater than 20 ppm and 100 ppm have been purchased by Solutia, it is unclear from the table or from the text that the owners of those properties were offered the opportunity to participate in a Property Purchase Program voluntarily initiated by Monsanto/Solutia and that almost all of the property owners participated. In addition, none of the properties is currently occupied. In fact, all of the buildings on property purchased by Monsanto and Solutia have been demolished and the entire area owned by Solutia has been incorporated under the East Side Cover, a RCRA interim measures project implemented under the

oversight of ADEM. These properties afford no opportunity for exposure to PCBs. The property at 1500 W. 8th Street is a vacant lot, the owner of which refused to participate in the Property Purchase Program. The lot sits in the middle of the East Side Cover. Although there is access to the lot, it is rarely visited and, therefore, does not afford opportunity for exposure to PCBs. Two locations are noted along what is now referred to as the 11th Street Ditch. Solutia has submitted sampling plans and work plans to ADEM to address the PCB-impacted sediments in this ditch. Those plans still await ADEM approval. However, the ditch runs between railroad tracks and a street. Although access is not restricted, there is little indication that the sediments in the ditch provide a significant route for potential exposure to PCBs.

Page 18, first paragraph: Solutia suggests that the Agency avail itself of all avenues to ascertain the conditions under which the samples were collected by the agents of the plaintiffs' attorneys. It is Solutia's understanding that many of the samples were collected in areas calculated to maximize potential soil levels, such as under downspouts. Our understanding is based on the deposition testimony of one of the persons who performed soil sampling for the larger of the two plaintiff groups. (Solutia will provide relevant sections of that deposition to ATSDR upon request.) Such areas may not represent realistic scenarios for potential human exposures to PCB-impacted soils. It may be appropriate for the Agency to interview the persons who were involved in the various sampling efforts in order to more clearly understand the sampling strategies.

Page 18, second paragraph, including both subparagraphs: Solutia suggests adding the word "potential" between "several" and "reasons" in the last sentence. Although Solutia agrees that there appears to be little, if any, relationship between residential soil levels and plaintiff blood levels, it is not clear that the Agency has determined the reasons for this apparent discrepancy. For example, ATSDR apparently has made no effort to determine if any of the plaintiffs had occupational exposures to PCBs or if there were unusual dietary exposures, either currently or in the past. The Health Consultation correctly mentions in the next paragraph that there is a possibility that geophagia contributed to many of the blood levels in this community. While ASTDR notes that ADPH reported a relationship between residential soil level and blood level in their 1996 exposure investigation, the Agency should note, as it did later on page 29 in Appendix A, that the correlation was weak at best.

Page 18, last paragraph: The Health Consultation should note that the houses in the 800 block of Boynton Avenue have been demolished and that the lots on which the houses stood have been incorporated under the East Side Cover. In the second sentence, there is an apparent error in the units used to describe the detection limit. Depending on whether the results for the dust samples were normalized to the weight of the dust or the area sampled, the results should either be parts per million (ppm) or micrograms per square meter ($\mu g/m^2$). The Agency might also note that these dust sampling results are in stark contrast to those obtained in 1995 by ADPH. This discrepancy again points out the importance of quality assurance and quality control results for all of the analytical procedures utilized by the various groups upon whose data the Agency is relying.

DISCUSSION

Page 19, first paragraph, second sentence: As discussed above, Solutia does not agree that the PCDD/PCDF analytical results can be relied upon to hypothesize that exposures in west Anniston are higher than those in any other urban area. The selected group of only ten persons whose blood was sampled was relatively elderly. If one removes persons with likely occupational exposures and other obvious outliers, it seems probable that the levels measured would not be above background levels for an age-matched urban population.

Blood Data

Page 19, first paragraph of this section: Solutia's comments on the results of the analyses of PCBs in blood of both adults and children have been discussed above. However, several additional points are relevant. As the Agency knows, there are several critical steps which must be adhered to in order to obtain reliable results for these analyses. Because PCB levels in blood are highly correlated with blood lipid levels (because the PCBs are associated with the blood lipids), it is critical that the blood samples be taken only if the subject has fasted overnight. There is no indication in the available "documentation" that any such fasting protocol was required of the subjects.

Solutia also iterates its cautions about over-interpretation of the PCB blood level results for any given individuals, especially the children. (See comments on Page 9, Table 5 above.) The Health Consultation repeatedly characterizes the levels in a few children as "high". However, questions of blood sampling protocol, unknown test-retest repeatability, and probable errors in the data set make it imperative that ATSDR assure itself that the data upon which it relies are of high quality and are appropriately validated.

Page 20, second paragraph: While the discussion of physiologically-based pharmacokinetic modeling is of some theoretical interest, it does not seem that such an approach could be justified on a cost/benefit basis. It seems that this experiment would be very costly, fraught with uncertainties, and unlikely to provide useful information to the Agency or the community on which to base recommendations for further activities. Since this potential experimental procedure is carried forward as Recommendation 5 in the **RECOMMENDATIONS,** Solutia urges that any such program be implemented only after careful, thoughtful peer-review by qualified scientists and only after careful consideration of potential uses of the outcome of the modeling process, especially since there are so many uncertainties in the current data sets, as described in the next paragraph of this section.

Air Pathway

Page 20, first paragraph of this section: Here and elsewhere, the Health Consultation makes reference to "ATSDR's estimate of upper bound excess for individual cancer risk", "health effects assessment", or similar phrases that make it clear that ATSDR has

performed risk assessments, presumably based on the soil and air levels reported by the various stakeholders. Solutia does not agree that the air pathway provides an exposure route that indicates a "health hazard may exist". If such a risk assessment has been done, Solutia requests the opportunity to review the assessment itself and the conclusions drawn from it.

Page 20, last paragraph, continuing to Page 21: Here again ATSDR refers to an "[e]stimated cancer risk" which the Agency deems high enough to speculate that there may be a "need to take actions to reduce exposure risk". This statement seems to be based on limited sampling at a single point in the middle of a former industrial site. There are no data to suggest that any residents of west Anniston are exposed to PCBs in air at anywhere near that level or that they have been exposed to any such level for 30 years. Solutia requests that this risk assessment be provided to the stakeholders for review and comment.

Soil Pathway

Page 21, first paragraph of this section: Previous comments have addressed Solutia's concerns about the data provided in Table 9. However, in this paragraph the Agency is apparently concluding that soil levels above 10 ppm, the level used to justify including an address or block in Table 9, "indicate that a public health hazard exists". This statement raises several questions: On what basis has the Agency determined that soils containing 10 ppm or greater of PCBs present a health hazard? How does the Agency account for the finding that most persons residing at these residences have no PCBs detected in their blood? Where are the risk assessments upon which the Agency is basing its determinations? If the Agency is using predetermined soil "reference" levels to hypothesize about potential public health hazards, where are those reference levels documented?

The Agency also suggests in this paragraph that exposures of less than one year to PCBs in soil may warrant concern for thyroid and neurodevelopmental effects, presumably to children. This statement mischaracterizes the animal and human scientific literature on these potential effects, even if one assumes the validity of the studies. There are several issues which need to be considered before ATSDR suggests, as it does here, that neurodevelopmental effects could result from exposure to PCBs in soils in the Anniston community. Reviews by Dr. Susan Schantz (Schantz, S. L., *Neurotox. Teratol.*, **1996**, 18(3):217-227) and Dr. Richard Seegal (Seegal, R. F., *Crit. Rev. Toxicol.*, **1996**, 26(6):709-737) of the studies of potential neurodevelopmental effects in humans associated with exposure to PCBs and other chemicals discussed in great detail the various criticisms of those studies, noted the small magnitude of the alleged effects, and concluded that the studies, taken as a whole, are inconclusive. Further, even if one were to assume that the various studies reviewed by Schantz and Seegal are valid as reported, the subtle effects were reported to be associated with prenatal exposure to the chemicals, not to postnatal exposures, such as incidental ingestion of surface soil. Solutia believes that the suggestion that thyroid and neurodevelopmental effects could result from exposures to certain soils in the Anniston area is not supported by the scientific literature.

Page 21, last paragraph continuing to Page 22: Solutia does not believe that the rationale presented in footnote "h" on Page 21 justifies the assumption that the maximum level reported for any given residence can be appropriately used to estimate average exposure. Although the Agency justifies its position based upon its ignorance of sampling locations and strategies, admitting that there are huge uncertainties in the data sets, it uses these assumptions as the basis for repeating its hypotheses of public health hazards from the previous paragraph in ***bold and italicized*** lettering, which is clearly intended to draw added attention to its hypothesis. While the paragraph continues with appropriate and largely correct discussions of the limitations of the studies upon which it apparently relies, especially with regard to the speculation about the potential for thyroid and neurodevelopmental effects, the lasting impression is left by the ***bold and italicized*** declaration that a public health hazard may exist. While the Agency may contend that the designation of a public health hazard is merely a formalized procedure based on comparison of environmental levels to some predetermined reference levels, the Agency is surely aware, as is Solutia, that such designations may needlessly alarm the local community by suggesting that they are, in fact, at risk for adverse health effects. Such alarm is especially troubling when the weight of the scientific and medical literature clearly indicates that the only human health effects associated with relatively high, occupational exposures to PCBs are skin effects, including possibly chloracne, and transient increases in the levels of some liver enzymes.

Other Pathways

Page 22, third paragraph of this section: This paragraph is unfortunate, in that it fails to characterize properly the situation it describes with respect to location and timing. In 1970 or 1971, Monsanto became aware that hogs were being raised on or near Monsanto property on an area that had been used for waste disposal. The hogs were apparently rooting around in this secluded area and were possibly being exposed to waste materials. Monsanto located the owners of the hogs, compensated them for the animals, and destroyed the hogs. Monsanto also instructed the local residents that raising animals on Monsanto property would not be allowed. This incident occurred thirty years ago. Furthermore, since the ATSDR staff was in the area sufficient time to note that some of the residents still raised chickens, they should also have been able to determine that no hogs are being raised on or near the Solutia facility. This situation is another for which a few inquiries of appropriately informed persons could have added clarity.

Data Gaps

Page 22, first paragraph of this section: Solutia has previously discussed its concerns with the Agency's interpretation of the PCDD and PCDF determinations in the blood of a small number of plaintiffs with reportedly high PCB levels. Based on the age of this population, the inclusion of at least one occupationally exposed person, and the unavailability for review of ATSDR's study upon which 95th percentile reference levels are based, Solutia believes there is no basis upon which to draw a broad conclusion that

persons in west Anniston have unusually high blood dioxin/furan levels. Accordingly, presenting such a statement (if called for in any case) in ***bold and italicized*** lettering is both inappropriate and likely to result in unnecessary concern in the community.

Page 23: Solutia believes the remainder of the **Data Gaps** sections appropriately describes many of the uncertainties associated with the available data and the difficulties faced in trying to draw meaningful conclusions from the existing data. We are, therefore, troubled by the use of bold and italicized typefaces to emphasize hypotheses based on these uncertain and limited data.

As mentioned previously, Solutia has relocated some of its air sampling monitoring stations so that the results better represent the air levels of PCBs at the fence lines of the Anniston facility and, therefore, better represent levels to which residents might occasionally be exposed. Solutia will provide ATSDR with copies of the results of the monthly air monitoring events, when they are sent to ADEM.

Susceptible Populations

Page 24, first paragraph: Solutia is unaware of any documented information which supports the contention that persons with Gilbert's syndrome or Crigler and Najjar syndrome are susceptible to health effects associated with exposure to PCBs. Although such speculations may have been made in the literature and although the various iterations of ATSDR's *Toxicological Profile for Polychlorinated Biphenyls* have continued to repeat these speculative assertions, we do not believe that their inclusion in this Health Consultation is appropriate. Further, Solutia repeats its position that citation of a DRAFT *Toxicological Profile* is not appropriate, because it is likely that the final version will differ significantly from the existing draft. Any citations to ATSDR *Toxicological Profiles* should be made to the most recent final version.

Page 24, second subparagraph of second paragraph: The fourth sentence contains a mismatched pronoun and antecedent: "someone" ... "they". Both should either be singular or plural. More importantly, this paragraph and the next are speculative and should not be included in this Health Consultation. There is no documented evidence in humans that past exposure to PCBs leads to "long-term, low level stress to the liver, or thyroid gland, or immune system", or any other "accumulated damage". These speculative musings, for which there is no literature support, may cause unnecessary concern among the public.

ATSDR CHILD HEALTH INITIATIVE

Page 25, second paragraph: Solutia once more cautions the Agency about relying upon unvalidated laboratory results to draw conclusions about potential PCB exposures of children in Anniston. The fact that a laboratory is thought by ATSDR to be "reputable" (which it may in fact be) is no substitute for quality assurance and quality control information about the laboratory results. We have also pointed out previously the fact

that there are known to be errors in birth dates reported to EPA and ATSDR in charts provided by the attorneys for one of the plaintiff groups. More importantly, our comments on Table 5 on Page 9 suggests that, if our analysis is correct, ATSDR's interpretation of the PCB blood results for children is not valid.

Page 25, third paragraph: Solutia has previously pointed out the discrepancy between this paragraph, which suggests that 658 children may live within a one-mile radius of the plant, and the previous indication that the number is 648. Further, we do not agree that the finding of two children with "elevated" PCB levels increases the likelihood that other such children would be located by more methodical sampling. A telling example of the weakness of this supposition is the child with the reported blood level of 17.2 ppb who apparently has three siblings whose blood PCB levels were below the method detection limit. If such similarly placed children have such discrepant reports of blood levels, there is no basis to conclude that, based on ATSDR's assessment that two children have "elevated" levels, other children in Anniston are likely to have similar levels. And while our analysis of Table 5 on Page 9 suggests that one of the two "children" that ATSDR claims to have found may, in fact, be an adult, even if there are two children who have levels which could be characterized as "elevated", it is likely that their exposure scenarios are rare and unlikely to be repeated elsewhere in the community.

Page 25, last paragraph: ATSDR here again suggests that exposures to PCBs in soil may present a risk of neurodevelopmental and behavioral effects in young children. This statement mischaracterizes the animal and human scientific literature on these potential effects, even if one assumes the validity of the studies. There are several issues which need to be considered before ATSDR suggests, as it does here, that neurodevelopmental effects could result from exposure to PCBs in soils in the Anniston community. Reviews by Dr. Susan Schantz (Schantz, S. L., *Neurotox. Teratol.*, **1996**, 18(3):217-227) and Dr. Richard Seegal (Seegal, R. F., *Crit. Rev. Toxicol.*, **1996**, 26(6):709-737) of the studies of potential neurodevelopmental effects in humans associated with exposure to PCBs and other chemicals discussed in great detail the various criticisms of those studies, noted the small magnitude of the alleged effects, and concluded that the studies, taken as a whole, are inconclusive. Further, even if one were to assume that the various studies reviewed by Schantz and Seegal are valid as reported, the subtle effects were reported to be associated with prenatal exposure to the chemicals, not to postnatal exposures, such as incidental ingestion of surface soil. Solutia believes that the suggestion that neurodevelopmental and behavioral effects could result from exposures to certain soils in the Anniston area is not supported by the scientific literature.

CONCLUSIONS

Page 26 continuing to Page 27: Solutia has commented extensively on the subjects on which ATSDR relies for its conclusions. Those comments need not be repeated here. Suffice it to say that Solutia disagrees that the concentrations of PCBs in soils in some areas of Anniston associated with drainage pathways from the Solutia facility present a public health hazard. More specifically, Solutia disagrees that the concentrations of

PCBs in the soils in these areas could result in adverse noncancerous health effects for children. These conclusions are not supported by the scientific literature which discusses the human health effects of PCBs. Solutia is confident that the levels of PCBs in soils in the near-site areas to which children had or have access do NOT pose a public health hazard.

Solutia is also confident that exposures to PCBs in air do NOT pose a public health hazard in Anniston. However, Solutia has agreed with ADEM to continue sampling air levels of PCBs at five sampling stations at various fence line locations around the facility. Solutia will also provide the results of those sampling events to ATSDR.

RECOMMENDATIONS

Page 27, Recommendation 2: Solutia does not believe that the existing data justify additional sampling for PCDDs/PCDFs. The levels of these compounds in the blood of persons with reportedly high levels of PCBs are probably within background levels of similar persons in the U. S., based on the results of the 1987 NHATS. If ATSDR has data to suggest that the background levels in the U. S. have declined significantly since that time, those results should be published in the peer-reviewed literature before they are relied upon in this or other Health Consultations. ATSDR should pay special attention to the age distribution of background levels of PCDDs/PCDFs in the population.

Page 27, Recommendation 4: (This recommendation should be separated from the previous one by a "line feed".) ATSDR recommends that primary consideration should be focused on specific health effects associated with PCB exposure. Since there is consensus that in relatively highly exposed workers, the only adverse health effects are dermal effects and possibly transient elevations in liver enzymes, it is unclear what ATSDR means by this recommendation. It is notable that among the largest group of plaintiffs suing Solutia, not a single physician or other medical expert has opined that PCBs have caused a specific adverse health condition in a specific individual. In the event, however, that ATSDR should choose in the future to pursue health studies in the Anniston community, Solutia urges the Agency to follow accepted, validated, and peer-reviewed protocols, including the selection and study of a reference population of similar socioeconomic status.

Page 27, Recommendation 5: Previous comments have addressed Solutia's concern with this recommendation. It seems unlikely that the results of any such theoretical study, as costly as it would be, would provide significant benefit to the Anniston community.

Page 27, Recommendation 6: Solutia's only comment with regard to this recommendation is to ask whether it should not have higher priority, since the relationship between environmental levels in soils and blood levels is a threshold question in Anniston.

PUBLIC HEALTH RESPONSE PLAN

Page 28, first paragraph: ATSDR notes that a Public Health Response Plan is being developed to address the recommendations of the Health Consultation. Solutia requests the opportunity to review the draft of this plan. Solutia also recommends that the plan be peer-reviewed by objective outside public health experts.

Appendix A - *Previous ATSDR Activities and site description*

Page 29, second paragraph: The 1996 Exposure Investigation conducted by ADPH and ADEM did not find that surface water levels were elevated compared to either background levels or levels of health concern. This paragraph correctly notes that the correlation reported by ADPH between residence soil levels and residents' blood levels was "weak".

Site description

Page 29, last paragraph: Solutia notes again that West Anniston is not a city. The area should be referred to as west Anniston. The Solutia facility is in the city of Anniston.

Page 30, third paragraph: The third sentence implies that the manufacture of PCBs and other chemicals only began after the purchase of Swann Chemical Company by Monsanto in 1935. In reality, those chemicals had been manufactured by Swann for several years at the time of the purchase, and, more correctly, Monsanto continued the manufacturing of those chemicals. In the penultimate sentence, the proper name of Solutia should be used: Solutia Inc.

Page 30, fifth paragraph: Solutia believes the West End Landfill was used only until 1960, not 1961 as denoted in the document. Solutia suggests replacing "exchanged to" to "exchanged with" in the penultimate sentence.

Page 31, second paragraph: The East Drainage Ditch no longer exists, nor does what the Health Consultation refers to as the Clydesdale community. The ditch and most of the area east of the plant through which it flowed have been incorporated under the East Side Cover. This paragraph should be rewritten in the past tense.

Page 31, third paragraph: The North Drainage Ditch no longer exists, nor does most of the residential area through which it flowed. The ditch and most of that area have been incorporated under the North Side Cover, a RCRA interim measures project implemented under the oversight of ADEM. In the third sentence, it is unclear whether it is the East Drainage Ditch (EDD) or North Drainage Ditch (NDD) to which the sentence refers. It appears from the description that it is the NDD which is being described.

Page 31, fourth paragraph: The description of Snow Creek is somewhat unclear, especially as to what constitutes "upstream" and "downstream" portions. The only

portion which is concrete-lined is downstream of the location at which the 11th Street Ditch enters Snow Creek. PCBs are more dense than water and do not float; therefore, any "oily residue" is unlikely to be associated with PCB production at the Anniston facility. Solutia notes, however, that an "oily residue" is often present on Snow Creek upstream of the point at which the ditches leading from the Anniston facility enter the creek.

Page 31, last paragraph: A 1994 ADEM Study Report entitled "Choccolocco Creek Watershed, Fish Tissue, and Sediment Analyses" listed over 20 known or potential sources of PCBs in the Snow Creek/Choccolocco Creek watershed.

Appendix B.-*Dioxin Comparison Levels*

Page 32, all three paragraphs: Solutia refers the Agency to previous comments about its dioxin comparison levels and the need to publish the results of their analysis in a peer-reviewed journal before relying on the results in a Health Consultation. Solutia also urges ATSDR to demonstrate that the comparison levels are applicable to an elderly population, such as that for which blood PCDD/PCDF levels were determined in Anniston.

Appendix C. - *Health concerns expressed by the community*

Page 33, **Table 11**: This table does not appear to be an appropriate appendix to the Health Consultation. While Solutia does not question that community residents expressed concerns to ATSDR representatives, the results in this table are clearly from a highly self-selected population and do not represent the health experience of the community as a whole. Further, the inclusion of this table implies that the community, or maybe even the Agency, is suggesting that exposure to PCBs has some association with the self-reported health concerns. If this table is to remain as an appendix to the Health Consultation, the Agency should clearly identify it as coming from a self-selected population and state that there is no evidence that any of these conditions are related to PCB exposure in the Anniston area.

REFERENCES

While it may be a matter of personal preference, the organization of this reference section is cumbersome and repetitive. For example, the ATSDR Draft *Toxicological Profile for Polychlorinated Biphenyls* is cited as references 10, 11, 12, 14, 26, 31, 32, and 36 (and some may have been missed). It would be much simpler to cite the reference the first time and then refer to it by that number each additional time it is cited. This comment applies to numerous documents in the reference list.

We have already commented that it is inappropriate for the Agency to cite draft documents, especially the Draft *Toxicological Profile*, which is currently undergoing significant revision. ATSDR also cites in several places a draft Public Health Assessment which was distributed for public comment by ADPH and ATSDR in December of 1999.

Solutia commented extensively on that document and believes that citation to that draft document is also inappropriate. Solutia urges the Agency to rely on final versions of documents and on published, peer-reviewed information, especially with regard to background levels of PCBs and PCDDs/PCDFs in human populations.

It is also difficult to follow the references when many reference numbers contain multiple citations. It would be much clearer if each referenced document had its own reference number and, as noted above, if that number were used consistently throughout the Health Consultation each time the document is cited.

It is obvious from the reference list that the EPA and/or ATSDR have been provided historical Monsanto documents by the attorneys for one or more of the various plaintiff groups from whom data sets were obtained. Solutia requests to be provided a set of those documents and, following review of the documents, requests an opportunity to provide additional documentation which might be necessary to understand the historical context of some of the documents.

FIGURES

Figure 6: Population density of Children Age 6 and Younger: If our analysis of Table 5 on Page 9 is correct, this figure requires modification, especially with respect to at least one of the prominent large circles which the legend indicates represent children with PCB blood levels between 10 ppb and 20 ppb.

Solutia again notes that the company name is Solutia Inc. (no comma, not "Incorporated") and requests that ATSDR use that name in the Health Consultation, including in the reference list.

Finally, Solutia requests that our comments on this draft Health Consultation be put on the Internet on ATSDR's page along with the draft Health Consultation. Solutia will provide an electronic version of our comments, if that would assist ATSDR in complying with this request.

If you need further information, please contact me.

Sincerely,

Robert G. Kaley, II
Director, Environmental Affairs
Solutia Inc.

cc: Cheryl Browder - ADPH
Dr. Donald Williamson - ADPH
Wm. Gerald Hardy - ADEM
Russ McLean - EPA
Elmer Akin - EPA

DSW 143550

ATTACHMENT I

DSW 143551

Solutia, Inc.
Anniston, AL

ENSR®

Work Plan for Estimating Ambient PCB Levels in the Vicinity of Solutia's Anniston, AL Facility

ENSR Corporation
April 2000
Document Number 6105-006-150

Solutia, Inc.
Anniston, AL

Work Plan for Estimating Ambient PCB Levels in the Vicinity of Solutia's Anniston, AL Facility

ENSR Corporation
April 2000
Document Number 6105-006-150

CONTENTS

CONTENTS (Cont'd)

APPENDIX

DSW 143555

LIST OF TABLES

OSW 143556

LIST OF FIGURES

DSW 143557

1.0 OVERVIEW AND OBJECTIVES

ENSR Corporation has been retained by Solutia Inc. (Solutia) to conduct ambient air monitoring for polychlorinated biphenyls (PCBs) in the vicinity of Solutia's Anniston, AL facility. Results from the study will provide a basis for estimating ambient levels of PCBs in the areas surrounding Solutia's facility property. Table 1-1 lists the target PCB analytes for this program.

Each ambient monitoring site selected for the program will be outfitted with an air sampler supplied, installed and operated by ENSR. Each sampler is designed to operate over a 24-hour period for collection of mono through deca PCB congener classes using a PUF/XAD sampling cartridge and glass fiber filter.

Sampling was initially conducted in February and April 1998. Beginning in October 1998 and through December 1999, sampling generally occurred on a monthly basis. This monthly sampling frequency is expected to continue during 2000.

This Air Monitoring Plan has been divided into six sections. Section 2 provides an overview of the program design and sampling strategy. Section 3 summarizes sample collection procedures, Section 4 presents sample validation and laboratory analysis protocols, Section 5 summarizes data reporting, and quality assurance/quality control elements are described in Section 6.

Table 1-1
Target PCB Analytes

Monochlorobiphenyl
Dichlorobiphenyl
Trichlorobiphenyl
Tetrachlorobiphenyl
Pentachlorobiphenyl
Hexachlorobiphenyl
Heptachlorobiphenyl
Octabhlorobiphenyl
Nonachlorobiphenyl
Decachlorobiphenyl

DSW 143558

2.0 PROGRAM DESIGN AND SAMPLING STRATEGY

The ambient air monitoring program incorporates key program design considerations, including site locations, target parameters, sampling and analysis methods, sampling frequency, and sample validation. Each of these considerations are described further in the paragraphs below.

2.1 Site Locations

Ambient air monitoring sites were selected by Solutia personnel to be representative of ambient conditions in the area in the immediate vicinity of the Anniston, AL facility. Table 2-1 lists the sites used during the program and the time periods each were or will be incorporated into the ambient PCBs monitoring program. Figure 2-1 provides a schematic of Solutia's Anniston, AL property and the location of sampling sites scheduled for use during 2000. Each site is described further below.

Site 1-East (Retention Pond) – This site was located adjacent to the Retention Pond situated just north of Highway 202 and just east of the Solutia facility. The site is also located east and slightly north of the Mars Hill Church. The site has been utilized since January 1999, and is scheduled for use during the 2000 monitoring period.

Site 2-South (Bottom of South Landfill) – This site is situated near the point of lowest elevation of the South Landfill, approximately 50 feet from eastbound Highway 202. The site has been utilized for ambient PCBs monitoring since June 1999, and is scheduled for use during the 2000 monitoring period.

Site 3-West (West End Landfill) – This site is situated atop the West End Landfill, approximately 100 feet from westbound Highway 202. The site has been utilized since January 1999, and is scheduled for use during the 2000 monitoring period.

Site 4-North (North of Plant) – A single site located approximately ¼ mile north of the Solutia plant is scheduled to be utilized through the 2000 monitoring period.

Site 5-Northeast (Miller Property) – The Miller property is located approximately ½ mile northeast of the Solutia facility. The site has been utilized since June 1999, and is scheduled for use during the 2000 monitoring period.

Downtown Anniston – The site was located at a 3-story office building in downtown Anniston, AL. The site operated during sampling sessions conducted in April 1998.

TABLE 2-1
SUMMARY OF MONITORING LOCATIONS AND SAMPLING FREQUENCY

City	2000 Campaign Site Name	Location	Approximate Distance from Solutia Property	Sampling Frequency by Year and Month (Jan=1, Feb=2 etc.) Completed 1998	Completed 1999	Scheduled 2000
Anniston	1-East	Solutia Property - Retention Pond	0 mi	4, 10-12	1-6, 8-12	1-12
Anniston	2-South	Solutia Property - Bottom of South Landfill	0 mi	NS	6, 8-12	1-12
Anniston	3-West	Solutia Property - West End Landfill	0 mi	4, 10-12	1-6, 8-12	1-12
Anniston	4-North	Solutia Property - North of Plant	0 mi	NS	NS	1-12
Anniston	5-Northeast	Miller Property - West 10th Street	1,500 ft	NS	6, 8-12	1-12
Anniston		Downtown Office Building - Route 431	2 mi	4	NS	NS
Anniston		Solutia Property - NE of Mars Hill Church	0 mi	2, 4, 10-12	1-6, 8-12	NS
Anniston		Alabama Power Property - Substation	500 ft	NS	6, 8-12	NS
Anniston		Solutia Property - SW of Mars Hill Church	0 mi	2, 4, 10-12	1-6, 8-12	NS
Anniston		Solutia Property - Top of South Landfill	0 mi	2, 4, 10-12	1-6, 8-12	NS
Anniston		Wellborn High School - 135 Pinson Road	3 mi	NS	6	NS
Birmingham		Downtown Office Building - 2030 3rd Avenue	58 mi	2, 4	NS	NS
Gadsden		Office Building - 239 College Street	27 mi	2, 4	NS	NS

NS - Not scheduled for sampling.

DSW 143560

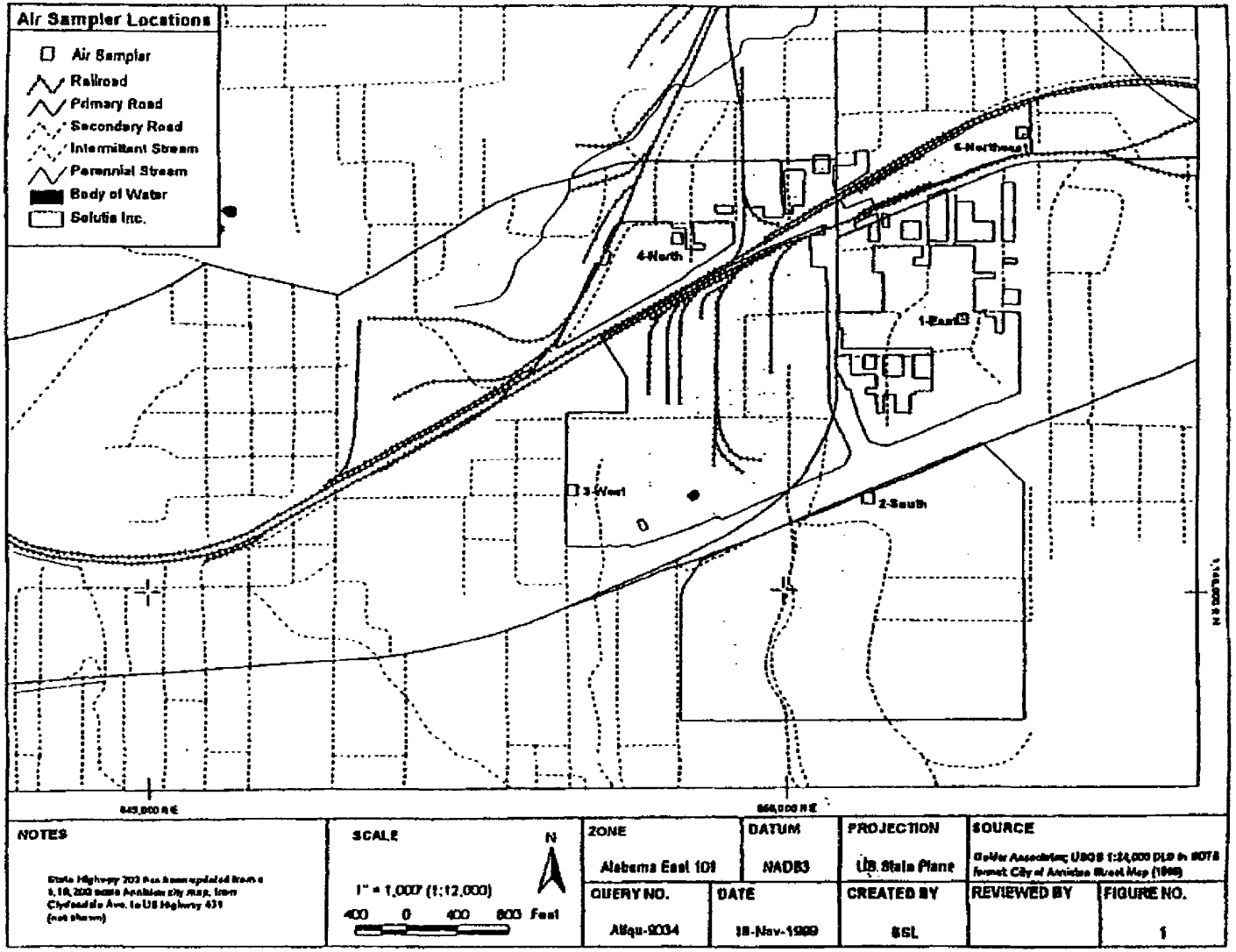


Figure 2-1
2000 Ambient PCB Sampling Locations

NE of Mars Hill Church – A single monitoring site was established on Solutia property just northeast of the Mars Hill Church. The site operated during all sessions conducted between program startup in February 1998 through December 1999.

Substation – This site was located at the electrical substation operated by Alabama Power situated just west of the West End Landfill. The site was used from June through December 1999.

SW of Mars Hill Church – A single monitoring site was established on Solutia property just southwest of the Mars Hill Church. The site operated during all sessions conducted between program startup in February 1998 through December 1999.

Top of South Landfill – This site was situated near the point of highest elevation of the South Landfill. The site served as "background", as it was proximate to the plant, but separated from the core study area around the Mars Hill Church. The site operated during all sessions conducted between program startup in February 1998 through December 1999.

Wellborn High School – The Wellborn High School is located approximately 3 miles west of the Solutia facility. The site was used during sampling conducted in June 1999.

Birmingham – A single monitoring site was established at a 15-story office building located at 2030 Third Avenue, Birmingham, AL. The sampler was installed on the roof of this building and operated during sampling sessions conducted in February and April 1998.

Gadsden – A single monitoring site was established at a 2-story office building located at 239 College Street, Gadsden, AL. The sampler was installed on the roof of this building and operated during sampling sessions conducted in February and April 1998.

2.2 Sampler Siting Requirements

Where logistically feasible, final PUF sampler siting was accomplished based upon criteria established for siting Total Suspended Particulate (TSP) samplers. The application of TSP sampler siting criteria to the siting of PUF samplers is practical because of the similar atmospheric behavior expected for both total suspended particulates and the particulate fraction of airborne PCBs. Therefore, mechanisms which may interfere with the collection of TSP may also interfere with the collection of total PCBs.

Table 2-2 summarizes the criteria for TSP monitor siting as described in EPA-450/4-80-012, Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD). To ensure representative results, each site must be reasonably secure from possible tampering. This is accomplished by placing PUF samplers away from crowded areas and inside a fenced or contained area. In addition, each site must be accessible for a reasonable length of time each day to allow the field team to

Table 2-2
PS-1 Sampler Siting Criteria

Siting Characteristic	Spacing Requirements
Height of sampler inlet above ground	2-15 meters
Distance of sampler from trees	>20 meters
Distance from sampler to obstacle	At least twice the height obstacle protrudes above sampler
Unrestricted airflow	270° arc of unrestricted space around sampler
Roof placement	>2 meters from any wall, parapet, penthouse, etc., and no nearby flues that may significantly impact sampling

efficiently conduct the monitoring program. Electrical power requirements of the PUF samplers necessitate the presence of 110 VAC, 20 amps at each sampling site.

2.3 Target Parameters

The target parameters for the program include polychlorinated biphenyls (PCBs), reported as mono through deca congener class sums. The summation of these ten congener class sums provides a value for total PCBs.

2.4 Sampling and Analysis Methods

Sample collection and laboratory analysis methods are described further in Section 3 and Section 4, respectively.

2.5 Sampling Frequency

Sampling frequency has varied throughout the program. During 1998, sampling periods were conducted in February and April, before continuing in October on a monthly basis. From October 1998 through the end of 1999, two 24-hour sampling sessions per month were conducted. An exception to this sampling frequency occurred in June/July 1999, when four sampling periods were conducted in June and none in July. This monthly sampling frequency is expected for 2000. Table 2-1 provides summary of completed and scheduled sampling sessions.

3.0 SAMPLE COLLECTION PROCEDURES

3.1 Overview

Sample collection procedures for the ambient measurement of PCDDs/PCDFs are based upon the protocol outlined in EPA Method TO-4, "High Volume PUF Sampling and GC/MS Analysis." The detailed sampling collection approach for the Solutia monitoring program is described further in the sections to follow.

3.2 Sample Collection System and Procedures

General Metal Works Polyurethane Foam (PUF) PS-1 samplers will be utilized for collection of the PCBs parameters listed in Table 1-1. The PS-1 will be fitted with a glass fiber filter and a PUF/XAD sorbent trap to collect both particulate-associated and vapor phase semivolatile organic compounds. The General Metal Works PS-1 sampler, shown in Figure 3-1, is equipped with a by-pass blower motor arranged with an independent cooling fan. This feature permits the motor to operate at low sampling flow rates for periods of long duration without motor failure from overheating. Air flow rates are variable up to 280 liters per minute (lpm). The units are also equipped with a 7-day timer, magnehelic flow gauge, voltage variator, and elapsed timer.

The sampling module contains two chambers. The upper chamber supports the particulate filter media (10.16 cm diameter glass fiber filter) and the second chamber accommodates a glass cartridge containing a section of polyurethane foam (PUF) and XAD resin.

Following sorbent pretreatment procedures, the sample cartridges will be assembled by carefully placing the PUF plug into the glass sampling cartridge with forceps. Cotton gloves will be worn and care taken to handle PUF sorbent only on methylene-chloride-cleaned aluminum foil and with methylene-chloride-cleaned forceps. The sampling cartridge will be wrapped in methylene-chloride-rinsed aluminum foil and placed in a sealed polyethylene bag until ready for use. A sufficient number of cleaned samples (filters and PUF cartridges) will be maintained in the laboratory for laboratory method blanks and spikes. An overall summary of the sample collection system and procedures is provided in ENSR SOP 2622-020 and included in the Appendix to this document.

3.3 Sampler Calibration

The PS-1 samplers will be fully calibrated in the field prior to and at the conclusion of each 24-hour sampling session. Calibration will be conducted as specified in ENSR SOP 2622-021 included in the Appendix of this document.

3.4 Sample Collective Flows and Volumes

Samplers will operate for a nominal 24-hour sampling period at a flow rate of approximately 200 lpm. These sampling conditions will provide an approximate air volume of 300 m^3, and will offer data consistent with the sensitivity goals stated in Table 3-1 for each of the "target" PCBs parameters. Sample collection flow rates will be determined using the average of the initial and final magnehelic readings corrected to standard temperature and pressure (25EC, 760 mm Hg).

3.5 Sample Shipping and Handling Procedures

All sample filters and cartridges will be prepared and packaged for field use at the laboratory prior to shipment to the monitoring sites as per the applicable procedures found in the appendices of this document. The cartridges will be packaged in shipping coolers. When used for sampling, cartridges will be handled only with clean, cotton gloves. During the sampling period, shipping coolers will be stored in a clean location with their lids sealed. After sampling has been completed, the cartridges will be packaged back in their original containers, wrapped in bubble wrap or soft paper, and packed "snugly" in coolers with ice packs for shipment to the laboratory sample bank.

3.6 Sample Chain-of-Custody and Documentation

Sample control, including chain-of-custody and documentation procedures, is essential to this program. Chain-of-custody procedures:

- provide a mechanism for assignment of responsibility for sample integrity; and
- provide physical evidence of the history and integrity of each sample, from collection through analysis and data reporting.

Documentation procedures include mechanisms to assure the use of proper sample handling and proper labeling and tracking from sample media preparation in the laboratory through sample collection, and transportation to the laboratory sample bank. Detailed sample control and chain-of-custody procedures can be found in the Quality Assurance Project Plan (Section 6) and the Appendix of this document.

DSW 143565

Table 3-1
PCBs Parameters – Detection Limits Goals

	Anticipated Lower Limits of Detection	
	ng/sample	ng/m^3 @ 300 m^3 Total Volume
PCB Congener Class		
Mono	20	0.07
Di	20	0.07
Tri	20	0.07
Tetra	20	0.07
Penta	20	0.07
Hexa	20	0.07
Hepta	20	0.07
Octa	20	0.07
Nona	20	0.07
Deca	20	0.07
Total PCBs	**200**	**0.7**

DSW 143566

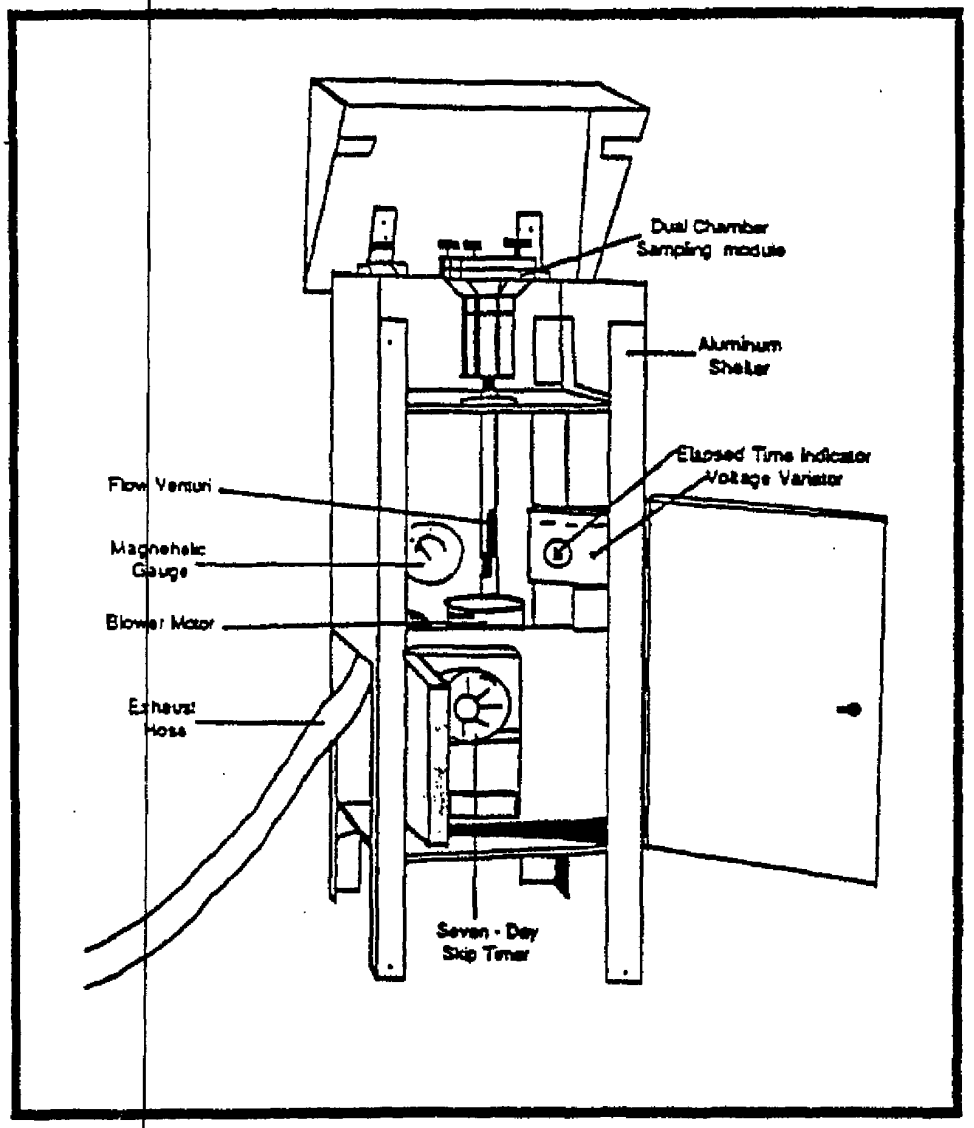
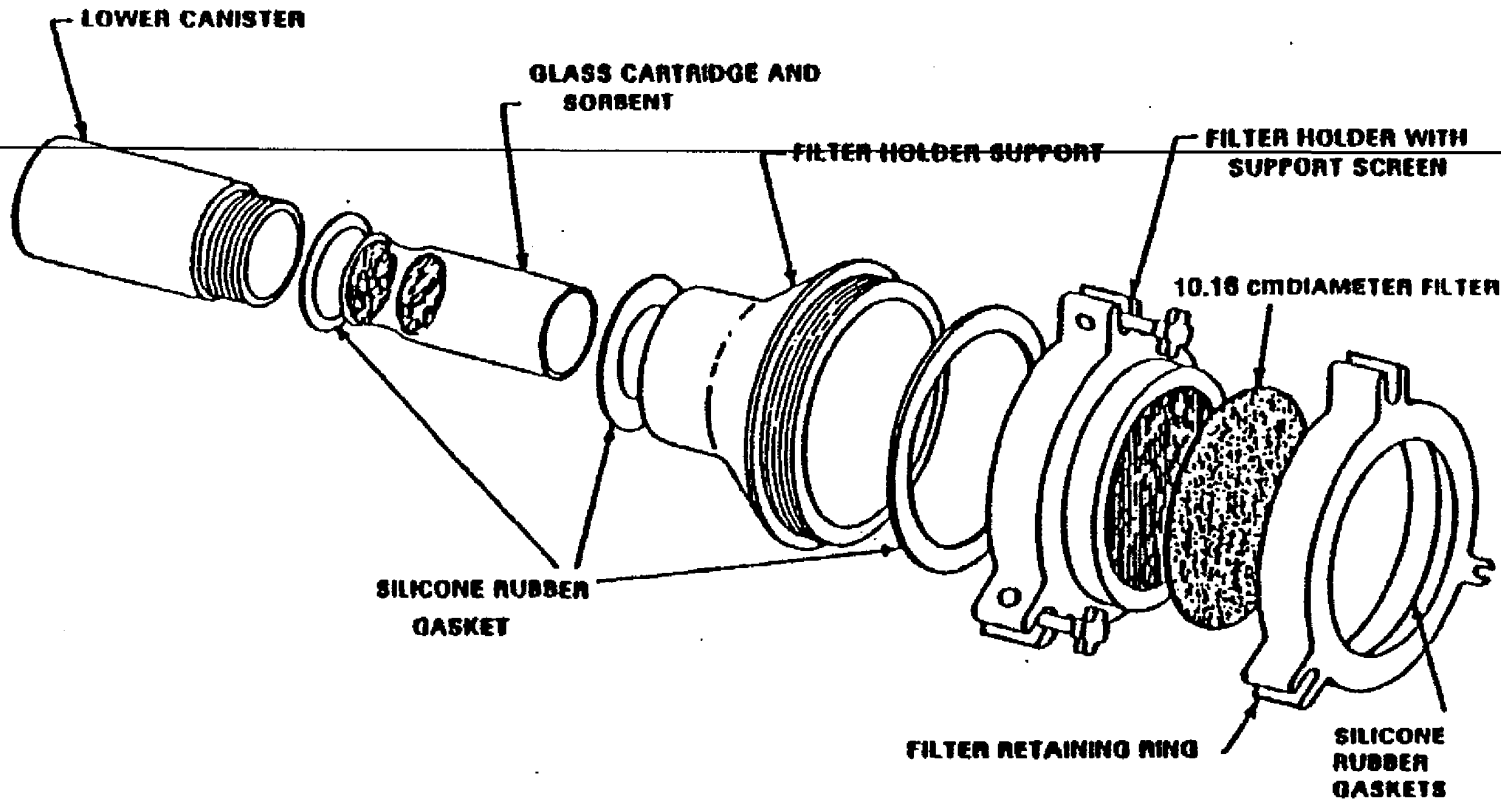


Figure 3-1
Schematic of PS-1 Sampler

DSW 143567



(Adapted from "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", Method T09, EPA-600/4-84-041, April 1984)

Figure 3-2
Schematic of Sampling Head

4.0 SAMPLE VALIDATION AND LABORATORY ANALYSIS

A formal validation and selection procedure will be implemented to select samples for analysis. This procedure assesses sample integrity, sampler operation, and sample identification issues for each individual sample. Only those samples deemed valid through application of the sample validation protocol discussed in this section will be considered for analysis. These criteria are detailed further below.

4.1 Sample Validation Criteria

Physical Integrity

Field staff inspect each sample cartridge and filter immediately prior to and at the completion of each sampling session to ensure the physical integrity of the collected sample. Glass cartridges are inspected for cracks or chips which may prevent formation of an adequate seal while seated in the sampler head. Glass fiber filters are inspected for tears which, if present, could affect the collection of particulate-associated PCBs. Samples containing components which do not display appropriate physical characteristics as identified above may be invalidated and eliminated from consideration for analysis. In addition, visible physical signs of sampler tampering may lead to sample invalidation.

Sampler Calibration Check

All samplers undergo full calibration prior to and at the completion of each sampling session in order to confirm proper sampler operation. Pre- and post-calibration points should fall within 20 percent of each other to be considered valid. Samples contained in samplers not meeting this criteria may be invalidated and eliminated from consideration for analysis. Also, samplers not meeting this criteria will be examined for potential operational problems prior to initiation of the next sampling session.

Flow Rate Consistency

Accurate sample volume determination requires that a consistent flow rate be maintained throughout the sampling period. Flow rate consistency is confirmed by comparison of the initial and final magnehelic gauge readings which, if differing by more than 20 percent, indicates the occurrence of a significant variation in flow rate during the session. Samples collected in samplers not meeting this criterion may be considered invalid and eliminated from consideration for analysis.

Sampling Duration

Samplers are set at a particular flow rate based on the anticipated session duration to produce a sample volume of approximately 300 m^3 to ensure attainment of program detection limit goals.

Abbreviated sampling sessions due to sampler malfunction or power interruption may preclude collection of the desired 300 m^3 sample volume. Such samples may be considered invalid and eliminated from consideration for analysis.

Sample Identification

Any unresolvable ambiguities with sample identification or chain-of-custody will result in sample invalidation.

4.2 Laboratory Analysis Methods

Valid samples will be analyzed via gas chromatography/mass spectrometry (GC/MS) for the mono through deca PCB congener classes based upon the procedures detected in EPA Method TO-4 and EPA Method 680. Detection limits of 20 ng/sample per congener class are anticipated, producing an overall method detection limit of about 0.7 ng/m^3 (assuming 300 m^3 sample volume) for total PCBs.

The PCB data set from the program will be evaluated based upon the following parameters:

- recoveries of isotopically labeled PCB congeners spiked into samples prior to extraction. Acceptance limits for recoveries have been established as 50% to 125%.
- Results for the analyses of field and method blanks.
- Results of laboratory control spikes. Acceptance limits for PCB congener laboratory control spikes are relative percent difference of 40% and recovery limits between 50% and 125%.

5.0 DATA REPORTING

Ambient PCBs concentrations will be reported for the ten tetra through deca congener class sums, as listed in Table 1-1.

Ambient concentrations will be derived by dividing laboratory results (measured weight of target compound per sample) by sample volume (standard cubic meters) to give a mass per unit volume in ambient air as follows:

- Ambient Concentration: ng/m^3

Ambient concentrations will be reported for each individual PCB congener class; total PCBs will be reported on a per sample basis by summing the values reported for each of the ten congener classes. For those congener classes reported as non-detected, a value of zero will be used to calculate total PCBs.

Written data reports will include the following information:

- Laboratory analytical data reports,
- Copies of field data sheets (sampling dates, sample volumes, sampling periods),
- Copies of sampler calibrations,
- Calculated ambient concentrations

6.0 QUALITY ASSURANCE/QUALITY CONTROL

6.1 Introduction

This Quality Assurance Project Plan is designed to assure that all sampling and analysis conducted during the course of the program will be completed in a manner which will provide consistent, high-quality data in accordance with the objectives of the sampling and analysis program.

6.2 Sample Control and Chain-of-Custody

6.2.1 *General*

The purpose of sample control and chain-of-custody procedures is to document the identity of the sample and its handling from the point of collection through completion of sample analysis and data reduction. For this program, field custody records will trace a sample from its origin as a precleaned sample cartridge through sample collection and all transfers of custody until it is returned to the analytical laboratory. Internal laboratory records will then document the custody of the sample through its final disposition.

6.2.2 Sample Control

Sample control will begin in the analytical laboratory, with the preparation of collection media. Sampling cartridges shipped to the field will be accompanied by a detailed worksheet specifying items such as spiked compounds and fortification level, date of preparation, fortification solution ID and relevant comments. Samples will be returned to the laboratory by the field technician following collection. As samples are collected each sample will be labeled with a unique identification number which includes:

- session number,
- network identification code,
- monitoring site identification code, and
- sampling date.

After collection, identification, and preservation, the sample will be maintained under chain-of-custody procedures discussed in Section 6.2.3.

DSW 143572

In addition to the labeling of the samples, a field data sheets will be maintained by the field coordinator (or designee) in which a complete account will be kept of samples collected at each sampling site. Information entered in the log for each sample will include:

- sampler magnehelic readings,
- sample site location,
- sampler ID number,
- sample ID number,
- sample type,
- pre- and post-calibration check data
- date collected,
- start and end time of sample run, and
- observations/comments.

6.2.3 Chain-of-Custody Procedures

Chain-of-custody procedures serve at least two essential purposes in ambient monitoring programs of this nature:

- They provide a formalized mechanism for assignment of responsibility for sample integrity.
- They provide objective, physical evidence of the possession history and integrity of each sample, from collection, through analysis to data reporting, which supports the validity of site investigation data.

A sample is under a person's custody if:

- it is in that person's possession,
- it is in that person's view, after being in his or her possession,
- it was in that person's possession and he or she locked it up to prevent tampering, or
- it is in a secure area, under the control of that person.

The following custody procedures will be followed in the field:

1. The field technician will be personally responsible for the care and custody of the samples collected until they are transferred or dispatched properly.

2. The project manager will determine whether proper custody procedures were followed during the field work and decides if additional samples are required.

3. As soon as each sample has been collected, containerized and labeled, it will be entered on the chain-of-custody form (Figure 6-1). One chain-of-custody form may be used for as many as eight samples but all samples sharing a single chain-of-custody form must be packaged and shipped together. Field staff must complete all of the heading information on the form accurately and legibly. For each sample, the following information is entered:

    - sample identification number (must be identical to the identification number on the sample label),
    - date and time of sample collection,
    - type of sample media, and
    - analyses to be performed.

4. Samples will be packaged and dispatched to the analytical laboratory for analysis, with a separate custody record accompanying each package.

6.3 Sample Collection Procedures

The sample collection procedures that will be used for this program can be found in Section 3 and Appendix A to this monitoring plan. In addition to these sample collection procedures, the quality control measures detailed below will be followed during sample collection.

6.3.1 Field Biased Blanks

Each field blank cartridge will be cleaned, prepared, and shipped as an actual PUF/XAD sorbent cartridge ready for field sampling. Once in the field, the field blank will be opened at the same time and in the same manner as one of the cartridges to be used for sampling. Once sampling has begun, the field blank will be repackaged and stored onsite for the balance of the sampling session. When sampling is completed, the field blank will be opened again during recovery of the ambient samples. The field blank will then be sealed back in its sample container at the same time as the sample cartridges, labeled, and returned to the sample cooler and then to the lab for analysis. One field blank per monthly sampling campaign will be collected at any one of the selected monitoring sites to provide

an indication of typical conditions. Field blanks will be used to assess field-derived sample contamination and contributions from passive deposition of particulate (if any) experienced prior to the commencement and at the conclusion of each sampling session.

6.3.2 Collocated Samplers/Field Replicates

Collocated samplers will be employed over the course of the monitoring program to assess the precision of the combined sample collection and analysis scheme. It is anticipated that collocated samples will be collected approximately every other sampling period (e.g. once per monthly sampling campaign).

Collocated samplers will be operated at one site for an identical duration at nearly identical flow rates and will be located close enough to each other so as to represent the same ambient air conditions without causing interferences with each other. As such, samplers will be more than 2 meters and less than 4 meters apart. In addition, collocated sampler housings will be identically oriented to eliminate biases in sample collection between samplers.

6.4 Analytical Procedures

The analytical procedures that will be used for this program are summarized in Section 4 of this air quality monitoring plan. These protocols represent the analytical methodologies that will be employed by the analytical subcontractor, Alta Analytical Laboratories.

A summary of the more noteworthy features of the laboratory quality control regime are provided in the discussion which follows.

6.4.1 Method Blanks

Method blanks are clean sorbent cartridges that are stored with the samples upon receipt at the laboratory. Method blanks are analyzed with the actual samples and are used to assess laboratory-derived sample contamination.

6.4.2 Laboratory Blanks

Blanks used in instrument calibration contain the identical reagents used in preparing instrument calibration standards with the exception of the parameters of interest.

6.4.3 Internal Standards

Isotopically labeled surrogate compounds will be fortified into each program sample prior to the conduct of the sample preparation scheme.

M391378

ENSR

CHAIN OF CUSTODY RECORD

Page ____ of ____

Client/Project Name:	Project Location:
Project Number:	Field Logbook No.:
Sampler: (Print Name) /Affiliation:	Chain of Custody Tape No.:
Signature:	Send Results/Report to:

Analysis Requested

Field Sample No./ Identification	Date	Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, Etc.)	Preservative	Field Filtered								Lab I.D.	Remarks

Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	Analytical Laboratory (Destination):
Signature:	Time:	Signature:	Time:	
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	
Signature:	Time:	Signature:	Time:	
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	
Signature:	Time:	Signature:	Time:	Serial No.

DSM 143576

Figure 6-1
Chain of Custody Record

6.5 Data Reduction and Validation

Quality control measures will be used to ensure the generation of reliable data from sampling and analysis activities. All information will be collected and organized clearly and concisely, and reported accurately.

6.5.1 Field Data Reduction

The data collected in the field will be recorded on the appropriate field data sheets and/or in the field logbook. All data and calculations will be checked by the project manager.

6.5.2 Laboratory Analysis Data Reduction

Analysis results will be reduced to the concentration units specified in the respective analytical procedures found in Section 4 of this air quality monitoring plan. All calculations will be recorded in the laboratory notebook, and will be checked and signed by the project laboratory coordinator or designee to demonstrate that the calculations and data have been approved and reviewed.

6.5.3 Data Validation

Data validation is the process of filtering data and accepting or rejecting it on the basis of sound criteria. Validation methods and criteria appropriate to the type of data and the purpose of the measurement will be used in this program. Records of all data will be maintained, even that judged to be an "outlying" or spurious value. The persons validating the data will have sufficient knowledge of the technical work to identify questionable values. Criteria used to evaluate the field sampling data will include (but not necessarily be limited to):

- use of approved test procedure,
- use of properly operating and calibrated equipment, and
- use of materials that have passed QC checks.

Criteria used to evaluate the analytical data will include (but not necessarily be limited to) the following:

- use of approved analytical procedure,
- use of properly operating and calibrated instrumentation,
- acceptable results from analyses of QC samples,
- precision and accuracy achieved should be comparable to that achieved in previous similar analytical programs.

6.5.4 Identification and Treatment of Outliers

Any data point which deviates markedly from others in its set of measurements will be investigated; however, the suspected outlier will be recorded and retained in the data set while it is investigated. Outliers will be identified by following the procedure for identification and treatment of outliers found in the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 1, Principles, (EPA-600/9-76-005).

Since an outlier may result from unique circumstances at the time of sample analysis or data collection, those persons involved in the analysis and data reduction will be consulted. This may provide an experimental reason for the outlier. Further statistical analyses will be performed with and without the outlier to determine its effect on the conclusions.

In summary, every effort will be made to include the outlying value in the reported data. If the value is rejected, it will be identified as an outlier, reported with its data set and its omission noted. Factors determined to have caused the outlier data will be presented.

6.6 Preventative Maintenance Procedures and Schedules

An orderly program of positive actions to prevent the failure of equipment or instruments used in the sampling and analysis segments of this program will be followed.

6.6.1 Sampling Equipment Preventative Maintenance

All preventative maintenance will be completed before committing the instruments for field use. PS-1 sampler maintenance will also follow the preventative maintenance procedures recommended by the manufacturer. ENSR maintains a full inventory of spare parts for the instrumentation; if necessary, repairs will be made promptly so as to minimize affect to the field program.

6.6.2 Analytical Equipment Preventative Maintenance

Preventative maintenance of all analytical instrumentation will be completed at the laboratory on a regular basis by competent personnel using the manufacturer's recommendations and schedules.

6.6.3 Immediate Corrective Action

Specific operating procedures and checklists are designed to help analysts detect the need for corrective action. Often the person's experience will be more valuable in alerting the operator to suspicious data or malfunctioning equipment.

If a corrective action can be taken, as part of normal operating procedures, the collection of poor quality data can be avoided. Instrument and equipment malfunctions are amenable to this type of action and procedures include troubleshooting guides and corrective action suggestions. The actions taken should be noted in field or laboratory notebooks but no other formal documentation is required, unless further corrective action is necessary. These on-the-spot corrective actions are an everyday part of the QA/QC system.

Corrective action during the field sampling portion of a program is most often a result of equipment failure or an operator oversight and may require invalidating of flagging a sampling session or individual sample. When equipment is discovered to be defective (i.e., pre-and post-sampling calibration check) it is repaired or replaced. Every effort is made by the field coordinator to ensure that all procedures are followed.

Corrective action for analytical work would include recalibration of instruments, reanalysis of known QC samples and, if necessary, of actual field samples. If the problem is not solved in this way, more formalized long-term corrective action may be necessary.

6.6.4 Long-Term Corrective Action

Any quality problem which cannot be solved by immediate corrective action falls into the category of long-term corrective action. A closed loop corrective action system used for long-term corrective action follows:

- Identify and define the problem.
- Assign responsibility for investigating the problem.
- Investigate and determine the cause of the problem.
- Determine a corrective action to eliminate the problem.
- Assign and accept responsibility for implementing the corrective action.
- Implement corrective action.
- Establish effectiveness of the corrective action and implementation.
- Verify that the corrective action has eliminated the problem.

Documentation of the problem is important to the system. When long-term corrective action is necessary, a Request for Corrective Action will be initiated by the person identifying the quality problem. A Request for Corrective Action will be documented in the Corrective Action Log and will include: identification of the problem, possible cause, person responsible for action on the problem, a description of the corrective action planned by the person responsible for action and the date of implementation. Later, the project manager along with the person who identified the quality problem

will document that the action has been implemented and its effectiveness. If the corrective action proves to be inadequate, the corrective action loop and Request for Corrective Action will be repeated.

DSW 143580

DSW 143581

APPENDIX

STANDARD OPERATING PROCEDURES

FOR FIELD OPERATIONS

DSW 143582

ENSR Consulting and Engineering

Collection of Semi-Volatile Organics in Air Using Solid Sorbents

Date: 4th Qtr., 1996
Revision No: 1
Author: Rick Rumba
Discipline:

1.0 PURPOSE AND APPLICABILITY

1.1 The objective of this document is to provide a standardized procedure for the collection of semi-volatile organic air contaminants using solid sorbents such as polyurethane foam (PUF), XAD-2 resin or Tenax® in combination with General Metal Works (GMW) PS-1 sampler. Specific sorbents or combinations of sorbents are selected on a case-by-case basis to optimize collection efficiency for the compounds of interest. The sample air is drawn through the sorbent at constant flowrate for a measured period of time. The exposed sorbent is then solvent extracted and the extract analyzed.

1.2 The procedures detailed herein describe the sorbent preparation, transportation, and sample collection techniques, and comply with the requirements of EPA Methods TO-4, TO-9, TO-10 and TO-13 found in the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA-600/4-84-041). Further details on analytical sorbent preparation, pre-treatment and sample analysis may be found in the appropriate ENSR SOP or EPA Method listed. Sampler calibration procedures are given in ENSR SOP 2622-021.

1.3 Health and Safety Considerations

1.3.1 The cutting procedure for the PUF Sorbent cylinders can be extremely dangerous due to the rotating cutting edge of the cutting die. This procedure must be performed by a trained drill press operator.

1.3.2 Nitrile or equivalent gloves should be worn when solvent-wiping the sampler.

1.3.3 When this procedure is used in a hazardous environment such as a hazardous waste site, the Health and Safety Plan for that site must be followed.

DSW 143583

1.4 Quality Assurance Planning Considerations

1.4.1 The precision, accuracy, and sensitivity of this measurement method will vary from application to application, due to variations in target compounds and their properties, and variations in matrix (i.e. presence or absence of compounds other than the target compounds which may interfere with or complicate the sample analyses). It is essential that each new application be carefully evaluated by air toxics chemistry and analytical chemistry professionals before it is attempted.

1.4.2 For each target compound a quality assurance monitoring plan must be prepared to address the following issues on the basis of project specific goals and circumstances:

- Sorbent type and sorbent module configuration-depends on compounds of interest and analytical procedures.
- Sorbent cleaning and sample extraction solvent system - depends on compounds of interest, sorbent type and analytical procedure.
- Analytical Method - depends on the above, as well as project detection limit and specificity requirements.
- Sampler Siting - depends on the ultimate objectives of the project and the monitoring circumstances.
- QA Samples and Procedures -

At least one field blank should always be collected with each round of samples. Field blanks are collected by bringing a sorbent/filter set through the entire sampling and analysis process without actually drawing sample air through it. The most representative blanks are those that are actually mounted in a "dummy sampler" because they detect contamination associated with handling and passive deposition.

Duplicate samples should be collected through the use of collocated samplers

DSW 143584

In many cases, it is important to monitor sorbent retention efficiency by spiking labeled surrogate compounds onto the sorbent prior to sample collection and comparing the quantity of these compounds measured to that spiked.

2.0 RESPONSIBILITIES

2.1 Project Manager

2.1.1 The project manager is responsible for ensuring that sampling is planned and executed in accordance with this SOP and applicable provisions of the ENSR QA Manual, that properly trained individuals are assigned and that those individuals are oriented to the project objectives.

2.1.2 The project manager is also responsible for overseeing the specification and procurement of analytical services for the air samples and arranging for validation of the data, as appropriate.

2.2 Field Technician

2.2.1 It is the responsibility of the field technician to read and perform the operation in accordance with the methods and requirements specified in this and all referenced ENSR Standard Operating Procedures.

2.2.2 It is also the responsibility of the field technician to document the procedure in the field station log as well as on any data forms contained or referred to within this procedure.

3.0 REQUIRED MATERIALS

- Sorbent Thimble (65 mm x 125 mm Glass cylinder) -GMW PS-1 or equivalent.
- Sorbent Material - Selected on the basis of specific sampling objectives
- Solvent-rinsed aluminum foil.
- Particulate Filters - 10.16 cm dia. glass fiber (Gelman GFA glass fiber filter or equivalent)
- Sampler(s) - General Metals Works Model PS-1, or equivalent
- Clean white cotton gloves (two pair)
- Calibration orifice kit with calibration curve and water manometer.

- ENSR SOP 2622-021, Calibration of the GMW Model PS-1 PUF Sampler.

4.0 METHODS

4.1 Sample Collection Media

4.1.1 Semi-volatile organic compounds in the ambient air are collected in a solid sorbent material such as PUF, XAD-2, or a combination of PUF and one of the granular sorbents. Sorbent cartridges are assembled by placing the laboratory-precleaned sorbent media in a clean glass thimble. Two typical sorbent cartridge configurations are illustrated in Figures 1 and 2. Note that the support screens and nut and bolt assembly must be constructed of stainless steel.

Particulate matter is collected on a 10.16 cm diameter glass fiber filter upstream of the sorbent cartridge. (See Figure 3).

4.1.2 Glass thimbles should have etched serial numbers for identification purposes..

The project field manager shall be responsible for assigning unique serial numbers to the thimbles as well as recording the serial numbers in a procurement log.

4.2 Sorbent Preparation and Clean-Up

4.2.1 Foam Preparation

Polyurethane Foam (PUF) sorbent cylinders must be cut from 3-inch thick sheets. In order to achieve a satisfactory fit in the glass sorbent module, the cylinders should be 75 mm in diameter, and as close to perfectly cylindrical as possible. Imperfections may create gaps in the foam-to-glass contact, which may permit some of the sample air to bypass the foam. The following procedure has proven effective in cutting good foam cylinders.

- Obtain a cylindrical steel cutting die which can be mounted on a drill press. Most machine shops can fashion such a die to specifications. The diameter of the

DSW 143586

cutting edge should be 75 mm, and the drill press bit mount is standard.

- Mount the cutting die on a drill press.
- Cut the foam sheet into rectangular sections of about 2 feet to make the foam manageable during cutting.
- Select a section and saturate it with water. This reduces friction during cutting and prevents melting and sticking.
- Place the foam on the drill press under the cutting die and turn on the drill press.

NOTE: The drill press should be operated by a trained operator. Keep hands well away from the cutting die.

- As the cylinders are cut, they should be visually inspected to ensure that good cylinders are being obtained.

4.2.2 Prior to dispatching for field sampling, the sorbent and glass thimbles must be cleaned in the laboratory to remove contamination and potential interferences.

The standard clean-up procedure is soxhlet extraction for at least 16 hours, in a solvent system that must be specified on the basis of the parameters of interest, followed by drying in a vacuum desiccator or oven. Ten percent of the pre-cleaned sorbent cartridges (or a minimum of one per lot) should be submitted for a quality control check consisting of an extraction and analysis scheme identical to that performed for the actual samples. Acceptance criteria for the results of the QC check will be determined for each project on the basis of the achievable or required ambient air concentration detection limits. If the quality control acceptance criteria are not satisfied, the cleaning must be repeated for the entire lot.

The pre-cleaned sorbent cartridges are then wrapped in solvent-rinsed aluminum foil, sealed in individual zip-lok® bags and then wrapped with an outer layer of bubble wrap for dispatching to the field.

4.3 Particulate Filter Preparation

4.3.1 Particulate filters are 10.16 cm in diameter glass fiber filters which are pre-cleaned prior to use. Pre-cleaning may involve soxhlet extraction and/or baking. Pre-cleaning procedures will vary according to project requirements. Pre-cleaned filters are placed in individual petri dishes for dispatching to the field. Each petri dish is sealed with teflon tape. Alternately, filters may be wrapped in pre-cleaned aluminum foil and placed in zip-lok® bags.

4.3.2 Following clean-up, it is recommended that a minimum of one filter per batch undergo a quality control (QC) check consisting of an extraction and analysis scheme identical to that to be performed for actual sample analysis. The filters are then individually inspected for pin holes, tears, or other imperfections. When the filters have met the acceptance criteria, they are carefully packaged as a batch in solvent-rinsed aluminum foil for use in the field.

4.4 Storage and Handling of Sample Collection Media

Extensive precautions must be taken to preserve the integrity of the pre-cleaned collection media during transport and storage. The sorbent cartridges will be stored and transported wrapped in solvent-rinsed aluminum foil and sealed in zip-lok® bags, and handled only with clean white cotton gloves or Teflon-tipped tongs. Organics particulate filters are handled only with teflon-tipped tongs and are kept in foil wrappings when not being handled. In addition, the samples are stored and transported under refrigeration to maintain sorbent integrity and minimize artifact release and migration and sorbent contamination. Samples must be removed from the site promptly after collection to avoid contamination. In the laboratory, the organics samples must be stored and handled in a designated organic free area.

4.5 Chain-of-Custody Procedures

4.5.1 Chain-of-custody procedures are initiated by the Laboratory Sample Custodian upon issuance of sample kits. At this time, each sampling kit is sealed with chain-of-custody tape signed and dated by the Sample Custodian, and is accompanied by a chain-of-custody form (Figure 4) containing the sorbent

cartridge identification numbers, the chain-of-custody tape numbers (in the signature box), the signature of the Sample Custodian (as "Relinquished By") and the date and time. When issuing sample kits, the Laboratory Sample Custodian will retain the back copy of the chain-of-custody record.

4.5.2 When the field operator receives the sample kits, he or she will sign as "Received By" and enter the date and time. A field notebook entry will be made stating the condition of each chain of custody seal, as well as the completeness and condition of the package contents. The samples will be in that person's custody until they are relinquished back to the laboratory.

4.5.3 Usually, a new chain-of-custody begins in the field, with the collection of the samples, because the cartridges are not necessarily exposed and returned in the same batches that were shipped from the lab. It is important that sorbent cartridge IDs appear on both sets of chain-of-custody forms to maintain traceability for the full cycle.

4.5.4 Minimum information recorded on the chain-of-custody record in addition to the signatures and dates of all custodian will include:

- Sampling site identification
- Sampling date and time
- Sample collector's name
- Sample s/n
- Sample description (type and quantity)

4.5.5 For the return of the completed samples to the laboratory for analysis, each kit will be sealed with chain-of-custody tape and the seals will be signed and dated. The new chain-of-custody seal numbers will be entered on the chain-of-custody form (in the signature box). The current custodian will sign the chain-of-custody record as "Relinquished By", enter the date and time, tear off and keep the back copy and place the remainder in the shipping container with the samples.

4.5.6 The samples will be received at the laboratory by the Laboratory Sample Custodian who will sign the chain-of-

custody record as "Received for Laboratory" and enter the date and time. The last copy of the completed record will be sent to the sample collection task manager. The original will be retained in the laboratory files.

4.5.7 The laboratory's log-in record will explicitly state the condition of the chain-of-custody seal and accompanying samples on each incoming sample.

4.6 Sampler Calibration

Sampler flowrate is measured by means of a venturi built into the flow path between the pump and the sorbent cartridge holder. The pressure differential in the venturi is indicated in inches of water, on a magnehelic gauge mounted inside the body of the sampler. The relationship between the magnehelic gauge reading and the true flowrate in standard liters per minute (SLPM) must be calibrated and documented prior to operation, and should be verified after each sampling round. The calibration is performed at five different flowrates, the range of which must include the operating sample flowrate. Record all calibration data on the PUF sampler calibration form (Figure 6). Full calibration procedures are detailed in ENSR SOP 2622-021.

Between sampling rounds, once the sorbent cartridge has been removed, the sampling module (Figure 3b) should be disassembled and decontaminated by wiping with a clean solvent-moistened towel. (Wear protective gloves for this task). This is to prevent potential transfer of contamination from the module to the sample once a clean sorbent cartridge has been reinserted into the module.

4.7 Sample Collection

4.7.1 Installation of Sample Collection Media

Open the sorbent cartridge canister by turning the filter holder support counter-clockwise (see Figure 3). Be careful not to drop the gasket that seals the contract between the sorbent cartridge and the canister. Then open the bubble wrap, zip-lok® bag and foil wrapping on the sorbent cartridge, put on the clean white cotton gloves, take out the cartridge and slide it into the lower half of the canister on the sampler. Be careful not to soil the gloves by touching the sampler. Once the

cartridge is in place, take off the gloves, position the gasket (if it is loose) to ensure a good seal, and then close the canister and turn clockwise until it is hand-tight. Carefully fold and place the foil inside the zip-lok® bag and seal it.

Unscrew the three wingnuts on the filter retaining ring until the swing-away bolts can be pushed aside, freeing the filter retaining ring. Lift the ring off, being careful not to dop the gasket. Put the gloves on, take a filter out of its petri dish or foil wrapping and place it, rough side up, on the screen in the filter holder. Take off the gloves, position the gasket (if necessary), replace the retainer ring, flip up the bolts and tighten each wingnut finger-tight. Close the foil wrapping on the remaining filters.

The tongs should be kept in a zip-lok® bag and protected from contamination. If the tongs become soiled or contaminated, clean them immediately by rinsing in methanol or hexane and air drying.

The cotton gloves should be kept clean, and if soiled, they should be replaced. It is best to keep them in a clean zip-lok® bag when they are not being worn, and to retain them to the zip-lok® bag each time they are taken off in the above procedure.

Fill out the heading information on the Sample Collection Data Sheet (Figure 5), entering the identification numbers of the cartridge and filters just installed, as well as the sampler number, sampling site, date and your name

4.7.2 Setting the Sampler Flowrate

Ensure that the sampler exhaust hose is directed away from the sampler in such a way that it will not disturb the normal flow of air around the sampler or cause the dispersal of airborne particles.

Turn the sampler on by switching the 7-day timer ON/OFF lever to ON. Record the reading of the elapsed time meter as "start time" on the Sample Collection Data Sheet. Allow several minutes for warm-up.

Look up the desired sample flowrate on the calibration curve for the sampler and find the corresponding value of "I_c". Record this value as "Sqrt I" on the first line of the "Sample Flowrate" section of the Data Sheet. Record the square of the "Sqrt I" value on the data sheet as "I". Adjust the sampler flowrate to obtain the magnehelic gauge reading just recorded as "I". The flowrate can be adjusted either by turning the voltage variator potentiometer (fine adjustment) located adjacent to the elapsed time indicator or by turning the ball valve (coarse adjustment) located downstream of the venturi. When the desired reading has been achieved, record the time, ambient temperature, barometric pressure and set flowrate on the data sheet.

Close the roof of the sampler. If sampling is not to begin immediately, set the timer for start and end time.

4.7.3 Periodic Sampler Flowrate Checks

The required frequency of flowrate checks varies from one sampling project to another. The Sample Collection Data Sheet is designed to accommodate twelve flowrate readings, including the set point recorded in 4.7.2. Check the project work plan or QA plan for the correct frequency.

In each flow rate check, record the time, ambient temperature, barometric pressure and magnehelic gauge reading ("I"). Compute and record the square root of "I". On the sampler calibration curve, look up the flowrate corresponding to the "Ic" value just recorded as the square root of "I", and record that flowrate under "SLPM" on the data sheet.

If the flowrate just determined differs from the set flowrate by an unacceptable amount, readjust the flowrate (using the ball valve) and note in the margin: "Reset to _____ SLPM".

4.7.4 Removal of Sample Collection Media

If the sampler is off, turn it on and allow it to run for several minutes. Record the final ambient temperature, barometric pressure and flowrate indicated on the Data Sheet. Turn the

sampler off by turning the timer ON/OFF switch to the OFF position. Record the final elapsed timer reading.

Open the filter holder by loosening the wingnuts and flipping the swing-away bolts. Take off the retaining ring, being careful not to lose the gasket. Put on the white cotton gloves, remove the particulate filter. Wrap it in solvent-rinsed foil and place it in the zip-lok® bag for the sample and seal the bag. Alternatively, carefully fold the filter and place it inside the sorbent cartridge.

Take off the gloves and unscrew the sorbent module sleeve. Lift the sleeve up over the cartridge and set it aside. Put on the gloves, remove the sorbent cartridge, wrap the cartridge with the original solvent rinsed aluminum foil, place it in the zip-lok® bag with the filter and seal the bag.

Place the collected samples in a cooler and remove them from the sampling site promptly.

Dispatch the samples to the laboratory, following the chain-of-custody procedures in Section 4.5.

5.0 QUALITY CONTROL

5.1 Ten percent of the pre-cleaned sorbent cartridges (or a minimum of one per lot) should be submitted for a quality control check consisting of an extraction and analysis scheme identical to that performed for the actual samples. Acceptance criteria for each project shall be determined on the basis of the achievable or required ambient air concentration detection limits. If the quality control acceptance criteria are not satisfied, the cleaning must be repeated for the entire lot.

5.2 Field blanks are run as a quality control measure, in order to show that any contamination detected in a sample is truly native to the sample and has not been introduced by sample handling or passive deposition. At least one field blank should be collected with each round of samples. Field blanks are collected by exposing a sorbent/filter set to the entire sampling and analysis process without actually drawing sample air through it. These blanks should be mounted in a "dummy sampler."

5.3 Duplicate samples should be collected employing a collocated sampler.

DSW 143593

5.4 If required by the QAPP or project work plan, sorbent retention efficiency should be monitored by spiking labeled surrogate compounds onto the sorbent prior to sample collection and comparing the quantity of these compounds measured to that spiked.

6.0 DOCUMENTATION

6.1 Each sample collected will be documented on the PUF/XAD Sample Collection Sheet (Figure 5). The following information will be recorded for each sample:

- Sampler s/n
- Sample s/n
- Site name
- Date
- Sampler's name
- Start time
- End time
- Total sampling duration
- Ambient temperature
- Barometric pressure
- Magnehelic gauge reading (I)
- Square root of I
- Flowrate - SLPM

6.2 All samples shipped will be documented on chain-of-custody forms (Figure 4) and tape. Minimum information recorded on the chain-of-custody record in addition to the signatures and dates of all custodians will include:

- Sampling site identification
- Sampling date and time
- Sample collectors name
- Sample s/n
- Sample description (type and quantity)

6.3 All sampler calibrations will be documented on the PUF Sampler Calibration Form (Figure 6).

6.4 To aid in the interpretation of the results, a bound field log book should be maintained detailing weather conditions during sampling periods, sample condition, sampler downtime and any additional observations.

6.5 Upon completion of the field program, all documentation shall remain in the project files indefinitely.

7.0 REFERENCES

Not applicable

DSW 143595

APPENDIX

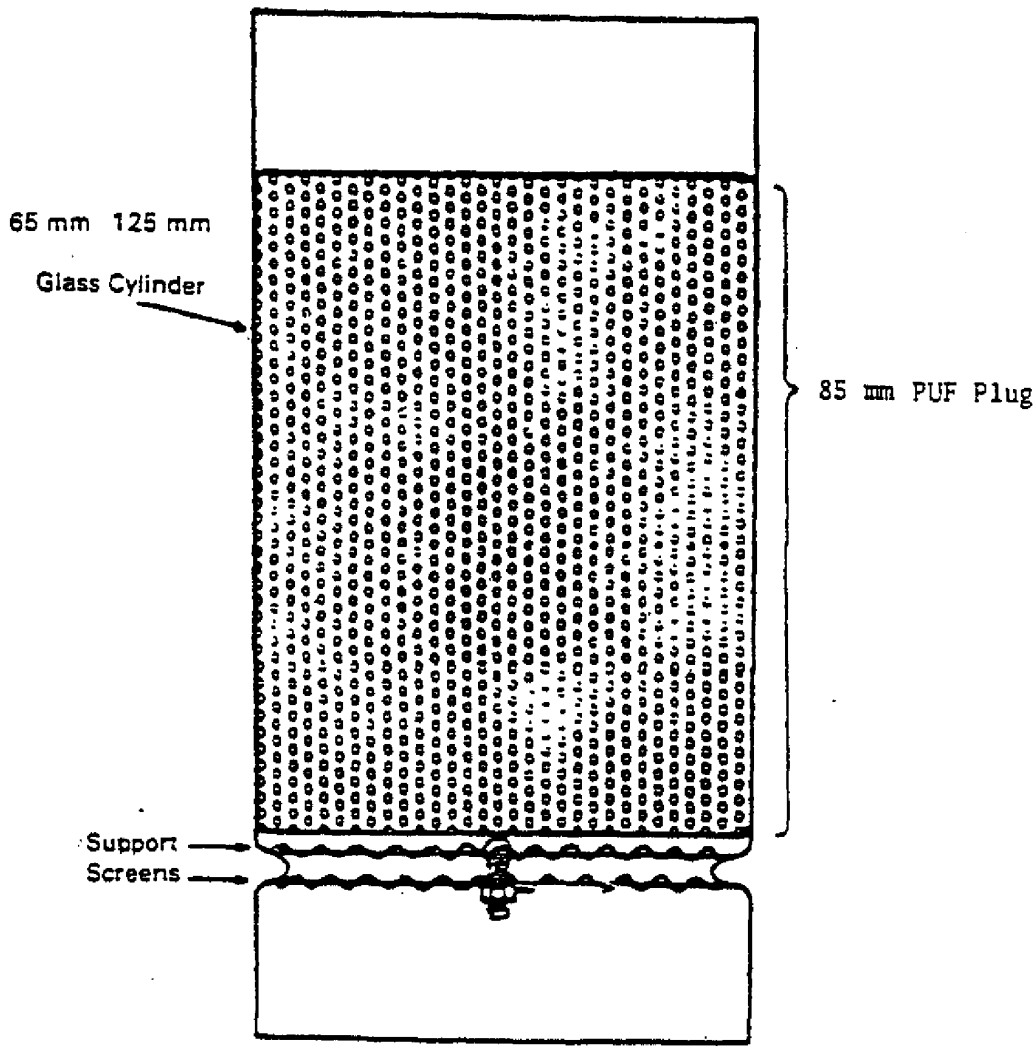
- Collection (or Retention) Efficiency - Of the total quantity of a compound contained in a sample, the amount that is trapped by the sorbent is considered the collected or retained amount. The collection or retention efficiency is the percent of the total quantity that is retained. This value cannot be measured directly, but may be estimated experimentally by spiking labeled compounds (organic compounds similar to those being sampled, but with rate isotopes of carbon or chlorine attached to their molecules) into the sorbent prior to sampling, and then comparing the quantity found in analysis to the quantity spiked.

- Semi-volatile Organic Compounds - Organic compounds with boiling points typically greater than 150°C. These compounds include many of the polynuclear aromatics, PCBs, and dioxins.

- Sorbent - A material that selectively retards the progress of molecules passing through it or over its surface. Sorbents are used to separate compounds from mixtures, and have their most significant application in gas chromatography.

- Venturi - A device, consisting of a small constriction in the path of a flowing fluid, that is used to measure the flowrate as a function of the pressure change caused by the constriction.

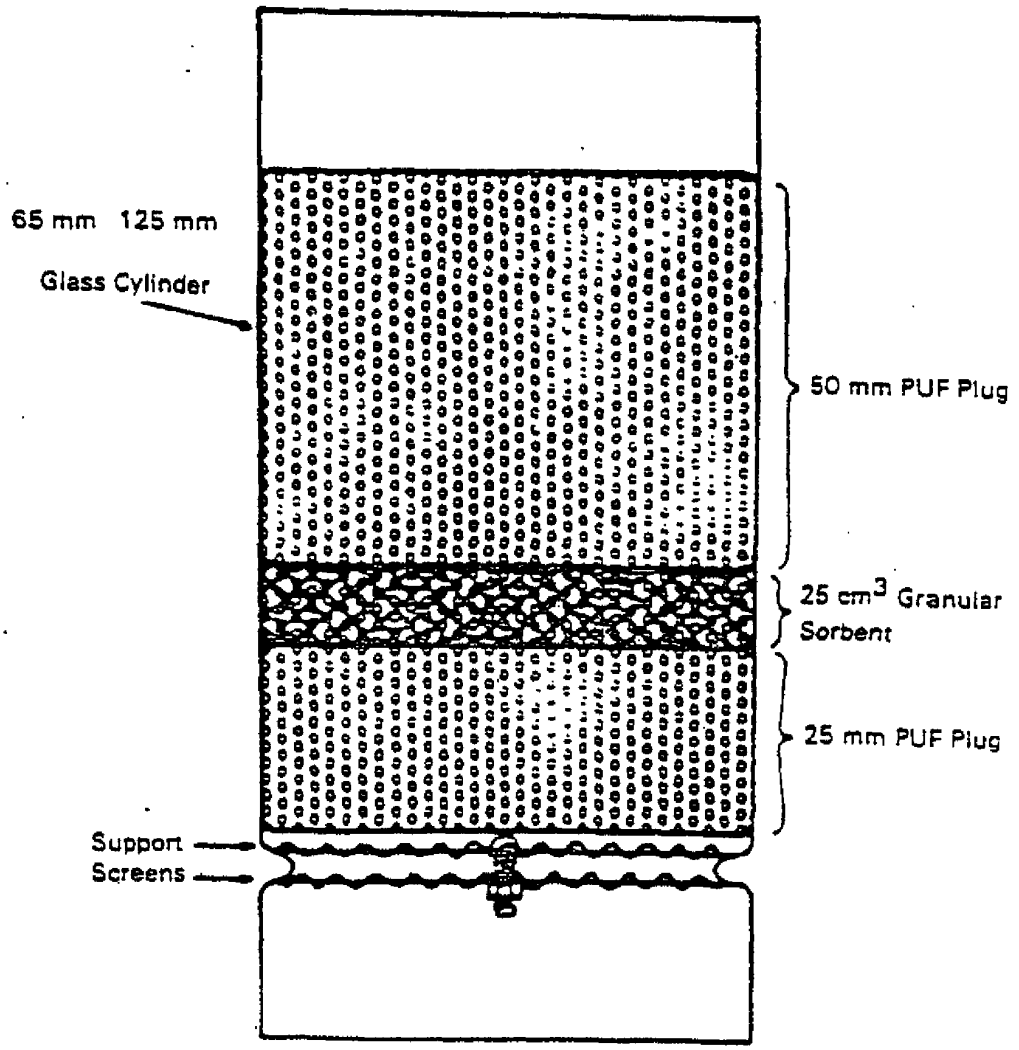
DSW 143596



Note: The support screens and nut and bolt assemblies must be constructed of stainless steel.

Figure 1 - PUF Sampling Cartridge

DSW 143597



Note: The support screens and nut and bolt assemblies must be constructed of stainless steel.

Figure 2 - Dual Sorbent Sampling Cartridge

DSW 143598

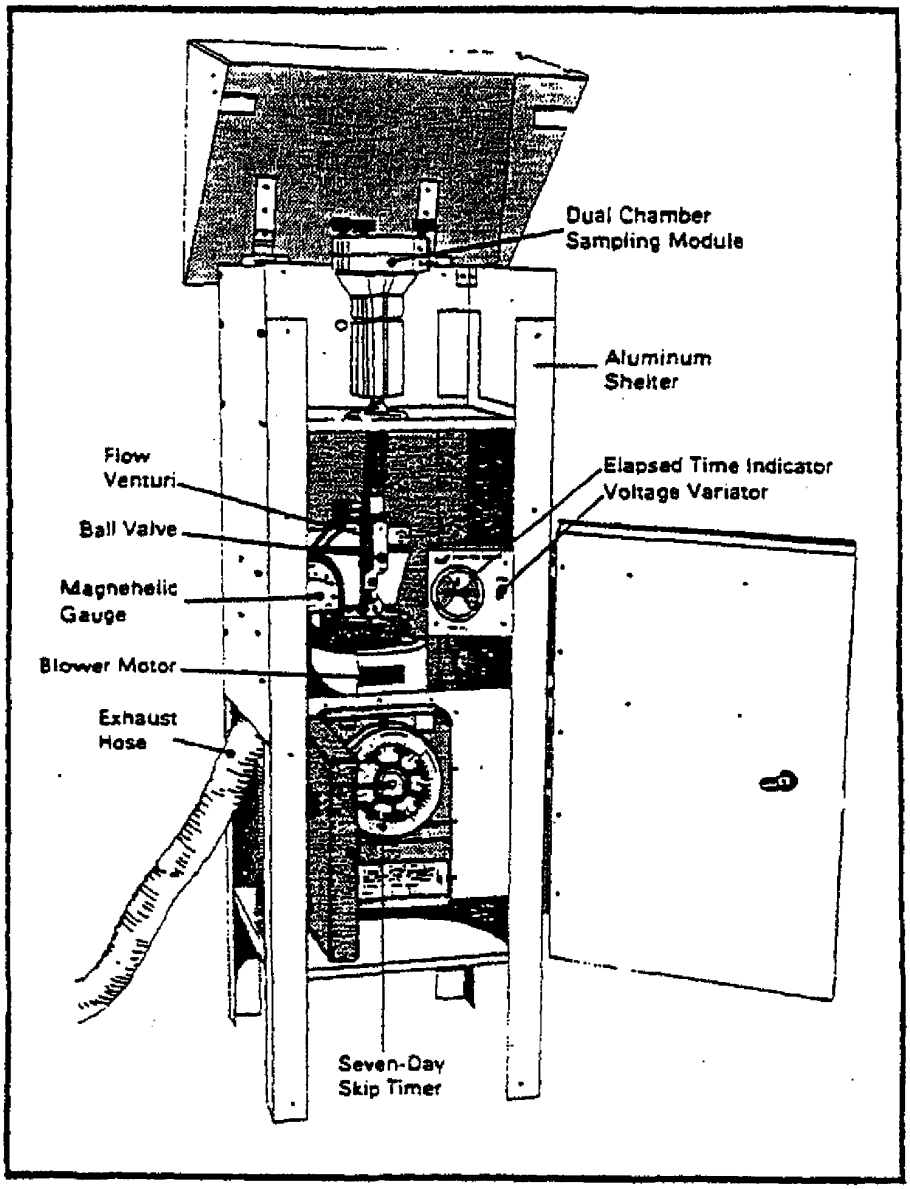
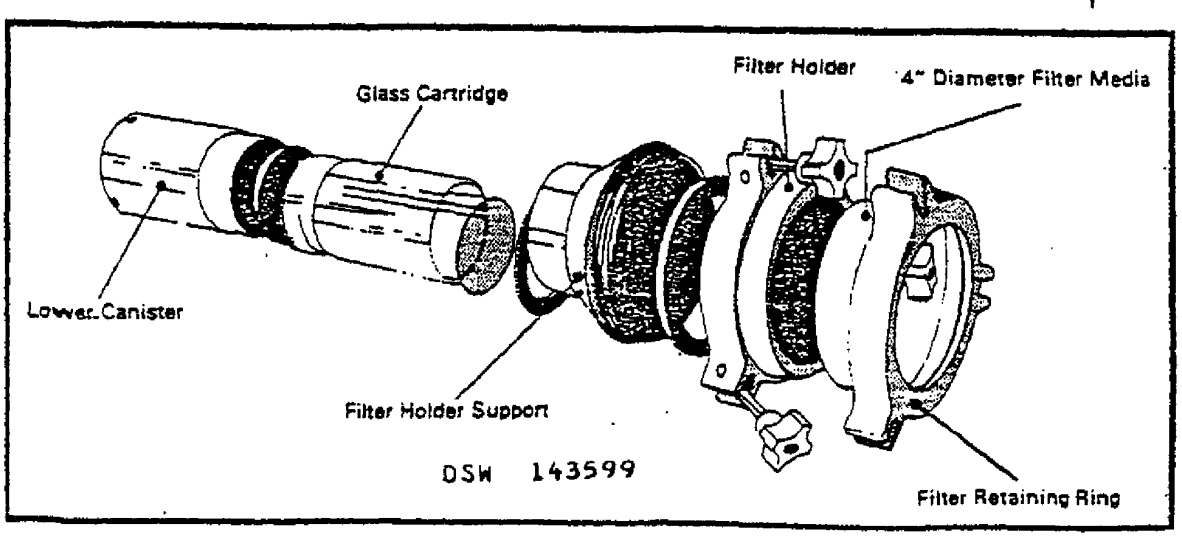


Figure 3a
Sampler

Figure 3b
Dual Chamber
Sampling Module



M901378

ENSR

CHAIN OF CUSTODY RECORD

Page ____ of ____

Client/Project Name:	Project Location:
Project Number:	Field Logbook No.:
Sampler: (Print Name) /Affiliation:	Chain of Custody Tape No.:
Signature:	Send Results/Report to:

Analysis Requested

Field Sample No./ Identification	Date	Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, Etc.)	Preservative	Field Filtered							Lab I.D.	Remarks

Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:
Signature:	Time:	Signature:	Time:

Analytical Laboratory (Destination):

Serial No. 16931

FIGURE 4

ENSR

P.U.F./XAD SAMPLE COLLECTION DATA SHEET

Sampler Number: _____

Sample Number: (Cartridge): _____ Filter: _____

Site: _____ Date: _____

Sample Collector Name: _____

Sample Exposure Time

End Time: _____

Start Time: _____

Total Duration: _____

Sample Flowrate

Time	Ambient Temperature	Barometric Pressure	I	SQRT I	SLPM

DSW 143601

_____
Sample Collector's Signature

FIGURE 5

M890457

Network _____ Site _____ Sys. No. 1 2 3 4

Technician _____ Date _____ HI-VOL Serial No. _____

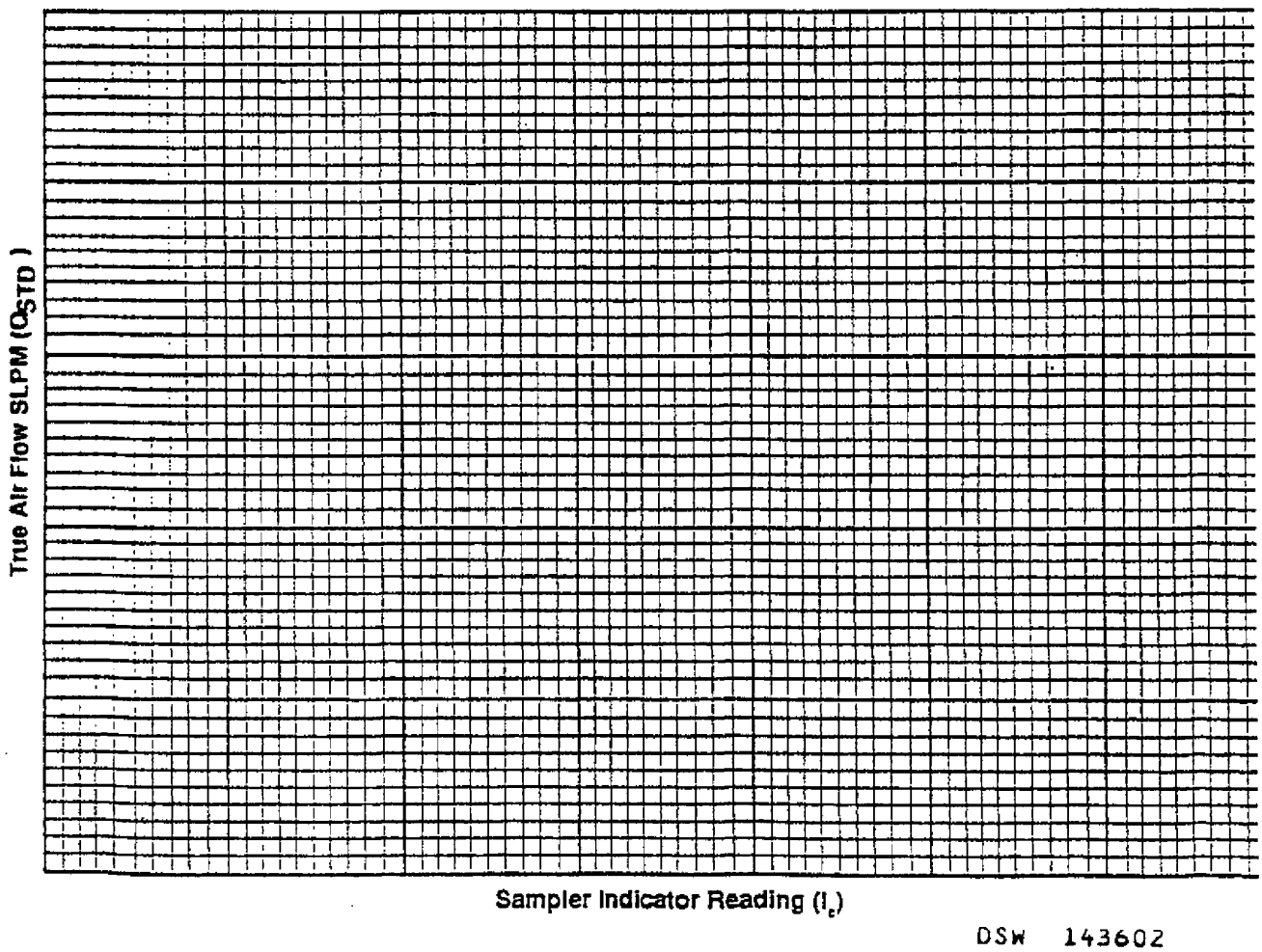
Orifice SN _____ Cal. Dat _____

Ambient Temp. (K) _____ (=T_1) Barometric Pressure (mmHg) _____ (=F

Seasonal Avg. Temp. (K) _____ (=T_2) Site Mean Pressure (mmHg) _____ (=F

Reason for Cal. ( ): _____ Motor/Brush Change: _____ Quarterly Recal. _____ New Hi-Vol _____ Other _____

Plate	ORIFICE: ΔH ("H_2O) X 0.392 $\frac{P_1}{T_1}$ = ΔH_c ("H_2O) → LOOK-UP Table Q_{STD} (SLPM)	SAMPLER INDICATOR (Logarithmic): I $\sqrt{T}$ X $\sqrt{\frac{P_1}{P_1} \times \frac{T_1}{T_1}}$ = I_c
7		
10		
13		
18		
25		
—		



DSW 143602

QC Review _____ Flow Controller Set Point: _____

M890390

FIGURE 6

SOP NO: 2622-921

ENSR ENSR Consulting and Engineering

Calibration of the GMW PS-1 Polyurethane Foam (PUF) Sampler

Date: April 11, 1997
Revision No: 1
Author: A.M. Sacco

1.0 APPLICABILITY

This procedure describes the steps necessary for calibration of the General Metal Works Model PS-1 Polyurethane Foam (PUF) Sampler.

2.0 SUPPORTING MATERIALS

- GMW-40 orifice calibrator which has been calibrated within the past year.
- Water manometer, Dwyer Model 1221-20-W/M or equivalent; or 0-10" and/or 0-3" and 0-0.25" magnehelic gauge.
- Thermometer (or equivalent) for ambient temperature readings.
- Portable aneroid barometer (or equivalent) for ambient pressure readings.
- Water or unity oil if calibration in freezing weather is expected.
- Mean barometric pressure for site as determined from Smithsonian tables of elevation vs. mean pressure (see Table 1).
- Seasonal mean ambient temperature for the site, as determined from reliable climatological information.
- Flexible ruler, or straight edge and a set of French curves.
- ENSR calibration form.

DSW 143603

3.0 INSTRUCTIONS

Note: Avoid calibrating the PS-1 when winds exceed 15 mph.

The PS-1 is usable over the range of 20 SLPM to approximately 250 SLPM. The GMW-40 calibrator must be certified over the range for which the sampler is to be calibrated. The 0-100" H_2O magnehelic gauge supplied with the PS-1 may be used for flows greater than 70 SLPM. Below 70 SLPM a 0-10" H_2O magnehelic gauge must be used. The gauge(s) used during calibration must be the same one(s) employed during actual use of the sampler.

3.1 Remove the filter and whatever material is in the glass cartridge of the sample collection unit. Be certain that the glass cartridge is put back into the holder and secured.

3.2 Install the GMW-40 calibrator on top of the 4" filter holder.

3.3 Connect the water manometer (or equivalent gauge) to the pressure tap of the GMW-40 calibrator. If a manometer is used, fill it about half full with water or unity oil and secure in a vertical position. Set the scale to read "0" at the bottom of the meniscus.

3.4 Fill out all of the heading information on ENSR Calibration Form.

3.4.1 Place the thermometer in a shaded, well ventilated place and wait for a stable reading. Record as Ambient Temperature (T_1).

3.4.2 Barometric Pressure. Obtain a barometric pressure reading from the nearest National Weather Service (NWS) observation station and apply the correction factor that corresponds to your site elevation in Table 2:

NWS Pressure x Correction Factor = True Pressure

DSW 143604

3.5 Connect the appropriate magnehelic gauge (0-100" H_2O or 0-10" H_2O) across the Venturi meter located downstream of the motor. Both taps of the magnehelic gauge(s) must be connected. The gauge(s) should be used in the vertical position. Adjust the zero if necessary by turning the zero adjust screw (below meter face).

3.6 Turn the PS-1 on by switching the 7-day timer on/off lever to "on." Flow may be regulated by adjusting the voltage variator potentiometer (located next to the elapsed time indicator) and/or by the ball valve located downstream of the Venturi meter. The maximum flow desired for the calibration should be set using the potentiometer for a coarse adjustment and the valve for the fine adjustment. Read the differential pressure on the manometer or magnehelic gauge. (Read the bottom of the water meniscus.) Differential pressure equals the sum of the water displacements (in inches) of both sides of the manometer; in other words, the total distance between meniscus levels. Example: If one side reads 3.5" above zero and the other reads 3.4" below zero, then the differential pressure is 6.9". Record the value under "ΔH" on the calibration form. Take the square root of the manometer reading and record it in the "√Δ" column.

3.7 Record the magnehelic gauge reading in the "I" column. Take the square root of the magnehelic gauge reading and enter it in the "√I" column.

3.8 Repeat steps 3.6 and 3.7 for at least 4 additional flow points.
Use I = 20, 40, 50, 60, 80

3.9 Temperature and Pressure Corrections

3.9.1 Obtain and record seasonal mean ambient temperature (°C) on calibration sheet. This information should be available from the Program Manager or Meteorologist responsible for the network.

DSW 143605

3.9.2 Determine the mean barometric pressure for the site elevation from Table 1.

3.9.3 Determine the correction factor for the manometer readings as follows:

$$CF_1 = 0.626 \left(\frac{P_1}{T_1}\right) 1/2$$

where

CF_1 = correction factor for manometer readings
P_1 = barometric pressure during HiVol calibration, mmHg
T_1 = ambient temperature during HiVol calibration, °K
(°K = °C + 273)

3.9.4 Determine the correction factor for magnehelic gauge readings as follows:

$$CF_2 = \left(\frac{P_1}{P_2} \times \frac{T_2}{T_1}\right) 1/2$$

where

CF_2 = correction factor for magnehelic gauge or flow recorder readings, representing seasonal mean temperature and site mean barometric pressure
P_1 and T_1 = same as defined above
P_2 = site mean barometric pressure, mmHg
T_2 = seasonal mean temperature for the site, °K

3.9.5 Record the correction factors. The correction factors will often be close to 1.000, but they should be recorded anyway. Multiply each value of "✓ΔH" and each value of "✓I" by the corresponding correction factors determined above and enter the resulting corrected values in the "ΔH_c" and "I_c" columns, respectively.

3.10 For each value of "ΔH_c", locate the corresponding true flow rate in standard liters per minute on the orifice calibration curve supplied with the orifice. Record under "Q_{STD}".

DSW 143606

3.11 Plot the curve using the standardized magnehelic gauge readings (I_c) as the horizontal scale (abscissa) and Q_{STD}, standardized true flow (SLPM) as the vertical scale (ordinate). Connect the points with a smooth curve. Label the scales to accommodate the range of flows and gauge readings used.

4.0 DRAWING THE CURVE

4.1 The curve must be either a straight line or a continuous smooth curve.

4.2 If a straight line cannot be drawn in such a way that no point is more than two divisions off the line, try a smooth curve using a French curve or flexible ruler.

4.3 If neither a straight line nor smooth curve can be drawn in such a way that all points fall within two divisions of it, it will be necessary to redo the "outlier" point.

5.0 ACCEPTANCE CRITERIA

5.1 All spaces on the calibration form must be filled out or marked N/A.

5.2 The plotted curve must be smooth. Only one of the points may be off the curve and that point may not be more than 2 divisions from the curve or the point must be rerun. If rerunning does not improve the reading, suspect a leak.

5.3 The curve must bracket the range of flows which are anticipated to be employed.

DSW 143607

6.0 QUALITY CONTROL CHECK

6.1 A one-point calibration check must be performed every week at the flow rate being used during normal sampling conditions. Calculate the Δ% between point and the value from the calibration curve. If Δ% is > ± 7%, investigate the cause, and repair and recalibrate as necessary.

7.0 DOCUMENT SUBMISSION

- Calibration data sheet (2 copies) within 3 days to supervisor.
- Final cal curve, with QC checks, to sample processing facility.

DSW 143608

TABLE 1

Site Elevation (Feet above sea level)	Approximate Mean Barometric Pressure (mm Hg)
0	760
500	746
1000	733
1500	720
2000	705
2500	694
3000	680
3500	669
4000	656
4500	644
5000	632
5500	620
6000	609
6500	598
7000	586
7500	575
8000	564
8500	554
9000	543
9500	533
10000	523

DSW 143609

TABLE 2
CORRECTION FACTORS FOR NWS PRESSURES

Site Elevation Above Mean Sea Level		Correction Factor
Ft.	Meters	
11000	3353	0.661
10500	3200	0.674
10000	3048	0.688
9500	2896	0.701
9000	2743	0.715
8500	2591	0.779
8000	2438	0.743
7500	2286	0.757
7000	2134	0.771
6500	1981	0.786
6000	1829	0.801
5500	1676	0.817
5000	1524	0.832
4500	1372	0.848
4000	1219	0.864
3500	1067	0.880
3000	914	0.896
2500	762	0.913
2000	610	0.930
1500	475	0.947
1000	305	0.964
500	152	0.982
0	0	1.000

DSW 143610

Network _____ Site _____ Sys. No. 1 2 3 4

Technician _____ Date _____ HI-VOL Serial No. _____

Orifice SN _____ Cal. Dat _____

Ambient Temp. (K) _____ (=T_1) Barometric Pressure (mmHg) _____ (=

Seasonal Avg. Temp. (K) _____ (=T_2) Site Mean Pressure (mmHg) _____ (=

Reason for Cal. ( ): ____ Motor/Brush Change: ____ Quarterly Recal. ____ New Hi-Vol ____ Other _____

Plate	ORIFICE: ΔH ($"H_2O$) X 0.392 $\frac{P_1}{T_1}$ = ΔH_c ($"H_2O$) → LOOK-UP Table Q_{STD} (SLPM)	SAMPLER INDICATOR (Logarithmic): I $\sqrt{T}$ X $\sqrt{\frac{P_1}{P_1} \times \frac{T_1}{T_1}}$ = I_c
7		
10		
13		
18		
25		
—		

True Air Flow SLPM (Q_{STD})

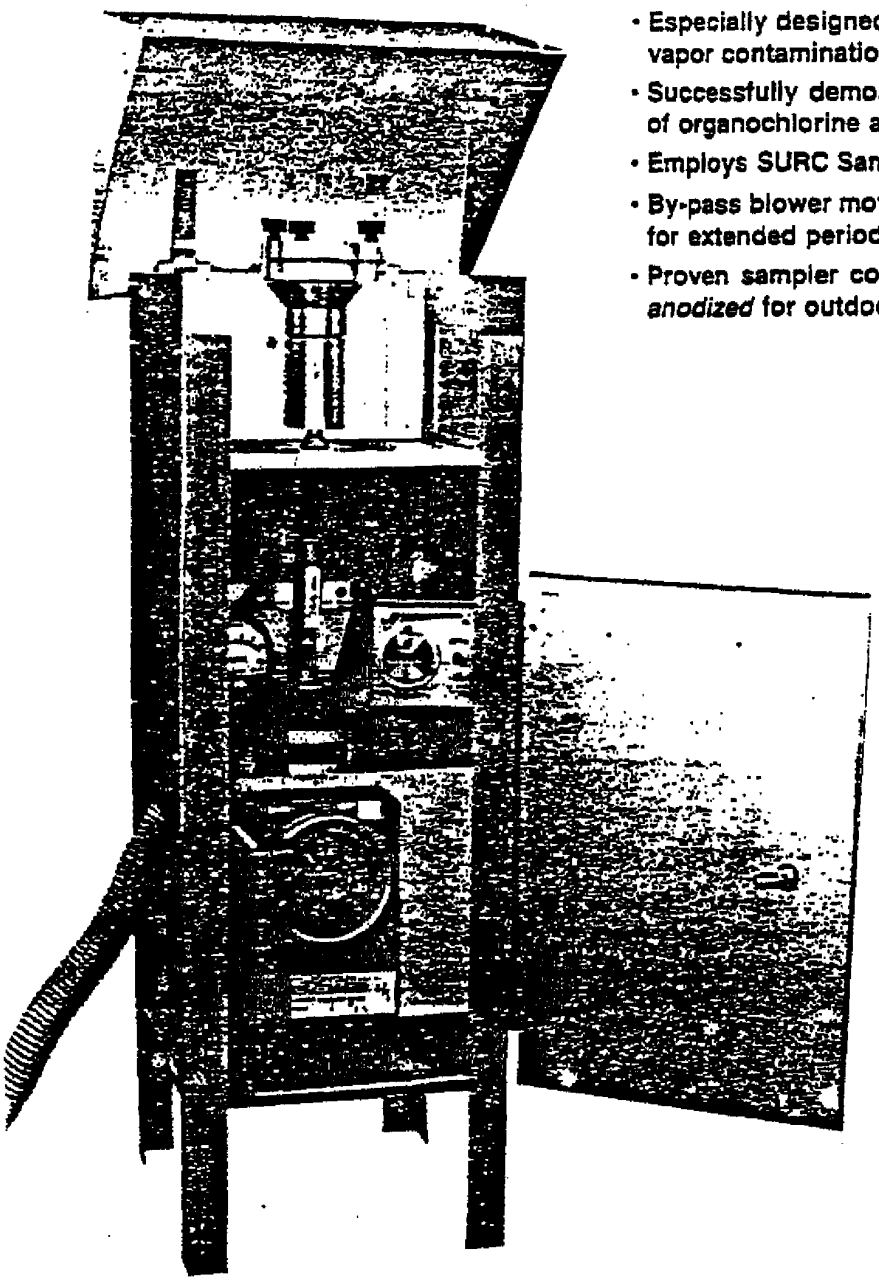
Sampler Indicator Reading (I_c)

OSW 143611

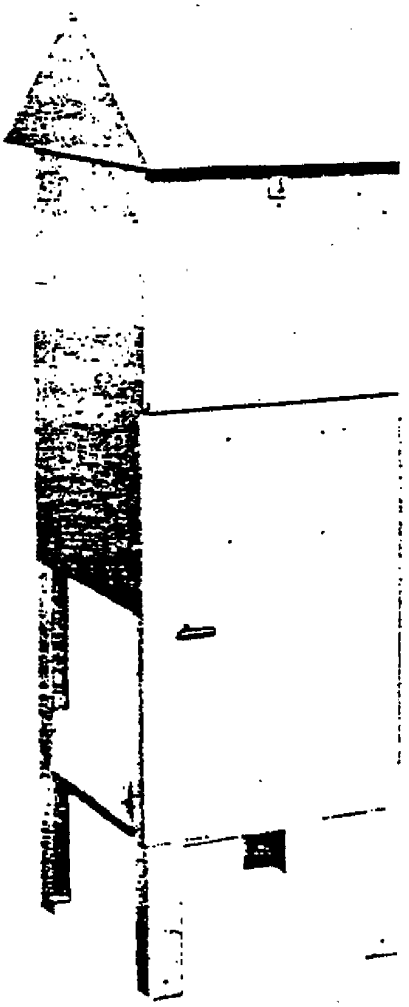
QC Review _____ Flow Controller Set Point: _____

MODEL PS-1 PUF SAMPLER

Pesticide Particulate and Vapor Collection System



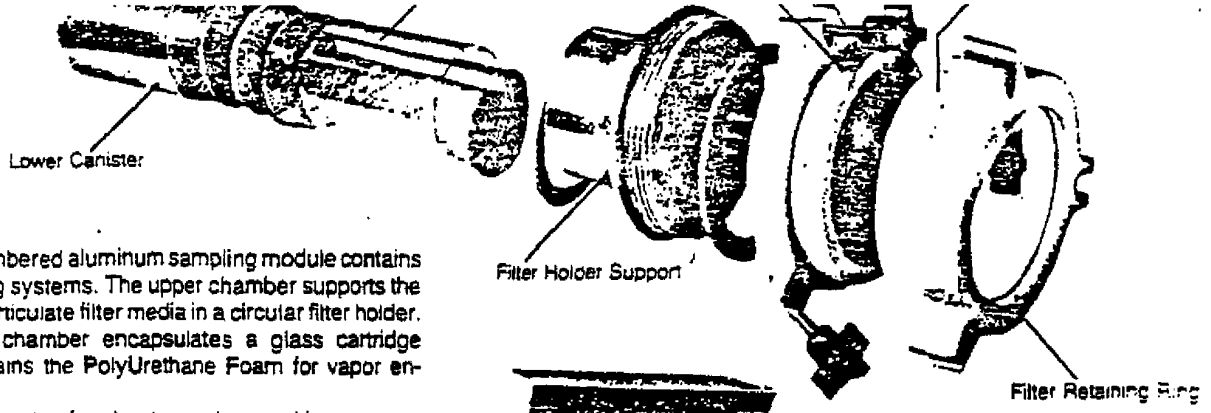
- Especially designed for sampling airborne particulates and vapor contamination from pesticide compounds.
- Successfully demonstrated to efficiently collect a number of organochlorine and organophosphate pesticides.
- Employs SURC Sampler concepts.
- By-pass blower motor design permits continuous sampling for extended periods at rates to 280 liters per minute.
- Proven sampler components housed in aluminum shelter *anodized* for outdoor service.



General Metal Works' PUF (PolyUrethane Foam) Sampler is a complete air sampling system designed to simultaneously collect suspended airborne particulates as well as trap airborne pesticide vapors at flow rates up to 280 liters per minute. Based on early SURC sampler collection concepts, the Model PS-1 features the latest in technological advances for accurately measuring airborne particulates and vapors.

The GMW PUF Sampler is equipped with a by-pass blower motor arranged with an independent cooling fan. This feature permits the motor to operate at low sampling flow rates for periods of long duration without motor failure from overheating.

DSW 143612



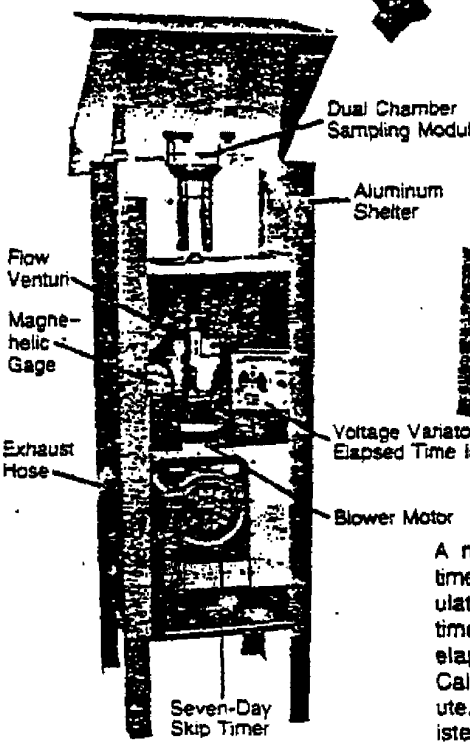
A dual chambered aluminum sampling module contains both filtering systems. The upper chamber supports the airborne particulate filter media in a circular filter holder. The lower chamber encapsulates a glass cartridge which contains the PolyUrethane Foam for vapor entrapment.

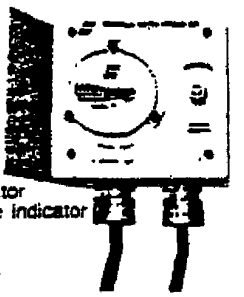
A wide variety of sorbents can be used in a manner that permits their continual use. Polyurethane foam or wet dry granular solid media can be used individually or in combination.

The dual chambered sampling module is designed for easy access to both upper and lower media. Swing-away bolts simplify changing the 4" diameter particulate filter media. The threaded lower canister is removed with the cartridge intact for immediate exchange. Filter support screens and module components are equipped with gaskets providing a leak proof seal during the sampling process.

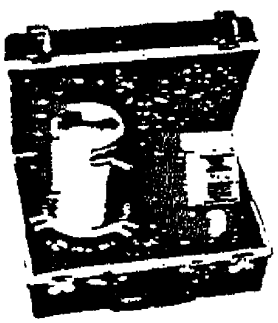
Air flow rates are infinitely variable up to 280 liters per minute. The voltage variator adjusting screw alters the blower motor speed to achieve the flow rate desired. The air flow rate is measured through the flow venturi utilizing a 0-100" Magnehelic Gage. Periodic calibration is necessary to maintain on-site sampling accuracy.

A 7-day skip timer is included as standard and permits weekly scheduling with individual settings for each day and 14 trippers to turn the sampler on and off as desired. Any day or days may be omitted. Day and night periods are distinctly marked. Other timers and timer/programmers are available optionally to suit any sampling requirement.





A nonresettable, elapsed time indicator verifies accumulative intermittent sampling time periods as well as total elapsed time of operation. Calibrated in tenths of a minute, the unit has a total register of 99,999.9 minutes.

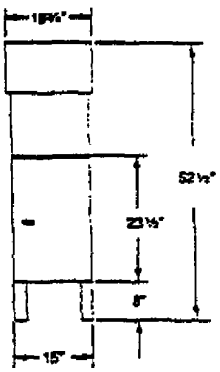


Priced separately, the calibration kit includes a manometer, calibrator and calibration curve nested in a carrying case. The calibrator attaches directly to the top of the filter holder eliminating the need to disassemble the sampling unit. It affords precise calibration of the sampler and is especially recommended for calibrating the Model PS-1 PUF Sampler.

The GMW Model PS-1 PUF Sampler is shipped completely wired and assembled, ready for operation. All components are housed within the anodized aluminum shelter for maximum protection.

SPECIFICATIONS:

- Amperage - 8.0
- Wattage - 960
- Max. Flow Rate - 280 liters per minute
- Power Source - 115V, 1 phase, 60 Hertz (other electrical characteristics available on request)
- Net Weight - 65 lbs.
- Shipping Weight - 75 lbs.



Outside Ohio call toll free 1-800-543-7412

DSW 143613

GENERAL METAL WORKS INC.

A Subsidiary of Andersen Samplers, Inc.

145 South Miami Ave. / Village of Cleves, Ohio 45002 / Tel. 513-941-2229

AP No. 1M	Revision: 1	Effective: 1/17/95	Replaces: 9/8/92
AIR TOXICS PREPARATION AND SHIPPING OF POLYURETHANE FOAM PLUG (PUF) CARTRIDGES AND FILTERS FOR IN FIELD USE			
Author: Melanee A. Schuld			
Management - Date	Robert L. Mafl 1/19/95		
QA Officer - Date	Shelley A. Weagraff 1/19/95		

1 PURPOSE

1.1 This analytical procedure describes the preparation, packaging and shipping of PUF cartridges and filters for in field use.

2 CLEANING

2.1 Locate and inspect the condition of the required glassware based upon the number of cartridges and filters indicated on the "Air Apparatus Shipping Request" form (attachment 1). Cartridges, filters and petri dish sets are stored alphabetically by client in the "Air Glassware" cabinets located in the warehouse. Glassware stored in the cabinets has been soaked for a minimum of 24 hours in hot soapy water and rinsed thoroughly.

2.2 Glassware

2.2.1 Rinse all glassware with the following solvents: acetone, toluene, methylene chloride ($MeCl_2$) and hexane. Remove any residue on the glassware left over from prior labeling.

2.2.2 After allowing the glassware to air dry for several minutes, place into the glassware drying oven at 110°C. Allow glassware to bake for a minimum of 4 hours.

2.3 Filters

2.3.1 Check the required number of filters. Obtain filters from the glassware cabinets and place filters in a pan containing $MeCl_2$ and soak for a minimum of 5 minutes.

2.3.2 Carefully remove each filter and place into a loosely folded solvent

DSW 143614

3 PREPARATION AND SPIKING

3.1 Remove glassware and filters from the oven and allow to cool to ambient temperature.

3.2 Filters

3.2.1 Place filters individually into petri dishes. Spike filters with prespikes according to the "Air Apparatus Shipping Request" form only if requested by the client. Use a Hamilton syringe to spike small droplets on to the filter surface in a random fashion. Place petri lid on top of the dish and tape shut. Cover entire petri dish set with aluminum foil.

3.3 PUFs and Cartridges

3.3.1 Obtain the appropriate number of cleaned PUFs from the client glassware cabinets. The number and sizes of the PUFs will be dependent upon the cartridge size and whether the cartridge is to also contain XAD2 resin (PUF/XAD2 sandwich).

3.3.2 Carefully place PUF so that it is firmly seated atop the retaining screen. All handling of the PUF and cartridge must be with cleaned tweezers or gloves.

3.3.2.1 PUF/XAD2 sandwich: If this type of sampling medium is needed place the lower (2 inch) PUF plug against the retainig screen. Measure and pour 15-20g of precleaned and QC'd resin atop the lower fitted PUF plug. Tap to ensure equal distribution of the resin.

3.3.2.2 Place the upper (1 inch) PUF plug atop the resin layer. Carefully seat the plug against the resin to remove any dead space. Check to make sure that there are no wrinkles or channels where the PUF contacts the cartridge which could allow resin to escape during sampling or shipping.

3.3.3 Spike the prespikes into the packed cartridge according to the "Air Apparatus Shipping Request" form. Use a Hamilton syringe and insert the needle through upper PUF plug so that the tip is in the center of the cartridge.

DSW 143615

3.3.4 Wrap each cartridge with aluminum foil and seal in a sealable plastic bag.

3.3.5 Label each cartridge bag with a trap label (attachment 2). Each label should contain:

3.3.5.1 Date packed
3.3.5.2 Chemist initials
3.3.5.3 Analysis the cartridge was prepared for
3.3.5.4 Client name
3.3.5.5 XAD2 resin lot number (PUF/XAD sandwich)

4 PACKAGING FOR SHIPMENT

4.1 Wrap petri dishes and PUF cartridges individually with bubble wrapping or paper packing materials. Color code PUF cartridges and filters with different colored lab tapes to differentiate filters and traps prepared for different analyses.

4.2 Obtain a cooler (Coleman ice chest style) of appropriate size. Use the client's cooler if available. Pack the bottom of the cooler with a minimum of 2 inches of styrofoam peanuts. Place traps and petri dishes atop of the peanuts and pack together firmly so that shifting will not occur. If more than one layer of traps and petri dishes is necessary, lay a bubble wrap divider covered with styrofoam peanuts between the layers. Place blue ice containers at the top of the cooler in sufficient number to keep the traps at no more than 4° C for the length of delivery time (usually 2 days). Cushion the blue ice with another layer of styrofoam peanuts to prohibit shifting.

4.3 Insert a letter containing the particulars of the shipment including:

4.3.1 name of the addressee

4.3.2 the number of PUF cartridges and filters

4.3.3 the analyses

4.3.4 the color coding of the traps

4.3.5 any special instructions

4.4 Label the cooler with the appropriate address label (FED-X or UPS) and tape firmly shut using 3 inch wide packing tape. Tape all lid latches and hinges for protection.

DSW 143616

4.5 Label cooler with "FRAGILE" and "GLASS" stickers. Place cooler in Sample Control to be picked by the appropriate courier service.

DSW 143617

ATTACHMENT 1

XAD2 RESIN QC FORM
XAD2 RESIN QUALITY CONTROL

BATCH ID: _____
MANUFACTURER: _____
LOT NO.: _____
DATES PREPARED: _____
NO. HOURS CLEANED: _____

METHOD 429 (PAH)

Date Extracted/ Analyst	429 I.S./Amount	Split? - # Portions	Clean-Ups Used	429 R.S./Amount/ F.V.

COMMENTS:

_____
_____

METHOD 428 (DD/DF)

Date Extracted/ Analyst	428 I.S./Amount	Split? - # Portions	Clean-Ups Used	428 R.S./Amount/ F.V.

COMMENTS:

_____
_____

METHOD 428 (PCB)

Date Extracted/ Analyst	PCB I.S./Amount	Split? - # Portions	Clean-Ups Used	PCB R.S./Amount/ F.V.

COMMENTS:

DSW 143618

_____
_____

ATTACHMENT 2

ALTA PACKED XAD2 TRAP

Client: _____

Batch: _____

Analyses: _____

Init/Date: _____

DSW 143618.01

AP No. 1M	Revision: 1	Effective: 1/17/95	Replaces: 9/8/92
AIR TOXICS PREPARATION AND SHIPPING OF POLYURETHANE FOAM PLUG (PUF) CARTRIDGES AND FILTERS FOR IN FIELD USE			
Author: Melanee A. Schuld			
Management - Date	Robert L. Mott 1/19/95		
QA Officer - Date	Shelley A. Weagraff 1/19/95		

1 PURPOSE

1.1 This analytical procedure describes the preparation, packaging and shipping of PUF cartridges and filters for in field use.

2 CLEANING

2.1 Locate and inspect the condition of the required glassware based upon the number of cartridges and filters indicated on the "Air Apparatus Shipping Request" form (attachment 1). Cartridges, filters and petri dish sets are stored alphabetically by client in the "Air Glassware" cabinets located in the warehouse. Glassware stored in the cabinets has been soaked for a minimum of 24 hours in hot soapy water and rinsed thoroughly.

2.2 Glassware

2.2.1 Rinse all glassware with the following solvents: acetone, toluene, methylene chloride ($MeCl_2$) and hexane. Remove any residue on the glassware left over from prior labeling.

2.2.2 After allowing the glassware to air dry for several minutes, place into the glassware drying oven at 110°C. Allow glassware to bake for a minimum of 4 hours.

2.3 Filters

2.3.1 Check the required number of filters. Obtain filters from the glassware cabinets and place filters in a pan containing $MeCl_2$ and soak for a minimum of 5 minutes.

2.3.2 Carefully remove each filter and place into a loosely folded solvent

DSW 143619

rinsed sheet of aluminum foil. Place filters in the glassware drying oven and allow to bake at 110°C for a minimum of 4 hours.

3 PREPARATION AND SPIKING

3.1 Remove glassware and filters from the oven and allow to cool to ambient temperature.

3.2 Filters

3.2.1 Place filters individually into petri dishes. Spike filters with prespikes according to the "Air Apparatus Shipping Request" form only if requested by the client. Use a Hamilton syringe to spike small droplets on to the filter surface in a random fashion. Place petri lid on top of the dish and tape shut. Cover entire petri dish set with aluminum foil.

3.3 PUFs and Cartridges

3.3.1 Obtain the appropriate number of cleaned PUFs from the client glassware cabinets. The number and sizes of the PUFs will be dependent upon the cartridge size and whether the cartridge is to also contain XAD2 resin (PUF/XAD2 sandwich).

3.3.2 Carefully place PUF so that it is firmly seated atop the retaining screen. All handling of the PUF and cartridge must be with cleaned tweezers or gloves.

3.3.2.1 PUF/XAD2 sandwich: If this type of sampling medium is needed place the lower (2 inch) PUF plug against the retainig screen. Measure and pour 15-20g of precleaned and QC'd resin atop the lower fitted PUF plug. Tap to ensure equal distribution of the resin.

3.3.2.2 Place the upper (1 inch) PUF plug atop the resin layer. Carefully seat the plug against the resin to remove any dead space. Check to make sure that there are no wrinkles or channels where the PUF contacts the cartridge which could allow resin to escape during sampling or shipping.

3.3.3 Spike the prespikes into the packed cartridge according to the "Air Apparatus Shipping Request" form. Use a Hamilton syringe and insert the needle through upper PUF plug so that the tip is in the center of the cartridge.

DSW 143620

3.3.4 Wrap each cartridge with aluminum foil and seal in a sealable plastic bag.

3.3.5 Label each cartridge bag with a trap label (attachment 2). Each label should contain:

3.3.5.1 Date packed
3.3.5.2 Chemist initials
3.3.5.3 Analysis the cartridge was prepared for
3.3.5.4 Client name
3.3.5.5 XAD2 resin lot number (PUF/XAD sandwich)

4 PACKAGING FOR SHIPMENT

4.1 Wrap petri dishes and PUF cartridges individually with bubble wrapping or paper packing materials. Color code PUF cartridges and filters with different colored lab tapes to differentiate filters and traps prepared for different analyses.

4.2 Obtain a cooler (Coleman ice chest style) of appropriate size. Use the client's cooler if available. Pack the bottom of the cooler with a minimum of 2 inches of styrofoam peanuts. Place traps and petri dishes atop of the peanuts and pack together firmly so that shifting will not occur. If more than one layer of traps and petri dishes is necessary, lay a bubble wrap divider covered with styrofoam peanuts between the layers. Place blue ice containers at the top of the cooler in sufficient number to keep the traps at no more than 4° C for the length of delivery time (usually 2 days). Cushion the blue ice with another layer of styrofoam peanuts to prohibit shifting.

4.3 Insert a letter containing the particulars of the shipment including:

4.3.1 name of the addressee

4.3.2 the number of PUF cartridges and filters

4.3.3 the analyses

4.3.4 the color coding of the traps

4.3.5 any special instructions

4.4 Label the cooler with the appropriate address label (FED-X or UPS) and tape firmly shut using 3 inch wide packing tape. Tape all lid latches and hinges for protection.

DSW 143621

4.5 Label cooler with "FRAGILE" and "GLASS" stickers. Place cooler in Sample Control to be picked by the appropriate courier service.

DSW 143622

ATTACHMENT 1

XAD2 RESIN QC FORM
XAD2 RESIN QUALITY CONTROL

BATCH ID: _____
MANUFACTURER: _____
LOT NO.: _____
DATES PREPARED: _____
NO. HOURS CLEANED: _____

METHOD 429 (PAH)

Date Extracted/ Analyst	429 I.S./Amount	Split? - # Portions	Clean-Ups Used	429 R.S./Amount/ F.V.

COMMENTS:

_____

_____

METHOD 428 (DD/DF)

Date Extracted/ Analyst	428 I.S./Amount	Split? - # Portions	Clean-Ups Used	428 R.S./Amount/ F.V.

OMMENTS:

_____

_____

ETHOD 428 (PCB)

Date Extracted/ Analyst	PCB I.S./Amount	Split? - # Portions	Clean-Ups Used	PCB R.S./Amount/ F.V.

)MMENTS:

DSW 143623

_____

_____

ATTACHMENT 2

ALTA PACKED XAD2 TRAP

Client: _____

Batch: _____

Analyses: _____

_____

Init/Date: _____

DSW 143624

ATTACHMENT II

DSW 143625

ATTORNEY WORK PRODUCT
ATTORNEY- CLIENT PRIVILEGE

SOLUTIA
Applied Chemistry, Creative Solutions

Solutia Inc.
575 Maryville Centre Drive
St. Louis, Missouri 63141

P.O. Box 66760
St. Louis, Missouri 63166-6760
Tel 314-674-1000

November 22, 1999

Mr. Wm. Gerald Hardy, Chief
Hazardous Waste Branch
Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36130~~-1463~~ 36110

Re: Request for Monthly Submittal of PCB Air Monitoring Data to ADEM and EPA Region 4
Solutia Inc.
702 Clydesdale Avenue
Anniston, AL 36201-5390
USEPA I.D. No. ALD 004 019 048

Dear Mr. Hardy:

On July 20, 1999, you wrote to Mr. Alan Faust at the Solutia Anniston Facility requesting that Solutia report air monitoring data collected by Solutia to the Alabama Department of Environmental Management (ADEM) and the U. S. Environmental Protection Agency Region IV (EPA). The letter requested submission of air monitoring data collected in June of 1999 within 14 days of the receipt of the letter and subsequent reporting of air monitoring data on a monthly basis. Solutia responded to that letter explaining that the June sampling and analysis data were not yet available in validated form and requesting that Solutia be allowed to report subsequent air monitoring data on a bimonthly (every other month) basis.

Solutia's air monitoring data were presented to ADEM at a meeting on September 2, 1999. The handouts provided at the meeting are attached as Appendix I. Specifically Solutia provided a map showing the locations of the air samplers that Solutia has used over the period of time since February of 1998; a Microsoft Excel® spreadsheet showing the results for the various samplers in the period since February of 1998; and two bar charts showing average values and maximum values of PCB levels in air at each sampler during the time period. One of the bar charts also graphically presented the OSHA PEL

DSW 143626

for 42% chlorinated biphenyls and the NIOSH recommended air level for occupational exposure to PCBs. These results were also attached as Appendix III to my October 1, 1999, letter to you, copies of which were also sent to EPA.

Currently, air sampling devices are mounted at 7 locations, and 24-hour air samples are being collected approximately twice per month. (No samples were collected in July and August.) Two sampling events were undertaken in September, and two additional sampling events were undertaken in October. The results for the September events are included on the updated Excel spreadsheet, which is attached as Table 1. However, Solutia has not received validated results for the October events.

The results of the air sampling conducted by Solutia confirm that PCB migration via an air pathway is not a source of concern, in that the concentrations are typically in the range of 0.1 to 50 nanograms per cubic meter (ng/m^3). The highest value reported during sampling by Solutia was 80 ng/m^3 near Mars Hill Missionary Baptist Church, an area which has since been remediated. All of the air levels detected by the plaintiffs and by Solutia are orders of magnitude below the OSHA PEL for Aroclor 1242, which is 1,000,000 ng/m^3. The OSHA PEL is strictly applicable only to occupational exposures, which are considered to be 40 hours per week. Even if the OSHA PEL is divided by four to adjust for a worst case, 168 hour per week potential residential exposure scenario, the levels at the Anniston facility are still orders of magnitude lower than the PEL. They are also well below the 1,000 ng/m^3 recommended by NIOSH, a level which was based on analytical considerations and is not a risk-based value.

At the September 2, 1999, meeting ADEM requested that, in addition to the summary spreadsheet provided with the handouts, Solutia provide the data report sheets from our contractor, ENSR Inc. Those sheets for the first 30 sampling sessions, including the September 1999 events, are attached as Appendix II. Each sheet shows the date of the sampling session and the results for each of the samplers used during that sessions. The names of the sampler locations correspond to the locations on the spreadsheet. However, the sampler numbers have only recently been assigned and do not appear on the reports from ENSR. The analyses of the air samples are being done by Alta Laboratories in California. The samples are being analyzed by gas chromatography with mass spectrometric detection (GC/MS) to minimize the potential for interferences in the analyses. Thus, the results on the session report sheets are reported in terms of concentrations of PCB congener classes (sometimes called homologs), each class determined by the number of chlorines attached to the biphenyl molecule. Total PCBs are obtained by summing the results for the ten congener classes for each sample. Solutia has complete data validation packages for each sampling session. However, it was agreed at the September meeting that Solutia need not supply those validation packages at this time.

As mentioned at the September meeting, Solutia intends to reposition its air sampling devices to more clearly define the levels of PCBs in air at the fenceline of the Anniston facility. Referring to the map attached as Figure 1, which is an updated version of the map in Appendix I, Solutia is proposing to undertake semimonthly (twice a month) air sampling events at former sampler locations 3, 6, 7, and 8, which are locations also sampled by the EPA in June of 1999. On Figure 1 those locations have been renumbered as locations 1-East, 3-West, 2-South, and 5-Northeast, respectively. Solutia proposes, however, to move sampler 8 (new location 5-Northeast) to a location nearer the fenceline of the so-called "Miller property" to more accurately represent fenceline conditions. The proposed location is indicated on Figure 1. Solutia also proposes an additional sampler to be located near the fenceline on the North Drainage Ditch remediation area. That location has been designated as 4-North on Figure 1. These semimonthly sampling sessions will be conducted under the same protocol used for prior events. ADEM and Solutia have agreed that as properly validated air sampling results become available to Solutia, they will be reported to ADEM and to EPA approximately every two months. (The results will be provided in triplicate to both agencies, as requested in your July 20th letter.)

It remains Solutia's position that the air sampling data collected by Solutia and others validates the conceptual model for the Solutia Anniston facility as presented in the RFI/CIS Work Plan and that the current understanding that the air pathway is not a pathway of concern is justified.

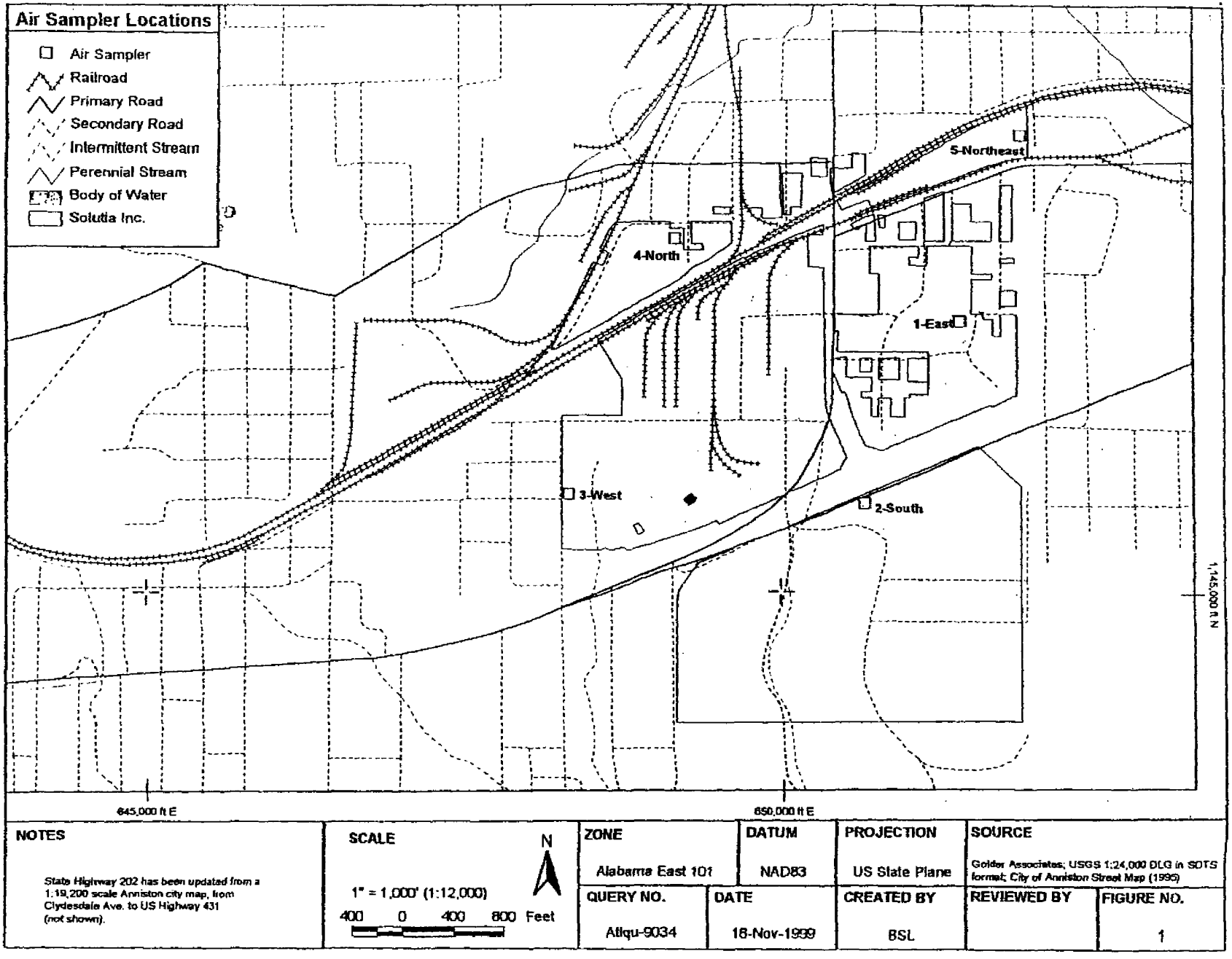
If you have questions or need further information, please contact me.

Sincerely,

Robert G. Kaley, II
Director, Environmental Affairs
Solutia Inc.

cc: Mr. Craig Branchfield, Solutia
Ms. Cheryl Browder, ADPH
Mr. Stephen Cobb, ADEM
Mr. James Grassiano, ADEM
Mr. Wesley Hardegree, EPA
Mr. Russ McLean, EPA

DSW 143628



NOTES	SCALE	ZONE	DATUM	PROJECTION	SOURCE
State Highway 202 has been updated from a 1:19,200 scale Anniston city map, from Clydesdale Ave. to US Highway 431 (not shown).	1" = 1,000' (1:12,000) 400 0 400 800 Feet N	Alabama East 101	NAD83	US State Plane	Golder Associates; USGS 1:24,000 DLG in SDTS format; City of Anniston Street Map (1995)
		QUERY NO.	DATE	CREATED BY	REVIEWED BY / FIGURE NO.
		Atlqu-9034	16-Nov-1999	BSL	1

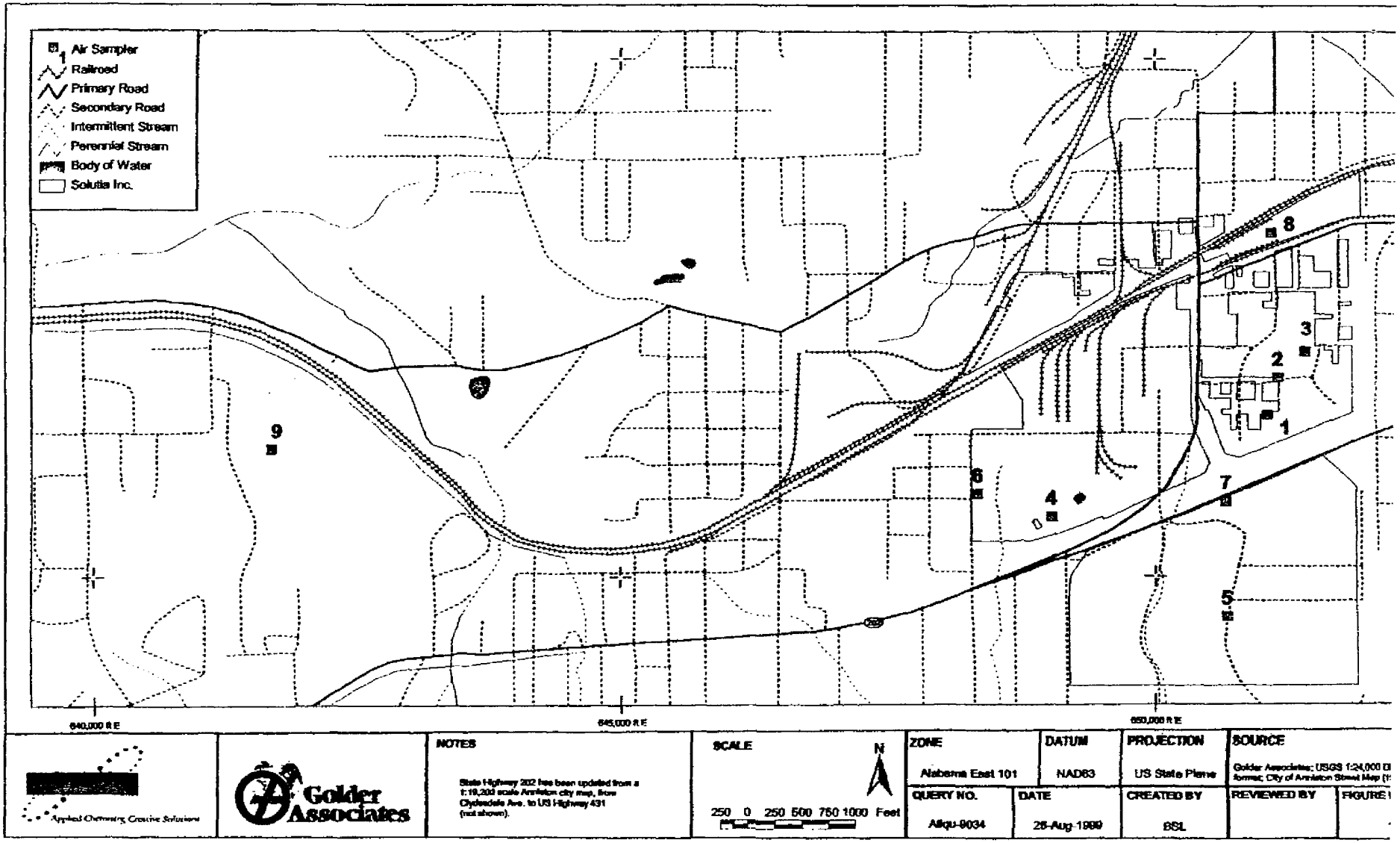
DSW 143629

APPENDIX I

DSW 143630

SOLUTIA INC. ANNISTON PLANT
PCB AIR LEVEL MEASUREMENTS
FEBRUARY 1998 TO JULY 1999

SEPTEMBER 2, 1999



DSW 143632

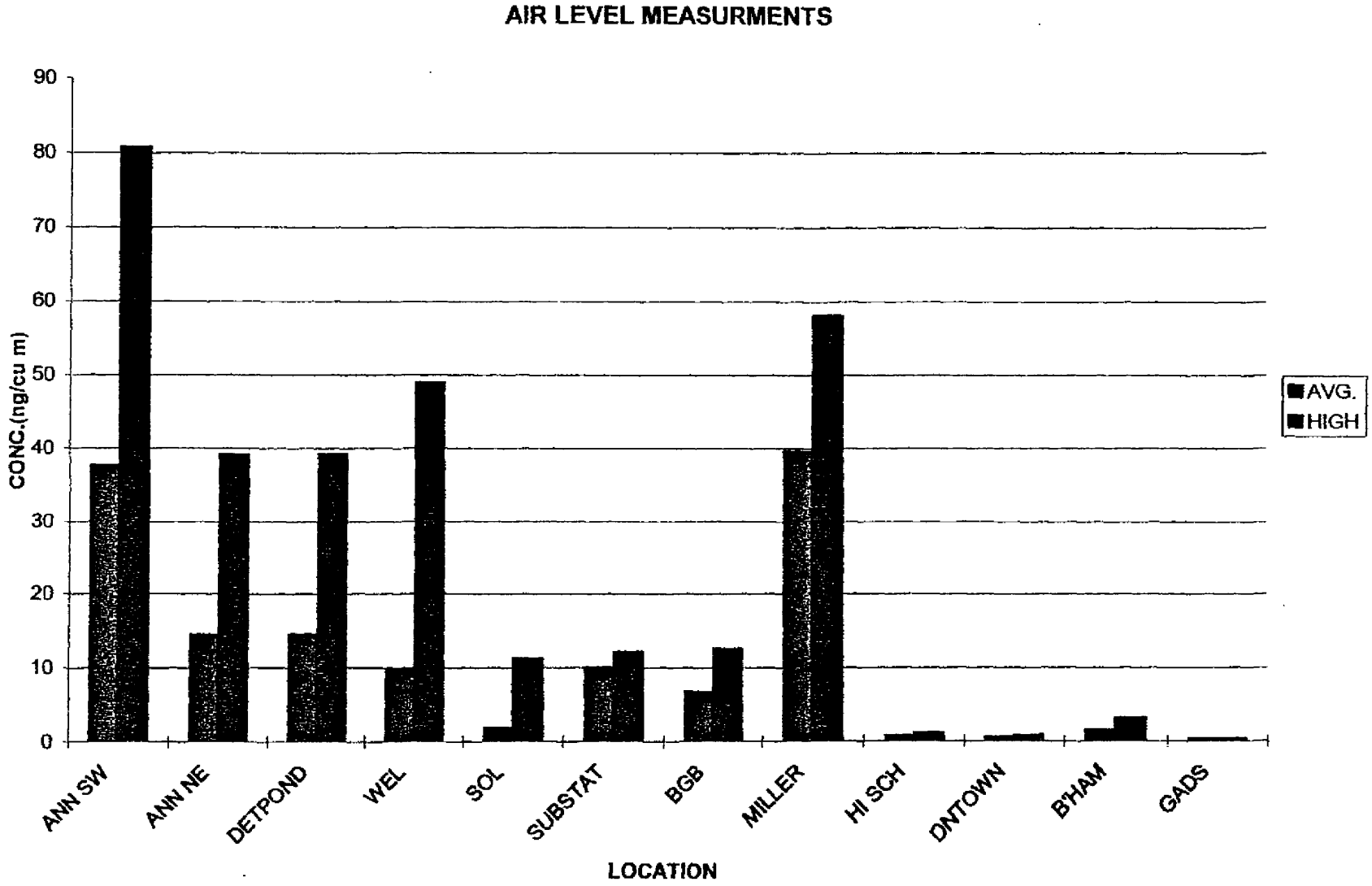
SOLUTIA ANNISTON PLANT

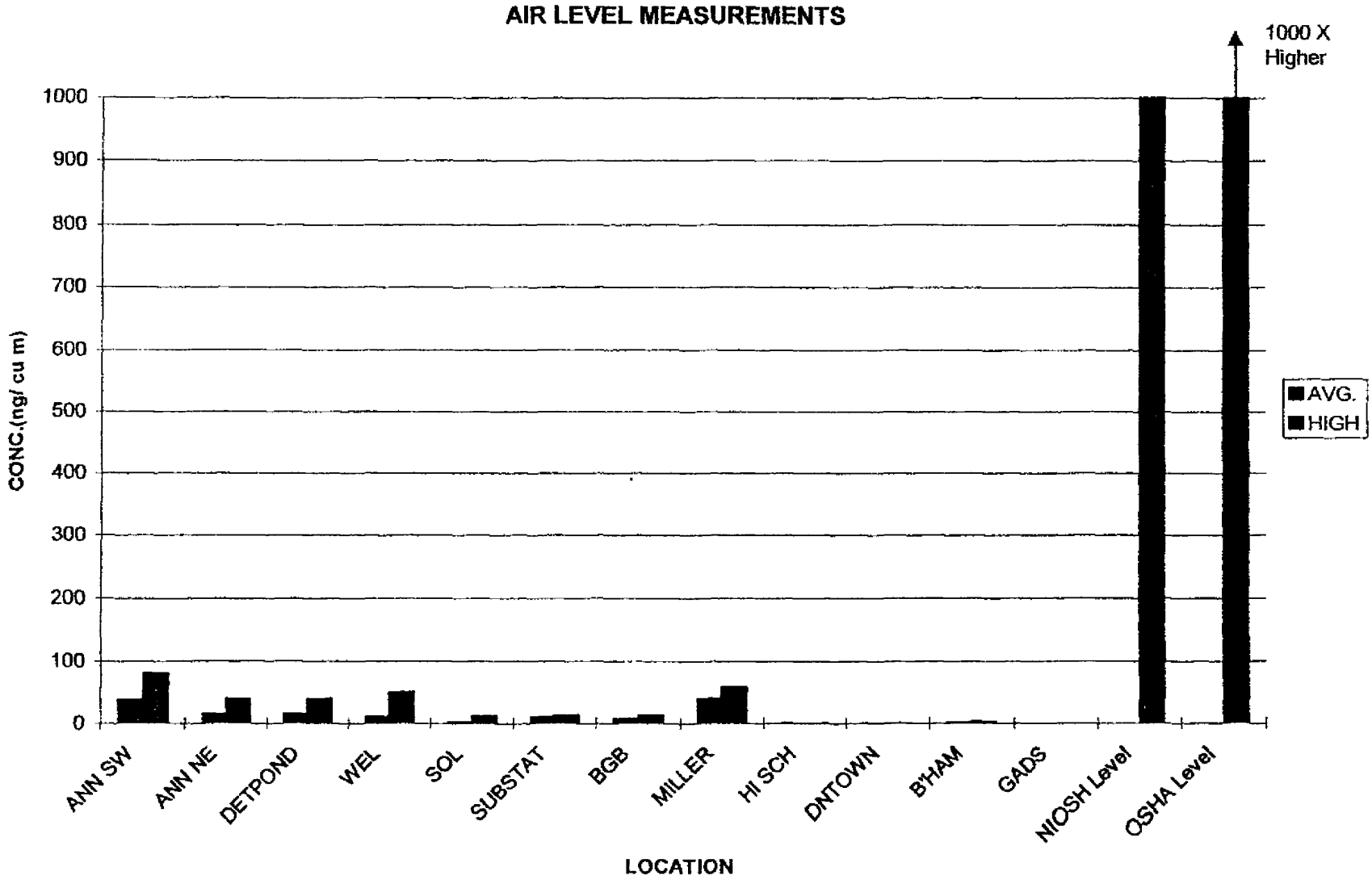
PCB AIR LEVELS (ng/m^3)

SAMPLER #/LOC.	1	2	2	3	4	4	5	6	7	8	9	N/S	N/S	N/S
DATE	ANN SW	ANN NE	ANN NE2	DETPOND	WEL	WEL2	SO L	SUBSTAT	BGB	MILLER	HI.SCH.	DNTOWN	B'HAM	GADS
02/18-19/98	49.4	25.1											1.4	0.3
02/19-20/98	56.1	26.1	27.4										0.9	0.3
02/23-24/98	34.6	23.1	21.2										0.4	0.2
02/24-25/98							0.8						3.1	0.3
04/09-09/98	80.7			32.0	3.4	2.7	1.2					0.8		
04/09-10/98	43.4	32.2		15.8	5.4		1.7					0.2		
04/14-15/98	61.6	6.9		5.2	1.3	1.0	0.1					0.4		
04/15-16/98	45.7	4.8		3.0	0.1	0.0	0.1					0.4		
10/22-23/98	13.9	3.4		3.3	2.9	2.8	0.0							
10/29-30/98	49.2	26.3		20.1	26.4		3.1							
11/05-06/98	14.3	8.1		10.6	6.2	6.2	1.7							
11/24-25/98	53.9	39.1		39.2	48.9		11.2							
12/12-13/98	4.3	1.1		0.7	0.2	1.2	0.2							
12/17-18/98	5.2	6.6		9.4	9.1		1.7							
01/09-10/99	0.1	0.2		0.1	1.1	1.0	0.2							
01/30-31/99	3.7	0.1		0.0	0.0		0.0							
02/20-21/99		0.7		0.1	3.9	3.7								
02/27-28/99		6.2			1.4		0.2							
03/20-21/99	26.8	16.5		16.0	11.0	8.6	4.0							
03/24-25/99		25.2		25.3	12.0		4.6							
04/23-24/99	33.3	17.2		27.5	10.6	8.4	0.4							
04/27-28/99		23.3		25.9	30.7		5.2							
05/22-23/99	71.1	18.8		18.3	23.1	24.8	2.0							
05/23-24/99	48.9	19.6		27.3	14.0		2.6							
06/12-13/99	19.5	0.8		1.5	3.0	3.5	0.4		1.7					
06/28-29/99	46.0	8.2		10.5	6.7		0.6	7.8	6.1	58.0	0.2			
06/29-30/99	61.2	28.7		30.3	9.0	9.0	3.5	12.2	12.6	46.0	1.1			
06/30-07/01/99	42.1	5.8		8.9	4.7		0.3	10.0	4.5	14.7	0.7			
AVG.	37.6	14.4	24.3	14.4	9.8	5.6	1.9	10.0	6.7	39.6	0.7	0.5	1.5	0.3

N/S - Not Shown on Map

DSM 143633





APPENDIX II

DSW 143636

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 1 - 2/18/98 through 2/19/98

Site	Birmingham		Gadsden		Anniston (SW)		Anniston (NE)		Anniston NE (Colo)		Background	
Volume (scm)	333.4		355.5		318.1		340.7		NA		NA	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	320	1.0	440	1.3	NA	NA	NA	NA
Di	96	0.3	21	0.1	1100	3.5	1000	2.9	NA	NA	NA	NA
Tri	280	0.8	72	0.2	4500	14	2800	8.2	NA	NA	NA	NA
Tetra	21	0.1	ND	ND	4900	15	2400	7.0	NA	NA	NA	NA
Penta	66	0.2	ND	ND	4400	14	1800	5.3	NA	NA	NA	NA
Hexa	ND	ND	ND	ND	410	1.3	120	0.4	NA	NA	NA	NA
Hepta	ND	ND	ND	ND	85	0.3	ND	ND	NA	NA	NA	NA
Octa	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Nona	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Deca	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Total PCBs		1.4		0.3		49.4		25.1				

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143637

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 2 - 2/19/98 through 2/20/98

Site	Birmingham		Gadsden		Anniston (SW)		Anniston (NE)		(Colo) Anniston NE		Background	
Volume (scm)	333.8		351.5		339.8		341.3		349.4		NA	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	280	0.8	320	0.9	360	1.0	NA	NA
Di	83	0.2	23	0.1	1400	4.1	1200	3.5	1200	3.4	NA	NA
Tri	230	0.7	77	0.2	5400	16	2900	8.5	3200	9.2	NA	NA
Tetra	ND	ND	ND	ND	7100	21	2700	7.9	3200	9.2	NA	NA
Penta	ND	ND	ND	ND	4200	12	1600	4.7	1400	4.0	NA	NA
Hexa	ND	ND	ND	ND	530	1.6	160	0.5	190	0.5	NA	NA
Hepta	ND	ND	ND	ND	139	0.4	22	0.1	25	0.1	NA	NA
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Total PCBs		0.9		0.3		56.1		26.1		27.4		

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143638

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 3 - 2/23/98 through 2/24/98

Site	Birmingham		Gadsden		Anniston (SW)		Anniston (NE)		(Colo) Anniston NE		Background	
Volume (scm)	315.8		359.5		319.8		319.2		347.4		NA	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	290	0.9	490.0	1.5	480.0	1.4	NA	NA
Di	41	0.1	ND	ND	1200	3.8	1400.0	4.4	1300.0	3.7	NA	NA
Tri	97	0.3	58	0.2	3500	10.9	2600.0	8.1	2700.0	7.8	NA	NA
Tetra	ND	ND	ND	ND	3800	11.9	1800.0	5.6	1800.0	5.2	NA	NA
Penta	ND	ND	ND	ND	2000	6.3	1000.0	3.1	1000.0	2.9	NA	NA
Hexa	ND	ND	ND	ND	240	0.8	96.0	0.3	100.0	0.3	NA	NA
Hepta	ND	ND	ND	ND	44	0.1	ND	ND	ND	ND	NA	NA
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Total PCBs		0.4		0.2		34.6		23.1		21.2		

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143639

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 4 - 2/24/98 through 2/25/98

Site	Birmingham		Gadsden		Anniston (SW)		Anniston (NE)		(Colo) Anniston (NE)		Background	
Volume (scm)	304.2		335.8		NS		NS		NS		361.5	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Di	170	0.6	26	0.1	NS	NS	NS	NS	NS	NS	49	0.1
Tri	490	1.6	79	0.2	NS	NS	NS	NS	NS	NS	180	0.5
Tetra	230	0.8	ND	ND	NS	NS	NS	NS	NS	NS	77	0.2
Penta	39	0.1	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Hexa	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Hepta	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Octa	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Nona	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Deca	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	ND	ND
Total PCBs		3.1		0.3								0.8

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NS - Not submitted for analysis; power interruption occurred at site during sampling period due to sampler motor failure.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters

DSM 143640

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 5 - 4/08/98 through 4/09/98

Site	Detention Pond		Downtown Anniston		Anniston (SW)		Anniston (NE)		West Landfill		West Landfill (colo)		Background	
Volume (scm)	339.1		351.4		332.2		NS		381.0		269.9		353.3	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	200	0.6	ND	ND	170	0.5	NS	NS	21	0.1	ND	ND	ND	ND
Di	1300	3.8	44	0.1	1200	3.6	NS	NS	330	0.9	220	0.8	80	0.2
Tri	2400	7.1	220	0.6	5600	16.9	NS	NS	640	1.7	420	1.6	220	0.6
Tetra	4600	14	ND	ND	11000	33.1	NS	NS	230	0.6	98	0.4	76	0.2
Penta	1900	5.6	ND	ND	6800	20.5	NS	NS	83	0.2	ND	ND	41	0.1
Hexa	350	1.0	ND	ND	1500	4.5	NS	NS	ND	ND	ND	ND	20	ND
Hepta	89	0.3	ND	ND	510	1.5	NS	NS	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	23	0.1	NS	NS	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND
Total PCBs		32.0		0.8		80.7				3.4		2.7		1.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NS - Not submitted for analysis; power interruption at site during sampling period due to severe weather.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143641

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 6 - 4/09/98 through 4/10/98

Site	Detention Pond		Downtown Anniston		Anniston (SW)		Anniston (NE)		West Landfill		Background	
Volume (scm)	374.8		343.7		341.1		329.0		370.0		363.29	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	77	0.2	ND	ND	260	0.8	320	1.0	56	0.2	21	0.1
Di	730	1.9	ND	ND	1700	5.0	1500	4.6	590	1.6	180	0.5
Tri	1800	4.8	62	0.2	4400	12.9	3700	11.2	1100	3.0	370	1.0
Tetra	2300	6.1	ND	ND	5400	15.8	3300	10.0	260	0.7	57	0.2
Penta	880	2.3	ND	ND	2500	7.3	1500	4.6	ND	ND	ND	ND
Hexa	130	0.3	ND	ND	440	1.3	250	0.8	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	88	0.3	24	0.1	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		15.8		0.2		43.4		32.2		5.4		1.7

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143642

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 7 - 4/14/98 through 4/15/98

Site	Detention Pond		Downtown Anniston		Anniston (SW)		Anniston (NE)		West Landfill		West Landfill (Colo)		Background	
Volume (scm)	359.0		343.4		300.1		335.2		319.0		293.2		322.4	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	23	0.1	ND	ND	26	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Di	84	0.2	21	0.1	330	1.1	95	0.3	27	0.1	21	0.1	ND	ND
Tri	360	1.0	120	0.3	2900	9.7	440	1.3	150	0.5	100	0.3	40	0.1
Tetra	760	2.1	ND	ND	8200	27.3	1000	3.0	150	0.5	88	0.3	ND	ND
Penta	540	1.5	ND	ND	5400	18.0	640	1.9	100	0.3	85	0.3	ND	ND
Hexa	89	0.2	ND	ND	1300	4.3	130	0.4	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	320	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		5.2		0.4		61.6		6.9		1.3		1.0		0.1

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143643

Mars Hill Missionary Baptist Church v. Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 8 - 4/15/98 through 4/16/98

Site	Detention Pond		Downtown Anniston		Anniston (SW)		Anniston (NE)		West Landfill		West Landfill (Colo)		Background	
Volume (scm)	312.6		343.4		339.8		336.4		310.8		297.0		312.4	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di	44	0.1	ND	ND	230	0.7	42	0.1	ND	ND	ND	ND	ND	ND
Tri	210	0.7	130	0.4	2300	6.8	330	1.0	22	0.1	ND	ND	22	0.1
Tetra	320	1.0	ND	ND	6300	18.5	650	1.9	ND	ND	ND	ND	ND	ND
Penta	350	1.1	ND	ND	5400	15.9	490	1.5	ND	ND	ND	ND	ND	ND
Hexa	24	0.1	ND	ND	950	2.8	91	0.3	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	360	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		3.0		0.4		45.7		4.8		0.1		ND		0.1

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143644

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 9 - 10/22/98 through 10/23/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	339.4		333.0		372.7		355.5		318.6		342.8	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	43	0.1	28	0.1	38	0.1	100	0.3	100	0.3	ND	ND
Di	260	0.8	180	0.5	240	0.6	270	0.8	240	0.8	ND	ND
Tri	390	1.1	860	2.6	390	1.0	380	1.1	320	1.0	ND	ND
Tetra	340	1.0	2200	6.6	430	1.2	230	0.6	180	0.6	ND	ND
Penta	90	0.3	1200	3.6	160	0.4	52	0.1	47	0.1	ND	ND
Hexa	ND	ND	160	0.5	ND	ND	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		3.3		13.9		3.4		2.9		2.8		ND

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143645

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 10 - 10/29/98 through 10/30/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	393.0		324.5		354.3		369.9				333.6	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	280	0.7	240	0.7	280	0.8	400	1.1	NA	NA	34	0.1
Di	1900	4.8	1500	4.6	1900	5.4	2400	6.5	NA	NA	320	1.0
Tri	3000	7.6	3900	12.0	3400	9.6	4400	11.9	NA	NA	540	1.6
Tetra	1900	4.8	6000	18.5	2400	6.8	1900	5.1	NA	NA	130	0.4
Penta	700	1.8	3600	11.1	1200	3.4	600	1.6	NA	NA	ND	ND
Hexa	91	0.2	570	1.8	150	0.4	81	0.2	NA	NA	ND	ND
Hepta	ND	ND	170	0.5	ND	ND	ND	ND	NA	NA	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Total PCBs		20.1		49.2		26.3		26.4		NA		3.1

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143646

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 11 - 11/05/98 through 11/06/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	314.7		323.1		369.8		386.7		323.8		336.8	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	100	0.3	48	0.1	110	0.3	64	0.2	57	0.2	26	0.1
Di	600	1.9	250	0.8	520	1.4	600	1.6	510	1.6	120	0.4
Tri	1700	5.4	1600	5.0	1600	4.3	1400	3.6	1200	3.7	440	1.3
Tetra	650	2.1	1400	4.3	390	1.1	240	0.6	180	0.6	ND	ND
Penta	290	0.9	1200	3.7	380	1.0	85	0.2	70	0.2	ND	ND
Hexa	ND	ND	120	0.4	ND	ND	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		10.6		14.3		8.1		6.2		6.2		1.7

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143947

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 12 - 11/24/98 through 11/25/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	290.7		302.5		349.8		362.1				314.7	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	450	1.5	450	1.5	520	1.5	870	2.4	NA	NA	150	0.5
Di	2700	9.3	2700	8.9	3200	9.1	4300	11.9	NA	NA	910	2.9
Tri	6200	21.3	6700	22.1	7200	20.6	9800	27.1	NA	NA	2100	6.7
Tetra	1400	4.8	3400	11.2	1800	5.1	2000	5.5	NA	NA	300	1.0
Penta	610	2.1	2400	7.9	840	2.4	650	1.8	NA	NA	76	0.2
Hexa	48	0.2	300	1.0	100	0.3	73	0.2	NA	NA	ND	ND
Hepta	ND	ND	300	1.0	ND	ND	ND	ND	NA	NA	ND	ND
Octa	ND	ND	49	0.2	ND	ND	ND	ND	NA	NA	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Total PCBs		39.2		53.9		39.1		48.9		NA		11.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143648

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 13 - 12/12/98 through 12/13/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	332.1		368.7		407.6		330.8		290.6		344.1	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	40	0.1	34	0.1	ND	ND	21	0.1	ND	ND
Di	57	0.2	100	0.3	91	0.2	34	0.1	97	0.3	35	0.1
Tri	100	0.3	320	0.9	190	0.5	48	0.1	200	0.7	27	0.1
Tetra	81	0.2	660	1.8	120	0.3	ND	ND	21	0.1	ND	ND
Penta	ND	ND	400	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Hexa	ND	ND	79	0.2	ND	ND	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		0.7		4.3		1.1		0.2		1.2		0.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143648.01

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 14 - 12/17/98 through 12/18/98

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	344.6		362.9		396.5		389.9				366.3	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	120	0.3	63	0.2	58	0.1	97	0.2	NA	NA	22	0.1
Di	950	2.8	260	0.7	740	1.9	1000	2.6	NA	NA	230	0.6
Tri	1500	4.4	490	1.4	1200	3.0	1700	4.4	NA	NA	350	1.0
Tetra	590	1.7	770	2.1	520	1.3	700	1.8	NA	NA	22	0.1
Penta	72	0.2	290	0.8	80	0.2	52	0.1	NA	NA	ND	ND
Hexa	ND	ND	22	0.1	ND	ND	ND	ND	NA	NA	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND
Total PCBs		9.4		5.2		6.6		9.1		NA		1.7

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
NA - Not applicable; sampler unused during this sampling session.
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143649

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 15 - January 9, 1999 through January 10, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	332.4		339.0		410.2		404.6		339.7		345.1	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	20	0.1	64	0.2	35	0.1	31	0.1	27	0.1	22	0.1
Di	ND	ND	63	0.2	22	0.1	210	0.5	170	0.5	23	0.1
Tri	ND	ND	ND	ND	ND	ND	220	0.5	150	0.4	ND	ND
Tetra	ND	ND	130	0.4	ND	ND	ND	ND	ND	ND	ND	ND
Penta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		0.1		0.8		0.2		1.1		1.0		0.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143650

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 16 - January 30 through January 31, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site	
Volume (scm)	296.7		320.7		359.1		356.7		321.1	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tri	ND	ND	110	0.3	ND	ND	ND	ND	ND	ND
Tetra	ND	ND	520	1.6	24	0.1	ND	ND	ND	ND
Penta	ND	ND	480	1.5	ND	ND	ND	ND	ND	ND
Hexa	ND	ND	90	0.3	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		ND		3.7		0.1		ND		ND

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143651

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 17 - February 20 through February 21, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill (Colo)		Background Site	
Volume (scm)	321.8		NR2		405.8		361.4		322.8		NR1	
PCB Congener Class	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3	ng/ sample	ng/m^3
Mono	24	0.1	NR2	NR2	57	0.1	76	0.2	67	0.2	NR1	NR1
Di	ND	ND	NR2	NR2	22	0.1	650	1.8	550	1.7	NR1	NR1
Tri	68	0.2	NR2	NR2	75	0.2	530	1.5	460	1.4	NR1	NR1
Tetra	26	0.1	NR2	NR2	110	0.3	140	0.4	130	0.4	NR1	NR1
Penta	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Hexa	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Hepta	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Octa	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Nona	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Deca	ND	ND	NR2	NR2	ND	ND	ND	ND	ND	ND	NR1	NR1
Total PCBs		0.1		NR2		0.7		3.9		3.7		NR1

NR1 - Not reported due to sampler motor failure during this sampling session.
NR2 - Not reported due to suspected sampler tampering; upon sample recovery, field technician noted missing filter and unscrewed filter housing bolts.

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m^3 at 350 m^3 sample volume).

Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).

"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

scm - standard cubic meters.

DSM 143652

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 18 - February 27 through February 28, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site	
Volume (scm)	NA1		NA2		403.7		387.8		375.5	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	NA1	NA1	NA2	NA2	240	0.6	ND	ND	ND	ND
Di	NA1	NA1	NA2	NA2	820	2.0	240	0.6	43	0.1
Tri	NA1	NA1	NA2	NA2	930	2.3	270	0.7	28	0.1
Tetra	NA1	NA1	NA2	NA2	400	1.0	21	0.1	ND	ND
Penta	NA1	NA1	NA2	NA2	100	0.2	ND	ND	ND	ND
Hexa	NA1	NA1	NA2	NA2	ND	ND	ND	ND	ND	ND
Hepta	NA1	NA1	NA2	NA2	ND	ND	ND	ND	ND	ND
Octa	NA1	NA1	NA2	NA2	ND	ND	ND	ND	ND	ND
Nona	NA1	NA1	NA2	NA2	ND	ND	ND	ND	ND	ND
Deca	NA1	NA1	NA2	NA2	ND	ND	ND	ND	ND	ND
Total PCBs		NA1		NA2		6.2		1.4		0.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
NA1 - Not analyzed; no electrical power at sample collection.
NA2 - Not analyzed; sampler motor failure.

DSW 143653

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 19 - March 20 through March 21, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill Cell		Background Site	
Volume (scm)	347.4		361.0		378.6		388.1		318.0		368.7	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	180	0.5	220	0.6	260	0.7	97	0.2	64	0.2	34	0.1
Di	1300	3.7	1300	3.6	1400	3.7	1100	2.8	880	2.8	500	1.4
Tri	2600	7.5	3800	10.5	3000	7.9	2500	6.4	1900	6.0	360	1.0
Tetra	920	2.6	2200	6.1	940	2.5	460	1.2	290	0.9	100	0.3
Penta	530	1.5	1900	5.3	610	1.6	110	0.3	75	0.2	ND	ND
Hexa	22	0.1	240	0.7	50	0.1	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	24	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		16.0		26.8		16.5		11.0		8.6		4.0

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample)
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143654

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 20 - March 24 through March 25, 1999

Site	Detention Pond		South West NC		North East		West Landfill		Background Site	
Volume (scm)	342.7				353.4		399.3		383.8	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	290	0.8	NC	NC	310	0.9	120	0.3	35	0.1
Di	1800	5.3	NC	NC	1900	5.4	1000	2.5	360	0.9
Tri	4700	13.7	NC	NC	4700	13.3	2600	6.5	1100	2.9
Tetra	1500	4.4	NC	NC	1500	4.2	960	2.4	260	0.7
Penta	320	0.9	NC	NC	410	1.2	110	0.3	ND	ND
Hexa	45	0.1	NC	NC	90	0.3	ND	ND	ND	ND
Hepta	ND	ND	NC	NC	ND	ND	ND	ND	ND	ND
Octa	ND	ND	NC	NC	ND	ND	ND	ND	ND	ND
Nona	ND	ND	NC	NC	ND	ND	ND	ND	ND	ND
Deca	ND	ND	NC	NC	ND	ND	ND	ND	ND	ND
Total PCBs		25.3		NC		25.2		12.0		4.6

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
NC - Not collected; no power at pole servicing this sampler at session setup.

DSM 143655

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 21 - April 23 through April 24, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill Colo		Background Site	
Volume (scm)	316.0		357.3		314.8		385.0		317.1		114.3	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	270	0.9	140	0.4	220	0.7	70	0.2	60	0.2	ND	ND
Di	1700	5.4	720	2.0	1200	3.8	690	1.8	530	1.4	27	0.2
Tri	2300	7.3	2200	6.2	1500	4.8	1100	2.9	870	2.3	21	0.2
Tetra	3200	10.1	4600	12.9	1700	5.4	1500	3.9	1300	3.4	ND	ND
Penta	860	2.7	3200	9.0	580	1.8	420	1.1	260	0.7	ND	ND
Hexa	260	0.8	790	2.2	200	0.6	220	0.6	180	0.5	ND	ND
Hepta	100	0.3	250	0.7	29	0.1	74	0.2	22	0.1	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		27.5		33.3		17.2		10.6		8.4		0.4

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
Background site sampler operated for 6.94 hours due to GFI trip, resulting in decreased sample volume for this sample.

DSW 143656

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 22 - April 27 through April 28, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site	
Volume (scm)	328.2		374.3		353.4		378.7		379.1	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	510	1.6	370	1.0	510	1.4	570	1.5	75	0.2
Di	2500	7.6	1600	4.3	2500	7.1	3100	8.2	660	1.7
Tri	3000	9.1	2700	7.2	3000	8.5	5100	13.5	970	2.6
Tetra	2000	6.1	4300	11.5	1800	5.1	2200	5.8	260	0.7
Penta	370	1.1	2000	5.3	320	0.9	490	1.3	ND	ND
Hexa	110	0.3	520	1.4	94	0.3	130	0.3	ND	ND
Hepta	ND	ND	160	0.4	ND	ND	24	0.1	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		25.9		NC		23.3		30.7		5.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
NC - Not collected; no power at pole servicing this sampler at session setup.

DSW 143657

Monsanto Company

Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations

SESSION 23 - May 22 through May 23, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill (colo)		Background Site	
Volume (scm)	321.9		367.0		338.1		374.8		283.6		373.1	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	120	0.4	110	0.3	160	0.5	320	0.9	280	1.0	30	0.1
Di	910	2.8	970	2.6	1000	3.0	2000	5.3	1700	6.0	230	0.6
Tri	1900	5.9	3600	9.8	2100	6.2	3600	9.6	2800	9.9	380	1.0
Tetra	2100	6.5	12000	32.7	2100	6.2	2000	5.3	1700	6.0	110	0.3
Penta	750	2.3	7300	19.9	840	2.5	630	1.7	490	1.7	ND	ND
Hexa	120	0.4	1600	4.4	140	0.4	110	0.3	61	0.2	ND	ND
Hepta	ND	ND	470	1.3	21	0.1	ND	ND	ND	ND	ND	ND
Octa	ND	ND	26	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		18.3		71.1		18.8		23.1		24.8		2.0

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).

Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).

"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

scm - standard cubic meters.

DSM 143658

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 24 - May 23 through May 24, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site	
Volume (scm)	305.0		381.9		324.5		366.9		355.7	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	160	0.5	74	0.2	150	0.5	100	0.3	27	0.1
Di	1700	5.6	710	1.9	1200	3.7	1400	3.8	270	0.8
Tri	2900	9.5	2700	7.1	2600	8.0	2700	7.4	530	1.5
Tetra	2300	7.5	7000	18.3	1400	4.3	700	1.9	110	0.3
Penta	1100	3.6	6700	17.5	860	2.7	220	0.6	ND	ND
Hexa	140	0.5	1100	2.9	130	0.4	ND	ND	ND	ND
Hepta	26	0.1	380	1.0	22	0.1	ND	ND	ND	ND
Octa	ND	ND	21	0.1	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		27.3		48.9		19.6		14.0		2.6

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143659

TOTAL P.05

Monsanto Company

Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations

SESSION 25 - June 12 through June 13, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill- Colo		Background Site		BGB	
Volume (scm)	315.4		358.6		328.8		391.2		296.6		365.9		279.1	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di	ND	ND	30	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tri	130	0.4	730	2.0	22	0.1	170	0.4	130	0.4	21	0.1	110	0.4
Tetra	210	0.7	3400	9.5	140	0.4	610	1.6	510	1.7	ND	ND	230	0.8
Penta	90	0.3	1900	5.3	78	0.2	300	0.8	190	0.6	ND	ND	82	0.3
Hexa	50	0.2	670	1.9	23	0.1	110	0.3	130	0.4	45	0.1	43	0.2
Hepta	ND	ND	260	0.7	ND	ND	ND	ND	67	0.2	74	0.2	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		1.5		19.5		0.8		3.0		3.5		0.4		1.7

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).

Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).

"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

scm - standard cubic meters.

DSW 143660

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 26 - June 28 through June 29, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site		BGB		High School		Sub Station		Miller's Property	
Volume (scm)	269.8		279.4		289.0		352.3		359.1		319.5		352.8		315.6		143.7	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	49	0.2	21	0.1	53	0.2	51	0.2	ND	ND	31	0.1	ND	ND	[illegible]	0.2	[illegible]	1.1
Di	470	1.6	210	0.8	300	1.0	380	1.1	44	0.1	270	0.8	43	0.1	[illegible]	2.2	[illegible]	22.3
Tri	640	2.4	1100	3.9	780	2.7	930	2.6	160	0.4	760	2.4	44	0.1	[illegible]	3.2	[illegible]	20.9
Tetra	1000	3.7	5500	19.7	590	2.0	350	1.0	ND	ND	580	1.8	ND	ND	[illegible]	1.8	[illegible]	11.1
Penta	520	1.9	4200	15.4	570	2.0	630	1.8	ND	ND	860	2.7	ND	ND	[illegible]	0.3	[illegible]	2.1
Hexa	140	0.5	1200	4.3	86	0.3	ND	ND	ND	ND	97	0.3	ND	ND	ND	ND	[illegible]	0.5
Hepta	70	0.3	450	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	69	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		10.5		46.0		8.2		6.7		0.6		8.1		0.2		7.8		58.0

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
GFI circuits tripped overnight at Miller Property and Southwest locations due to heavy storms; circuits reset and samplers operational in morning.

DSM 143621

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 27 - June 29 through June 30, 1999

Site	Detention Pond		South West		North East		West Landfill		West Landfill Colo		Background Site		BGB		High School		Sub Station		Miller's Property	
Volume (scm)	302.5		353.9		304.3		337.8		369.5		338.6		322.4		347.2		343.7		343.4	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	160	0.5	92	0.3	160	0.5	48	0.1	46	0.1	ND	ND	60	0.2	ND	ND	[illegible]	0.3	[illegible]	1.1
Di	2300	7.6	1300	3.7	2400	7.9	670	2.0	770	2.1	270	0.8	1000	3.1	190	0.5	[illegible]	3.2	[illegible]	11
Tri	4100	13.6	3100	8.8	3900	12.8	1700	5.0	1700	4.6	830	2.5	1600	5.0	180	0.5	[illegible]	5.5	[illegible]	20
Tetra	1600	5.3	6700	18.9	1400	4.6	390	1.2	520	1.4	74	0.2	820	2.5	ND	ND	[illegible]	2.4	[illegible]	9.0
Penta	880	2.8	8300	23.5	740	2.4	240	0.7	300	0.8	ND	ND	480	1.5	ND	ND	[illegible]	0.8	[illegible]	4.1
Hexa	130	0.4	1500	4.2	120	0.4	ND	ND	ND	ND	ND	ND	98	0.3	ND	ND	ND	ND	[illegible]	0.5
Hepta	27	0.1	590	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	26	0.1
Octa	ND	ND	87	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		30.3		61.2		28.7		9.0		9.0		3.5		12.6		1.1		12.2		46.8

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

DSW 143662

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 28 - June 30 through July 1, 1999

Site	Detention Pond		South West		North East		West Landfill		Background Site		BGB		High School		Sub Station		Miller's Property	
Volume (scm)	301.7		351.5		300.6		351.4		344.9		314.5		359.9		301.6		4E+002	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	39	0.1	29	0.1	36	0.1	56	0.2	ND	ND	30	0.1	ND	ND	[illegible]	0.3	[illegible]	0.5
Di	580	1.9	400	1.1	410	1.4	470	1.3	41	0.1	280	0.9	94	0.3	[illegible]	2.6	[illegible]	2.8
Tri	940	3.1	1400	4.0	390	1.3	530	1.5	47	0.1	310	1.0	160	0.4	[illegible]	4.3	[illegible]	4.2
Tetra	720	2.4	5600	15.9	530	1.8	420	1.2	ND	ND	420	1.3	ND	ND	[illegible]	2.1	[illegible]	4.2
Penta	340	1.1	5600	15.9	360	1.2	180	0.5	ND	ND	330	1.0	ND	ND	[illegible]	0.5	[illegible]	2.5
Hexa	81	0.3	1200	3.4	26	0.1	22	0.1	ND	ND	65	0.2	ND	ND	ND	ND	[illegible]	0.3
Hepta	ND	ND	510	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0
Octa	ND	ND	69	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0
Total PCBs		8.9		42.1		5.8		4.7		0.3		4.5		0.7		10.0		14.7

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
Sub-station site GFI circuit tripped after 20.65 hours of sampler operation.

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 29 - September 9 through September 10, 1999

Site	Detention Pond		Private Miller's Property		North East		West Landfill		West Landfill-Cola		Background Site		BGB (Bottom of South Landfill)		Sub Station	
Volume (scm)	314.6		339.9		310.0		367.8		327.7		337.8		321.0		370.4	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	100	0.3	270	0.8	64	0.2	90	0.2	110	0.3	29	0.1	50	0.2	87	0.2
Di	880	2.8	2300	6.8	730	2.4	730	2.0	1000	3.1	330	1.0	480	1.5	690	1.9
Tri	5400	17.2	9600	28.2	4500	14.5	4400	12.0	3200	9.8	1200	3.6	4300	13.4	3400	9.2
Tetra	1400	4.5	2100	6.2	1100	3.5	870	2.4	1300	4.0	180	0.5	1400	4.4	840	2.3
Penta	810	2.6	1100	3.2	1400	4.5	470	1.3	740	2.3	47	0.1	1400	4.4	270	0.7
Hexa	88	0.3	140	0.4	130	0.4	88	0.2	110	0.3	ND	ND	220	0.7	ND	ND
Hepta	ND	ND	21	0.1	21	0.1	ND	ND	ND	ND	ND	ND	61	0.2	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		27.6		45.7		25.6		18.1		19.7		5.3		24.8		14.3

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSW 143664

Monsanto Company
Alabama Ambient PCBs Measurements Program

Ambient PCB Concentrations
SESSION 30 - September 10 through September 11, 1999

Site	Detention Pond		Private (Miller's Property)		North East		West Landfill		Background Site		BGB (Bottom of South Landfill)		Sub Station	
Volume (scm)	302.6		355.4		322.9		365.5		333.7		310.0		343.6	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	99	0.3	120	0.3	28	0.1	250	0.7	ND	0.0	72	0.2	200	0.6
Di	850	2.8	1000	2.8	310	1.0	1300	3.6	ND	0.0	440	1.4	2100	6.1
Tri	5100	16.9	5600	15.8	2400	7.4	5400	14.8	130	0.4	2700	8.7	7600	22.1
Tetra	3500	11.6	2200	6.2	1900	5.9	2600	7.1	26	0.1	2600	8.4	1800	5.2
Penta	2100	6.9	1200	3.4	1600	5.0	1400	3.8	ND	ND	2000	6.5	680	2.0
Hexa	250	0.8	110	0.3	160	0.5	240	0.7	ND	ND	290	0.9	77	0.2
Hepta	53	0.2	ND	ND	23	0.1	52	0.1	ND	ND	65	0.2	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		39.5		28.8		19.9		30.8		0.5		26.3		35.3

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.

DSM 143695

ATTACHMENT III

DSW 143666

SOLUTIA

Applied Chemistry, Creative Solutions

April 18, 2000

Mr. Wm. Gerald Hardy, Chief
Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36130-1463

Re: Bimonthly Submittal of Air Monitoring Data
Solutia Inc.
702 Clydesdale Ave.
Anniston, AL 36201-5390
USEPA I.D. No. ALD 004 019 048

Dear Mr. Hardy:

In accordance with your letter dated December 15, 1999, Solutia is submitting validated air monitoring data for January and February of 2000. Enclosed are the data sheets for sessions 37 through 40. Also in included is an updated Microsoft Excel® spreadsheet, which has been revised from previous versions to reflect the new locations of air samplers on Solutia property. Also attached is a map, which has been previously submitted to ADEM, showing the sampling locations by numbers which correspond to the first row of the spreadsheet.

As requested by ADEM, these results are being submitted in triplicate to ADEM and to the U. S. EPA Region IV. If you have questions or need further information, please contact me.

Sincerely,

Robert G. Kaley, II
Director, Environmental Affairs
Solutia Inc.

DSW 143667

cc: Mr. Craig Branchfield
Mr. Stephen Cobb - ADEM
Mr. James Grassiano - ADEM
Mr. Richard Canady - ATSDR
Mr. Wesley Hardegree - EPA (3)
Mr. Russ McLean - EPA
Mr. Craig Brown - EPA
Karen Knight - EPA, Anniston Office

Solutia Inc.
2000 Ambient PCBs Measurements Program - Anniston, AL

Ambient PCB Concentrations
SESSION 37 - January 25 through January 26, 2000

Site	1-EAST		1-East (Colo)		2-South		3-West		4-North		5-Northeast	
Volume (scm)	341.1		332.0		365.0		350.9		334.2		390.5	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	ND	ND	ND	ND	140	0.4	60	0.2	ND	ND	ND	ND
Di	ND	ND	ND	ND	1800	4.9	92	0.3	ND	ND	ND	ND
Tri	ND	ND	ND	ND	3200	8.8	94	0.3	120	0.4	ND	ND
Tetra	ND	ND	ND	ND	1100	3.0	22	0.1	520	1.6	ND	ND
Penta	ND	ND	ND	ND	110	0.3	ND	ND	49	0.1	ND	ND
Hexa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		0.0		0.0		17.4		0.8		2.1		0.0

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

DSM 143668

Solutia Inc.
2000 Ambient PCBs Measurements Program - Anniston, AL

Ambient PCB Concentrations
SESSION 38 - January 26 through January 27, 2000

Site	1-EAST		1-East (Colo)		2-South		3-West		4-North		5-Northeast	
olume (scm)	347.0		354.3		NR		333.7		387.0		360.4	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	45	0.1	50	0.1	NR	NR	78	0.2	86	0.2	100	0.3
Di	100	0.3	100	0.3	NR	NR	1100	3.3	230	0.6	200	0.6
Tri	46	0.1	73	0.2	NR	NR	1400	4.2	330	0.9	99	0.3
Tetra	ND	ND	ND	ND	NR	NR	630	1.9	350	0.9	22	0.1
Penta	ND	ND	ND	ND	NR	NR	20	0.1	21	0.1	ND	ND
Hexa	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Hepta	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Total PCBs		0.6		0.6		NR		9.7		2.6		1.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
NR - Not reported; sampler started Jan 26, 2000 but not operating upon sample recovery Jan 27, 2000.

DSW 143669

Solutia Inc.
2000 Ambient PCBs Measurements Program - Anniston, AL

Ambient PCB Concentrations
SESSION 39 - February 24 through February 25, 2000

Site	1-EAST		1-East (Colo)		2-South		3-West		4-North		5-Northeast	
olume (scm)	322.3		370.7		NR		359.8		335.7		358.3	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	ND	ND	ND	ND	NR	NR	ND	ND	240	0.7	620	1.7
Di	ND	ND	ND	ND	NR	NR	28	0.1	640	1.9	2200	6.1
Tri	ND	ND	ND	ND	NR	NR	74	0.2	1500	4.5	780	2.2
Tetra	ND	ND	ND	ND	NR	NR	41	0.1	2000	6.0	380	1.1
Penta	ND	ND	20	0.1	NR	NR	ND	ND	980	2.9	70	0.2
Hexa	ND	ND	ND	ND	NR	NR	ND	ND	53	0.2	20	0.1
Hepta	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND
Total PCBs		0.0		0.1		NR		0.4		16.1		11.4

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).
Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).
"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.
scm - standard cubic meters.
NR - Not reported; sampler started Feb 24, 2000 but not operating upon sample recovery Feb 25, 2000.

DSW 143670

Solutia Inc.

2000 Ambient PCBs Measurements Program - Anniston, AL

Ambient PCB Concentrations

SESSION 40 - February 28 through February 29, 2000

Site	1-EAST		2-South		3-West		4-North		5-Northeast	
Volume (scm)	327.4		350.7		356.1		363.3		375.4	
PCB Congener Class	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³	ng/ sample	ng/m³
Mono	23	0.1	39	0.1	83	0.2	640	1.8	430	1.1
Di	82	0.3	91	0.3	220	0.6	1200	3.3	1100	2.9
Tri	94	0.3	160	0.5	410	1.2	2600	7.2	1000	2.7
Tetra	55	0.2	190	0.5	180	0.5	2600	7.2	530	1.4
Penta	79	0.2	230	0.7	110	0.3	1300	3.6	400	1.1
Hexa	ND	ND	20	0.1	ND	ND	73	0.2	ND	ND
Hepta	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Octa	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nona	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Deca	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs		1.0		2.1		2.8		23.2		9.2

ND - Not detected at detection limit of 20 ng/sample (0.06 ng/m³ at 350 m³ sample volume).

Field and method blank results for this sampling session show no detection of PCBs (MDL = 20 ng/sample).

"Total" entry for each sample represents summation of detected PCB concentrations only; ND values included as zero.

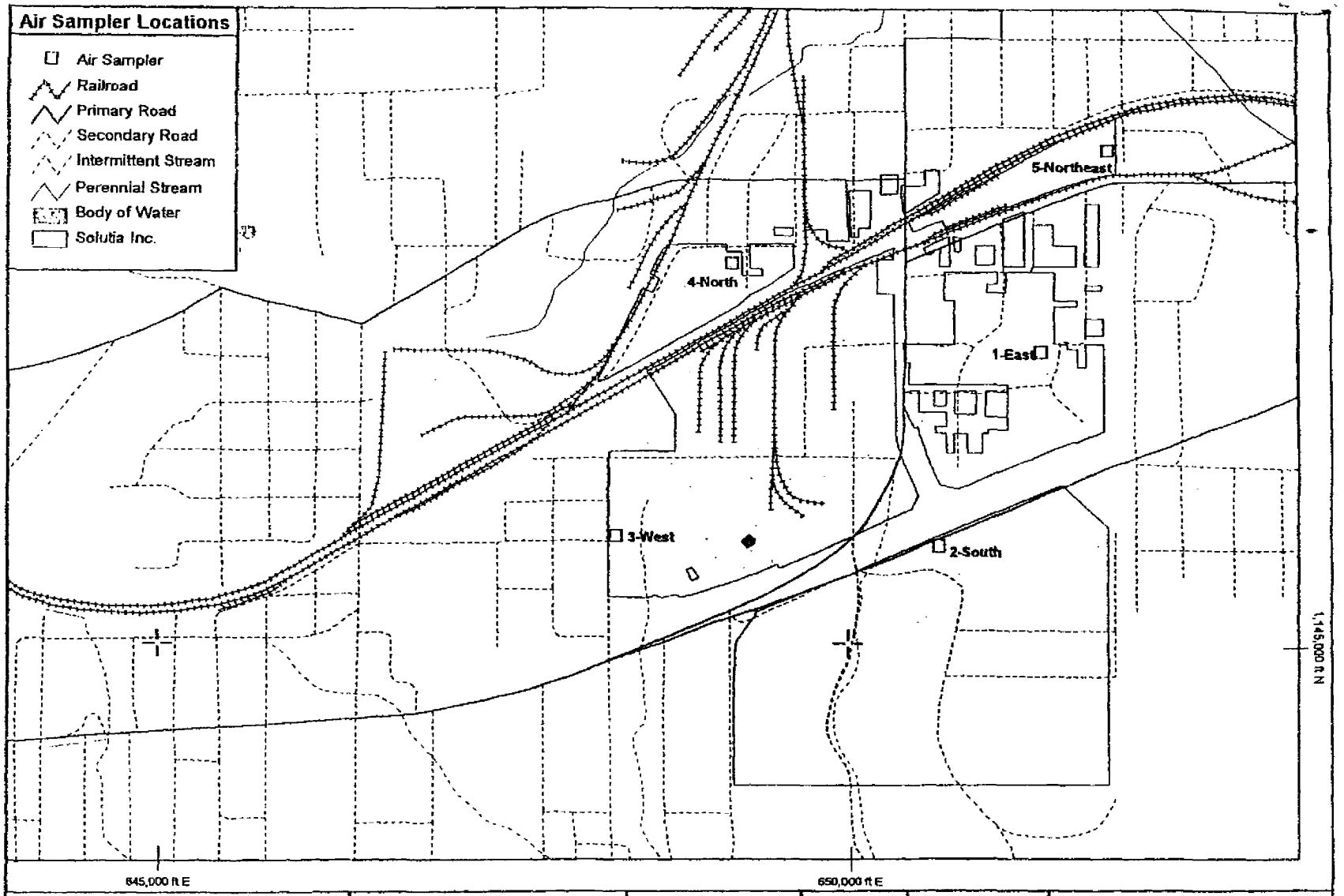
scm - standard cubic meters.

DSW 143671

SOLUTIA ANNISTON PLANT
PCB AIR LEVELS (ng/m^3)

SAMPLER #/LOC.	1	1(DUP)	2	3	4	5
DATE	EAST	EAST	SOUTH	WEST	NORTH	N'EAST
01/25-26/2000	0.0	0.0	17.4	0.8	2.1	0.0
01/26-27/2000	0.6	0.6		9.7	2.6	1.2
02/24-25/2000	0.0	0.1		0.4	16.1	11.4
02/28-29/2000	1.0		2.1	2.8	23.2	9.2
AVG.	0.4	0.2	9.8	3.4	11.0	5.5

DSW 143672



NOTES	SCALE	ZONE	DATUM	PROJECTION	SOURCE
State Highway 202 has been updated from a 1:19,200 scale Anniston city map, from Clydesdale Ave. to US Highway 431 (not shown).	1" = 1,000' (1:12,000) 400 0 400 800 Feet N	Alabama East 101	NAD83	US State Plane	Golder Associates; USGS 1:24,000 DLG in SDTS format; City of Anniston Street Map (1995)
		QUERY NO.	DATE	CREATED BY	REVIEWED BY / FIGURE NO.
		Atlqu-9034	18-Nov-1999	BSL	1

DSM 143673