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DEVELOPMENT AND APPLICATION OF TECHNIQUES FOR SAMPLING BIOAVAILABLE AIRBORNE ORGANIC CONTAMINANTS

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EXECUTIVE SUMMARY

As a focused part of a much broader study of human exposure to chemicals in the Southwestern United States, semipermeable membrane devices (SPMDs) were deployed in enclosed areas along the border between Arizona and Mexico. The main objective of this project was to determine the applicability of the integrative sampling approach of the SPMD technology to define the potential exposure of the people living in the sampled areas to complex mixtures of airborne chemicals. The SPMDs were deployed for thirty days and the sample extracts were subsequently analyzed for residues of organochlorine pesticides, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and the current use pesticides, diazinon, chloropyrifos, endosulfan, permethrin, and trifluralin. Residues of all analyte classes were determined to be present at varying concentrations in the samples from all deployment sites. Total levels of contaminant classes ranged from ng to µg quantities. In particular, the DDT complex and the current use pesticides were found at higher levels than expected. The polycyclic aromatic hydrocarbon (PAH) profiles were very complex and appear to contain a broad array of alkylated PAHs. Previously developed models were modified and employed to estimate ambient airborne concentrations of a limited set of contaminants. Additional research is ongoing to confirm the identities of residues identified by gas chromatographic techniques and to tentatively identify other chemicals present in the sample extracts. Also, research will be conducted to determine SPMD airborne chemical uptake rates for selected chemicals found in this study.

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INTRODUCTION

Aerial transport of organic contaminants occurs globally. Atmospheric contaminants exist in the vapor phase and are associated with airborne particulate matter. Organic contaminants are removed from the atmosphere by particulate fallout, vapor phase solution, rainout and snowfall of particulate matter, and vapor phase sorption processes. Before these processes remove airborne contaminants, the chemicals are often transported great distances from the original pollution source. Consequently, airborne contaminants have the potential to adversely affect ecosystems and human populations far removed from the source of contamination. Because people spend the majority of their lives inside buildings where they may be exposed to airborne chemicals through infiltration and input from ventilation systems and from sources within the building, assessing the consequences of exposure to chemicals present in indoor areas is of great concern.

The U.S. Environmental Protection Agency (EPA) has mandated air monitoring responsibilities under the provisions of the Clean Air Act. The major monitoring efforts of EPA have historically been related to gaseous pollutants (SO_X, NO_X, etc.), toxic metals, and particulate matter. More recently, the paucity of information concerning the atmospheric transport and deposition of toxic organic compounds (e.g., polycyclic aromatic hydrocarbons [PAHs], organochlorine pesticides [OCs], polychlorinated biphenyls [PCBs], etc.) has received increased attention.

Several techniques have been employed to measure deposition of airborne contaminants. These techniques include passive samplers such as glycerol-coated plates or pans, Teflon® sheets, containers of water, and the waxy outer surfaces of plants (e.g., the needles of conifers). Active or forced-air samplers-including polyurethane foam plugs, activated adsorbent traps (e.g., carbon, Florisil®, etc.) and glass fiber or paper filters-are even more widely employed.

While progress has been made in improving active air-sampling technology, these devices suffer the disadvantages of complexity and mechanical operation. Passive air samplers of either the air-diffusion or membrane-permeation design are attractive because of their integrative capacity and simple design. However, diverse and variable environmental conditions can cause unpredictable analyte uptake by influencing overall sampling rates.

Scientists at the U.S. Geological Survey's Columbia Environmental Research Center (CERC) have developed a semipermeable membrane device (SPMD) for passive integrative monitoring of airborne contaminants (1,2,3,4,5). This technology is the subject of U.S. Government patent No. 5,395,426. The SPMD consists of layflat polyethylene (PE) tubing containing a thin film of a high molecular weight ($\geq$ 600 Da) neutral lipid such as triolein. Other sequestration phases such as high molecular weight silicone fluids, adsorbents, etc., may also be used. The polymeric membrane used in the SPMD sampler functions by allowing vapors (i.e., the readily bioavailable portion) of contaminant molecules to pass through transient membrane cavities approaching 10 Å in cross sectional diameter. Transfer through these polymeric cavities appears to be very similar to the transport of contaminants through biomembranes via respiration (6).

Phenomenologically, the SPMD appears to mimic key aspects of the respiratory uptake of airborne chemicals. Respiratory uptake generally involves active transport to a biomembrane surface, diffusion through the exterior mucosal layer and the biomembrane, and in the case of bioconcentratable contaminants, export away from the membrane's inner surface to lipid containing tissues. Although contaminant uptake via air is complex, the respiration process can be simplified to its passive elements which include diffusion of organic chemicals through thin immobile air and liquid phase layers, then the nonpolar regions of the biomembranes and finally into the organism's lipid pool. The SPMD has been employed as a passive integrative air sampler (2) and appears to simulate these key portions of respiratory uptake of chemicals by a broad array of species, including man.

The purpose of this research project is to determine if the SPMD technique can be successfully applied to provide an integrated assessment of selected airborne organic contaminants present in the residential areas in the study. The present study is a limited component to a much more comprehensive U.S./Mexico border study. Reported herein are the results of the analysis of the SPMD samples for residues of PAHs, OCs, PCBs, and selected current use pesticides (diazinon, chlorpyrifos, endosulfan, permethrin and trifluralin) sequestered in the SPMDs deployed in indoor areas along the border between Arizona and Mexico.

EXPERIMENTAL

Materials: Low density polyethylene (PE) layflat tubing was purchased from Environmental Sampling Technologies, St. Joseph, MO. The PE tubing was a 2.54 cm wide, No. 940, untreated (pure PE; no slip additives, antioxidants, etc.) clear tubing. The wall thickness ranged from 84 to 89 μm. Triolein (1,2,3-tri-[cis-9-octadecenoyl]glycerol) was obtained from Sigma Chemical Co., St. Louis, MO and was ≥ 95% pure. Florisil® (60-100 mesh) was obtained from Fisher Scientific Company, Pittsburgh, PA. The Florisil was heated at 475 °C for 8 hours and stored at 130 °C. Silica gel (SG-60, 70-230 mesh) was obtained from Thomas Scientific, Swedesboro, NJ. The silica gel was washed with 40:60 methyl tert-butyl ether:hexane (V:V) followed by 100% hexane. The silica gel was activated at 130 °C for a minimum of 72 hours before use and subsequently stored at room temperature over P_2O_5 as a desiccant. Potassium silicate (KS) was prepared by reacting silica gel; SG-60 (300 g) with a methanolic solution of potassium hydroxide (168 g in 750 mL of methanol). The KS was subsequently washed in a column with 100 mL of methanol followed by 170 mL of methyl tert-butyl ether. The KS was activated at 130 °C for a minimum of 12 hrs prior to use and stored at room temperature over P_2O_5 as a desiccant. Phosphoric acid/silica gel was prepared by reacting prewashed silica gel (see above) with organic free phosphoric acid (500 g SG-60; 330 g phosphoric acid). The mixture was shaken until free flowing and stored at room temperature over P_2O_5 as a desiccant. All organic solvents were Optima® grade from Fisher Scientific, except methyl tert-butyl ether, which was purchased from Baxter Healthcare Corp., McGraw Park, IL.

SPMD Preparation: The SPMDs for the project were constructed using an 86 cm long piece of the LDPE tubing with 1mL of triolein being added to each SPMD. Four replicate SPMDs were created for each of the fifty-seven field deployment sites as well as four replicate SPMDs for field blanks for each of these sites. Due to the large number of SPMDs required to satisfy the experimental design of the project, SPMDs were made in three batches. Four replicate SPMD Day-0 samples were made for each of these three batches of SPMDs. The field deployment sample SPMDs were sealed into labeled, solvent rinsed, argon flushed cans. The field blank SPMDs were treated similarly and shipped to the field along with the SPMDs for deployment.

SPMD Storage and Custody: Following preparation of the SPMDs at CERC and prior to shipment to the field, the SPMDs were stored in sealed metal cans in a clean-room free of organic vapors. The cans containing the "Day-0" samples remained at CERC and were stored in a laboratory freezer at –15 °C. Following deployment, the samples were returned to CERC. Following receipt of the samples at CERC and prior to processing, the SPMDs were stored in a laboratory freezer at -15 °C. A record of custody and processing was maintained for each of these blind samples.

SPMD Deployment: The field portion of this project was performed by scientists from the University of Arizona and will be reported in detail by them in a separate report. Briefly, four SPMDs were deployed in each indoor area chosen for assessment. The samplers were deployed within the houses in such a manner that the composite sample consisting of four individual SPMDs per sampling site represented the entirety of the enclosed area.

Sample Processing and Residue Enrichment: Sample processing was similar to procedures previously described (2,3,4), with specific details noted in the following sections.

SPMD Cleanup: SPMDs, as received from field exposures, were subjected to a cleanup before dialysis. This cleanup was applied to all SPMDs received from the field as well as to all QA/QC SPMDs generated in conjunction with the analysis sets. The steps associated with this cleanup were applied to each SPMD individually and sequentially and were as follows. The sealed metal cans with field deployed SPMDs were opened and the SPMDs were removed and rinsed by immersion into 100 mL of hexane. Then, the hexane was discarded. The SPMDs were placed individually into a large flat stainless steel pan and washed using running tap water and a clean brush to remove all remaining surface adhering material. Any SPMD tether loops outside the lipid containment seals were cut off and discarded at this point. Next, the water was drained from each SPMD. The SPMDs were then separately immersed in a glass tank containing 1 N HCl for a period of approximately 30 seconds. Then, they were rinsed with tap water to remove the acid. Afterwards, all surface water was removed from individual SPMDs by using successive rinses of acetone followed by isopropanol. SPMDs were air dried by laying the SPMD on a piece of solvent-rinsed aluminum foil.

SPMD Dialysis: Canning jars with solvent-rinsed aluminum foil under the lid were used for the dialysis step. The 86 cm SPMDs containing 1 mL lipid, as used in this project, required 175 mL hexane and the use of a half-pint canning jar. The SPMDs were dialyzed individually at 18 °C for 18 hours. The hexane was removed and transferred into an evaporation flask. A second volume of 175 mL of hexane was added to the dialysis jar and the SPMDs were dialyzed for an additional 6 hours at 18 °C. The second dialysate was transferred into the flask containing the first dialysate. The SPMDs were then discarded. The combined dialysates were reduced to a volume of ~ 3 mL on a rotoevaporation system, and quantitatively transferred through a pre-rinsed glass fiber filter into appropriately labeled test tubes. The solvent volume was then reduced to ~ 1 mL, using high purity nitrogen.

Gel Permeation Chromatography (GPC) Cleanup, Principal Method: The following method describes the processing given to the bulk of the study samples which were not targeted for the analysis of contaminant levels of the current use pesticides trifluralin, diazinon, chlorpyrifos, endosulfan, and permethrin. The specific modifications to this principal method which were made to accommodate the processing of the 12 site samples which were targeted for these current use pesticides (also referred to in this report as "Additional Compounds") follows in a separate section. A Perkin-Elmer Series 410 HPLC (Perkin-Elmer, Inc., Norwalk, CN) was employed as the solvent delivery system for the GPC cleanup. This HPLC unit was equipped with a Perkin-Elmer ISS-200 autosampler. The GPC column was a 300-mm X 21.2-mm i.d. (10-µm particle size, 100 Å pore size) Phenogel column (Phenomenex, Inc., Torrance, CA), equipped with a 50-

mm X 7.5-mm i.d. Phenogel guard column. The isocratic mobile phase was 98:2 (V:V) dichloromethane:methanol (DCM:MeOH) at a flow rate of 4.0 mL per minute. The GPC system was equipped with an ISCO Foxy 200 (ISCO, Inc., Lincoln, NE) fraction collector connected to the output end of the GPC column.

GPC Calibration: The GPC system was calibrated on a daily basis by the injection of a solution of compounds representative of the analytes and potentially interfering materials. The substances contained by this calibration solution, in sequence of elution, are diethylhexylphthalate (DEHP; a model compound with lipid-like chromatographic behavior), biphenyl and naphthalene (small aromatic analytes), coronene (a large PAH later eluting than any anticipated analyte), and elemental sulfur (a problematic interfering substance encountered frequently in environmental samples). Elution of these components was monitored using a UV detector (254 nm) and a strip chart recorder.

Sample Processing: GPC cleanup was accomplished using a "Collect" fraction defined by the calibration of the system on the day of operation. The "Collect" fraction was initiated at the point 70% of the time between the apex of the DEHP chromatographic peak and the onset of the biphenyl chromatographic peak. The "Collect" fraction was terminated at 70% of the time between the apex of the coronene chromatographic peak and the onset of the sulfur chromatographic peak. This collect fraction contained PAHs, PCBs, and OCs. For the SPMD exposure samples, the replicate sample dialysates (4 SPMDs dialized individually) were collected in a common flask to give a composite sample. The fractions collected were amended with ~ 2 mL of isooctane, reduced to a volume of ~ 1 mL on a rotoevaporation system, and quantitatively transferred with hexane into appropriately labeled test tubes.

GPC Cleanup, Modifications to the Principal Method: The following method modifications apply to the processing of the 12 site samples, which were targeted for the current use pesticides previously identified. Each of these samples was subjected to two stages of GPC cleanup. During the first pass, the GPC was identical in all respects to that described previously. Likewise, the isocratic mobile phase was 98:2 (V:V) DCM:MeOH at a flow rate of 4.0 mL per minute. During the second pass, the GPC column was a 250-mm X 22.5-mm i.d. (10-µm particle size, 100 Å pore size) Phenogel column (Phenomenex, Inc., Torrance, CA), equipped with a 50-mm X 7.5-mm i.d. Phenogel guard column. The isocratic mobile phase was 80:20 (V:V) hexane:DCM at a flow rate of 4.0 mL per minute.

GPC Calibration: The GPC system was calibrated on a daily basis by the injection of a solution of compounds representative of the analytes and potentially interfering materials. The substances contained in this calibration solution, in sequence of elution, are diethylhexylphthalate (DEHP; a model compound with lipid-like chromatographic behavior), diazinon (an early eluting current use pesticide), biphenyl and naphthalene (small aromatic analytes), coronene (a large PAH later eluting than any anticipated analyte), and elemental sulfur (a problematic interfering substance encountered frequently in environmental samples). Elution of these components was monitored using an UV detector (254 nm) and a strip chart recorder.

Sample Processing: GPC cleanup was accomplished using a "Collect" fraction defined by the calibration of the system on the day of operation. During both the first pass and second pass cleanup, the "Collect" fractions were initiated at the minimum baseline between the apex of the DEHP chromatographic peak and the apex of the diazinon chromatographic peak. The "Collect" fraction for the first pass cleanup was terminated at 70% of the time between the apex of the coronene chromatographic peak and the onset of the sulfur chromatographic peak. The "Collect" fraction for the second pass cleanup was terminated when the coronene chromatographic peak came back to the baseline. These collect fractions contained the current use pesticides as well as PAHs, PCBs, and OCs. Following the first pass cleanup step, the replicate sample dialysates (4 SPMDs dialyzed individually) were collected in a common flask to give a composite sample. The fractions collected were amended with ~ 2 mL of isooctane, reduced to a volume of ~ 1 mL on a rotoevaporation system, and quantitatively transferred with hexane into appropriately labeled test tubes. Following the second pass cleanup step, the collect fractions were amended with ~ 2 mL of isooctane, reduced to a volume of ~ 1 mL on a rotoevaporation system, and quantitatively transferred with hexane into appropriately labeled test tubes.

Post GPC Sample Splitting: Because different enrichment techniques were required for the targeted environmental contaminants, the samples were split into two equal portions prior to further fractionation and enrichment. These were then identified as the "PAH" fractions and the "OC" fractions. After splitting, the two fractions were each reduced to a volume of ~ 1 mL using nitrogen blowdown.

Column Cleanup: Following GPC cleanup, the SPMD sample extracts were processed using open column chromatography. The procedures employed to enrich the "OC" and "PAH" fractions are presented separately as follows:

"OC" Fractions: The "OC" fractions, at ~ 1 mL in hexane, were applied to Florisil columns (5 g) and subsequently eluted with 60 mL of 75:25 (V:V) methyl tert-butyl ether:hexane. The fractions collected were amended with ~5 mL of isooctane, and reduced to a volume of ~ 0.5 mL on a rotoevaporation system. Following volume reduction to ~0.5 mL, each sample was applied to a silica gel column (5 g). Two fractions were collected; fraction SG-1 (46 mL of hexane) and SG-2 (55 mL of 40:60 [V:V] methyl tert-butyl ether:hexane). This enrichment procedure provided fractions for analysis of PCBs and OCs. The fractions collected were amended with ~2 mL of isooctane, reduced to a volume of ~ 0.5 mL on a rotoevaporation system, and quantitatively transferred with hexane into labeled GC vials. Sample volumes at this point were adjusted to 1.0 mL using nitrogen blowdown.

"PAH" Fractions: The "PAH" fractions, at ~ 0.5 mL in hexane, were treated using a tri-adsorbent column consisting of from top to bottom, 3 g phosphoric acid/silica gel; 3 g of KS; and 3 g of silica gel. The tri-adsorbent column was eluted with 50 mL of 4% (V:V) methyl tert-butyl ether in hexane. This procedure resulted in a solution suitable for analysis of PAH residues. The fractions collected were amended with ~2 mL of isooctane, reduced to a volume of ~ 0.5 mL on a rotoevaporation system, and quantitatively transferred with hexane into labeled GC vials. Sample volumes at this point were adjusted to 1.0 mL using nitrogen blowdown.

Gas Chromatography: Gas chromatographic analyses were conducted using a Hewlett Packard 5890 series gas chromatograph (GC) equipped with a Hewlett Packard 7673A autosampler (Hewlett Packard, Inc., Palo Alto, CA). In all analyses, 1.0 µL of sample extract was injected using the "cool-on-column" technique with hydrogen as the carrier gas. Analysis of PAH fractions was performed using a DB-5 (30 m x 0.25 mm i.d x 0.25 µm film thickness) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 60 °C, then 15 °C/min to 165 °C, followed by 2.5 °C/min to 250 °C, then 10 °C/min to 320 °C and held at 320 °C for 1 min. Detection was performed using an HNU photoionization detector (PID) with a 9.5 eV lamp operating at 270 °C (HNU, Inc., Newton, MA). Quantitation of PAHs was accomplished using a six point curve with 4-Terphenyl- d_{14} as the instrumental internal standard. The levels of the PAH standards spanned a 32-fold range of concentration for each priority pollutant PAH. Analysis of SG-1 and SG-2 fractions for OCs, PCBs, and current use pesticides was performed using a DB-35MS (30 m x 0.25 mm i.d. x 0.25 µm film thickness) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 90 °C; then 15 °C/min to 165 °C; followed by 2.5 °C/min to 250 °C; then at 10 °C/min to 320 °C. The electron capture detector (ECD) was maintained at 330 °C (Hewlett Packard, Inc., Palo Alto, CA). Quantitation of OCs in SG-1 and in SG-2 was accomplished using a six point curve with octachloronaphthalene (OCN) as the instrumental internal standard. The levels of the OC standards spanned an 80-fold range of concentration for each compound determined. Quantitation of total PCBs was accomplished using a six point curve employing solutions containing a 1:1:1:1 mixture of Aroclor® 1242, 1248, 1254, and 1260 with OCN as the instrumental internal standard. The levels of the PCB standards spanned a 40-fold concentration range. Quantitation of select current use pesticides was accomplished using a six point curve with OCN as the instrumental internal standard. The levels of the current use pesticide standards spanned an 80-fold range of concentration for each compound determined.

RESULTS AND DISCUSSIONS

Quality Control: Trip blank SPMDs (one set of four SPMDs for each sampling site) accompanied the deployed SPMDs during deployment, retrieval, and transportation to CERC. These trip blanks were processed and analyzed exactly as deployed samples. The trip blank samples exhibited no coincident GC peaks at a level higher than those associated with the laboratory control SPMDs and were indicative of successful deployment and retrieval. Procedural blanks (also referred to as SPMD controls or SPMD blanks) were freshly prepared SPMDs taken through the entire fractionation and analysis sequence. Samples containing contaminant residues exceeding the procedural blank values were considered positive and were subsequently background corrected. Reagent blanks (equivalent volumes of solvents used in processing the deployed SPMDs taken through the analytical sequence), GPC blanks, SPMD spikes, and Day-0 samples were processed to allow for the determination of chromatographic backgrounds and procedural recoveries of individual analytes during subsequent analyses. These samples were generated for each of the twenty-five dialysis sets associated with this project.

The method detection limit (MDL) and method quantitation limit (MQL) for analysis of SPMD samples were determined for each analyte by measuring the values of coincident GC-ECD or GC-PID peaks for each compound in the SPMD blank samples taken through the entire processing and analysis procedure. The MDL was defined as the mean plus three standard deviations of values so determined (7). The MQL was defined as the mean plus 10 standard deviations of values so determined (7). For individual analytes having no coincident GC peak, an assumed value equal to the low sample reject for the method was used to calculate the mean. In the cases where the MQLs were below the level of the calibration curve employed in the GC-analysis, the MQLs were set at the value of the lowest level of the calibration curve employed in quantifying the analyte levels. The background, MDLs and MQLs for analysis of the study samples for PAHs, OCs, PCBs, and current use pesticides are presented in Table I.

For each of the twenty-five dialysis sets required to process the total number of SPMDs associated with this project, dialytic recoveries were monitored by spiking an individual SPMD with approximately 90,000 disintegrations per minute (DPM) of ^{14}C-dibenz(a,h)anthracene. These spikes were processed concurrently with deployed SPMDs. During dialysis of the contaminants sequestered by the SPMDs, recovery of the ^{14}C-dibenz[a,h]anthracene surrogate had a mean value of 88.6% (Table II).

Operation of the GPC was monitored by injecting approximately 40,000 DPM of ^{14}C-2,5,2',5'-tetrachlorobiphenyl. Samples were processed by GPC in forty-one sets. Recovery of ^{14}C-activity through the GPC system had a mean value of 97.5 % (Table III). During the processing of the sample sets containing the twelve samples targeting the current use pesticides, operation of the GPC was also monitored by injecting approximately 60,000 DPM of ^{14}C-diazinon onto the GPC column and determining its recovery. These samples were processed through GPC in nine sets. Recovery of ^{14}C-diazinon through the GPC system had a mean value of 97.1 % (Table IV).

The recoveries of the analytes of interest were determined for the tri-adsorbent treatment for PAHs (Table V), and the Florisil and silica gel fractionation procedure for OCs, PCBs, and current use pesticides (Tables VI and VII). The recoveries of PAHs averaged 89.3%. The recoveries of the OCs averaged 88.7%. The recoveries of the current use pesticides averaged 76.7%. The recoveries of total PCBs averaged 96.2%.

To complete the Quality Control efforts for this project, the overall recoveries of the analytes of interest through the dialysis, fractionation and enrichment procedures were monitored using spiked SPMD samples. SPMD spikes were prepared by fortifying individual SPMDs with 8 μg of each priority pollutant PAH, a mixture of twenty-seven individual OC-pesticides at 40 ng each and with 8,000 total ng of PCBs. A total of fourteen SPMD spikes were processed concurrently with selected dialysis sets. The recoveries of PAHs averaged 70.8% (Table VIII). The recoveries of the OCs averaged 69.9% (Table IX). The recoveries of total PCBs averaged 82.3% (Table IX). These results are consistent with results from similar samples (3).

During the processing of the dialysis sets associated with the twelve samples targeting the current use pesticides, an additional SPMD spike was prepared using a mixture of trifluralin, diazinon, chlorpyrifos, and permethrins. The recoveries of the current use pesticides averaged 85.0% (Table X).

<u>Observations and Findings:</u> The SPMDs associated with this study were processed concurrently with the above referenced quality control samples. Therefore, the results

obtained from processing and analyses conducted on these SPMDs are taken to be similar to the observed results for the quality control samples described. During the gas chromatographic analysis of study sample fractions, conditions were optimized to give sufficient resolution for quantitation of the targeted analytes (Table XI and Figures 1,2,3, and 4). The results of the gas chromatographic analyses of study samples are given for all targeted analytes on a site-by-site basis (Table XII and Figure 5). The presentation of a selected portion of these data is repeated on a house-to-house basis to give a direct comparison of Inside/Outside sampling (Tables XIII, XIV, and XV and Figure 6). A portion of these data is also presented for the analyses of study samples for the current use pesticides (Table XVI and Figure 7).

The SPMD samples were analyzed for PAH residues and values are reported for identified individual priority pollutant PAHs. The PAH profile in the SPMD samples is extremely complex and typical of alkylated PAHs (Figure 8). Because of the extreme complexity of the GC-PID response, the entire PAH response was quantified by comparing the total area to the response of a standard of a widely occurring PAH, pyrene. The levels of PAHs varied from <MDL/4 SPMD composite to 20 μg/4 SPMD composite for individual PAHs detected. The SPMD sample from Site # 43 contained the highest levels of PAHs at 1400 μg/4 SPMD composite total PAH as pyrene. Thus, depending on the structures of PAHs in the PAH response envelope, PAH levels at certain study sites may be of concern.

The SPMD sample extracts were analyzed for OCs, total PCBs, and select current use pesticides following the Florisil-silica gel fractionation procedure. The GC-ECD profiles obtained from these samples were extremely complex (Figures 9 and 10). Identifiable and quantifiable levels of individual OCs were found at all sites. The concentrations of targeted OCs ranged form <MDL to µg quantities. The total identified OC-pesticides quantified at individual sites ranged from 110 ng to 20,000 ng. The DDT family of compounds are present and quantifiable at several of the sites. Other OCs in the SPMD samples included heptachlor, hexachlorobenzene (HCB), pentachloroanisole (a bacterial metabolite of pentachlorophenol), as well as chlordane and nonachlor components.

Interestingly, PCBs were found in the SPMD samples from only half of the sites at concentrations ranging from 1.3 to 10 total µg.

During the analysis of the samples from the twelve randomly selected study sites for the current use pesticides, diazinon and chlorpyrifos were found in all samples (Table XVI). Of the sites investigated, Site # 2 had the highest levels of these two compounds at 27 and 72 µg respectively.

In the three cases where SPMDs were deployed inside and outside of the same house (Tables XIII, XIV, and XV), observed levels of contaminants were generally elevated within the house. In the case of total PAH as pyrene, the inside levels were higher by a factor of five. The ratios of PCBs could not be estimated as outside levels were all <MDL. The levels of total identified OC-pesticides were also elevated within the houses

by factors of four or greater. The OC-pesticides α-BHC and endosulfan were the exceptions being at higher levels in the SPMDs deployed outside the houses.

A preliminary examination of a representative sample (Site # 14) by GC-mass spectrometry (MS) confirmed the presence of the DDT complex, dacthal, the chlordane components, dieldrin, methoxychlor, and the endosulfan complex. Additional sample extracts will be examined by GC-MS to provide more rigorous confirmation of analytes identified by GC analysis and to provide tentative identification of other chemicals. However, the GC-MS confirmation of these analytes supports the identification of the contaminants present in the sample extracts as analyzed by GC.

SPMD uptake kinetic data are required to accurately estimate ambient airborne concentrations of environmental contaminants. Using models previously developed (1) and preliminary data from ongoing uptake kinetic studies, the airborne concentrations of selected contaminants present in the air at the sampling sites can be estimated for these 30-day exposures.

An example of the overall estimation procedure is as follows. The analyte sampling rate (R_{sw}) is determined from laboratory exposures conducted under about the same conditions (i.e., air temperature and exposure duration) as the field study. The linear SPMD uptake of OCs with high K_{ow}s (octanol-water partition coefficients) from water was described by Huckins, et al. (1) as follows:

$$C_L = C_W k_o K_{mW} At/V_L \quad (2)$$

substituting R_{sw} for $k_oK_{mW}A$ in equation 2 gives

$$C_L = C_W R_{sw} t / V_L \quad (3)$$

where C_L is the concentration of the analyte in the lipid, C_W is the concentration of the analyte in the water, t is the exposure time in days, and V_L is the volume of the lipid. Rearranging equation 3 results in

$$C_W = C_L V_L / R_{sw} t \quad (4)$$

Because the analytes present in the membrane were also recovered during the dialysis procedure, equation 4 can be rewritten as

$$C_W = C_{SPMD} M_{SPMD} / R_{sw} t \quad (5)$$

where C_{SPMD} is the concentration of the individual analyte in the SPMD and M_{SPMD} is the mass of the SPMD. In our case we use the uptake rate constant (k_{uw}) defined as L/d·g (Liters per day per gram) of SPMD (membrane + lipid).

$$C_W = C_{SPMD} / (R_{sw}/M_{SPMD})\ t \quad (6)$$

$$C_W = C_{SPMD} / k_{uw}\ t \quad (7)$$

For SPMD uptake from air, equations 6 and 7 can be rewritten as

$$C_a = C_{SPMD} / (R_{sa}/M_{SPMD})\ t \quad (8)$$

$$C_a = C_{SPMD} / k_{ua}\ t \quad (9)$$

Where C_a is concentration of the analyte in air, R_{sa} is the SPMD sampling rate in air, and k_{ua} is the uptake rate constant in air.

Although little SPMD sampling rate (calibration) data exists for vapor phase contaminants, there is a fairly extensive set of calibration data set for aqueous phase contaminants. Conversion of a chemical's sampling rate in water to its sampling rate in air is feasible because SPMD concentrations have been shown to be proportional to both levels in water and air. The following rationale can be used for the extrapolation:

Assumptions-

1) The ratio of the air-sampling rate constant (k_{ua}) divided by the water-sampling rate constant (k_{uw}), for similar compounds and conditions, is constant.
2) The air and water temperatures are 26 ^{o}C.
3) Facial velocity of air and water is low, i.e., quiescent conditions during the exposures.

From existing laboratory data the k_{ua} and k_{uw} of PCB congener 52 (IUPAC no., 2,5,2',5'-tetrachlorobiphenyl), under the conditions described above is 600 L / d·g and 1.3 L/d·g, respectively. Note that the dramatic difference in the volumes of the two matrices sampled is due to the their difference in density, i.e. at sea level the density of water is 1220 times greater than air. The ratio of the SPMD -air and -water sampling rates ($S_{ra/w}$) is given by

$$S_{ra/w} = k_{ua} / k_{uw} \quad (10)$$

Using equation 10 and the sampling rate values given above for congener 52

$$S_{ra/w} = (600\ L/d\cdot g) / (1.3\ L/d\cdot g) = 460 \quad (11)$$

and from equation 10

$$k_{ua} = k_{uw} \cdot S_{ra/w} \quad (12)$$

also

$$R_{sa} = k_{ua} \cdot M_{SPMD} \quad (13)$$

Using approximate SPMD air sampling rates, the estimated airborne concentration of selected contaminants present at representative sampling sites are derived from equation 9 and presented in Tables XVII, XVIII, and XIX. These values were generated using an average R_s for an ambient temperature of 26°C.

The presence of persistent contaminants in the air of the deployment sites undoubtedly results from the present or former use of these chemicals in the area. While the estimated ambient concentrations of the chemicals are in general below the NIOSH time weighted average (TWA) exposure limits based on a maximum 10 h work day and a 40 h work week, the values estimated from the SPMD data are representative of up to 24 h per day, 7 d per week. This extended exposure period and the complexity of the chemical mixtures present in these homes and the potential for synergistic effects need further investigation to assess possible health effects.

For example, most of the chlorinated chemicals have been banned - some for nearly 20 years (8). The apparent longevity of these chlorinated contaminants may result in a continued reduction in environmental quality. For instance, dieldrin, the DDT complex, and the chlordane components along with a much larger set of diverse environmental contaminants have been reported to cause endocrine-disruption in some organisms (9). The potential biological effects from exposure to complex mixtures of airborne chemicals requires further research.

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Table I

Background, MDL, & MQL Values for Targeted Analytes

OC-Pesticides	Bkg ng	MDL ng	MQL ng
HCB*	0.1	0.8	2.2
PCA**	0.6	1.8	4.5
α-BHC***	0.1	0.3	0.7
β-BHC***	0.5	1.9	5.0
δ-BHC***	0.6	7.1	22.3
Lindane	0.4	2.1	6.1
Dacthal	0.5	3.3	9.8
Heptachlor	0.2	1.0	2.7
Heptachlor Epoxide	0.4	3.0	9.1
Oxychlordane	1.1	4.9	13.9
cis-Chlordane	0.2	1.0	2.8
trans-Chlordane	0.2	0.8	2.3
cis-Nonachlor	0.2	1.2	3.5
trans-Nonachlor	0.2	0.7	2.0
o,p'-DDT	0.3	1.8	5.5
o,p'-DDE	0.1	1.1	3.2
o,p'-DDD	0.5	2.3	6.6
p,p'-DDT	3.4	15.1	42.5
p,p'-DDE	0.7	5.2	15.8
p,p'-DDD	0.1	1.2	3.7
Dieldrin	1.7	14.4	44.1
Endrin	0.4	2.3	6.8
Methoxychlor	1.7	10.8	31.9
Mirex	0.2	1.4	4.2
Endosulfan	0.1	1.4	4.4
Endosulfan-II	0.1	0.4	1.0
Endosulfan Sulfate	0.3	3.0	9.3
Total PCBs	86	233	576

PAHs	Bkg μg	MDL μg	MQL μg
Naphthalene	0.04	0.15	0.42
Acenaphthylene	0.03	0.23	0.71
Acenaphthene	0.00	0.01	0.03
Fluorene	0.03	0.34	1.06
Phenanthrene	0.02	0.09	0.24
Anthracene	0.00	0.00	0.01
Fluoranthene	0.03	0.16	0.48
Pyrene	0.02	0.12	0.36
Benz[a]anthracene	0.00	0.01	0.02
Chrysene	0.00	0.01	0.03
Benzo[b]fluoranthene	0.00	0.00	0.01
Benzo[k]fluoranthene	0.00	0.01	0.02
Benzo[a]pyrene	0.00	0.01	0.02
Indeno[1,2,3-cd]pyrene	0.00	0.01	0.03
Dibenz[a,h]anthracene	0.00	0.01	0.03
Benzo[g,h,i]perylene	0.00	0.02	0.05
Total PID Response ****	25	44	90

Additional Compounds	Bkg ng	MDL ng	MQL ng
Trifluralin	0.9	3.5	8.6
Diazinon	1.0	4.1	9.6
Chlorpyrifos	0.1	0.4	2.0
cis-Permethrin	1.7	6.7	21.7
trans-Permethrin	1.9	7.6	24.2

* Hexachlorobenzene
** Pentachloroanisole
*** Benzenehexachloride
**** As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table II

Recovery of ^{14}C- Dibenz[a,h]anthracene *

Following Dialysis and Size Exclusion Chromatography

Sample Set #	%
Validation #1	88.2
Validation #2, Replicate # 1	83.9
Validation #2, Replicate # 2	86.5
Validation #2, Replicate # 3	85.7
Set # 1	80.0
Set # 2	89.8
Set # 3	93.7
Set # 4	89.5
Set # 5	91.3
Set # 6	90.9
Set # 7	89.2
Set # 8	96.3
Set # 9	88.5
Set # 10	87.7
Set # 11	88.5
Set # 12	86.5
Set # 13	86.2
Set # 14, Replicate # 1	89.3
Set # 14, Replicate # 2	86.6
Set # 14, Replicate # 3	86.9
Set # 15	89.2
Set # 16	89.3
Set # 17	86.6
Set # 18	89.1
Set # 19	88.2
Set # 20	90.2
Set # 21	90.7
Set # 22	88.1
Set # 23	90.8
Set # 24	89.4
Set # 25	88.6
Mean (n=31)	88.6
Std Dev	2.9

* Each SPMD spiked with ~ 90,000 DPM of ^{14}C- Dibenz[a,h]anthracene.

Table III

Recovery of ^{14}C-2,5,2',5'-Tetrachlorobiphenyl*

Through the Size Exclusion Chromatography System

Run Date	%	Run Date	%
5/8/98	98.7	11/19/98	98.3
5/21/98	96.3	12/2/98	97.4
6/4/98	100	12/3/98	95.9
6/4/98	97.8	12/7/98	95.8
7/14/98	98.6	12/16/98	95.6
7/16/98	97.2	1/28/99	98.3
7/20/98	96.9	2/1/99	98.3
7/29/98	99.2	2/4/99	95.8
8/5/98	95.0	2/10/99	96.0
8/17/98	98.0	2/16/99	97.7
9/1/98	97.1	2/17/99	95.7
9/4/98	98.3	4/27/99	97.8
9/17/98	95.1	4/30/99	96.6
9/29/98	97.5	5/4/99	97.5
9/30/98	96.2	5/5/99	97.8
10/7/98	95.9	5/7/99	97.3
10/13/98	98.1	5/11/99	97.8
10/20/98	98.6	5/13/99	98.2
11/16/98	97.3	5/17/99	97.0
11/18/98	98.0	5/20/99	97.7
		6/14/99	96.3
		Mean (n=41)	97.5
		Std Dev	1.3

* Each GPC recovery sample was spiked with ~ 40,000 DPM of ^{14}C-2,5,2',5'-tetrachlorobiphenyl.

Table IV

Recovery of ^{14}C-Diazinon*

Through the Size Exclusion Chromatography System

Run Date		%
4/27/99		97.0
4/30/99		95.8
5/4/99		97.0
5/5/99		100
5/7/99		99.0
5/11/99		97.2
5/13/99		95.2
5/17/99		97.6
5/20/99		94.9
6/14/99		
	Mean (n=9)	97.1
	Std Dev	1.7

* Each GPC recovery sample was spiked with ~ 65,000 DPM of ^{14}C-Diazinon.

Table V

Recovery of PAHs

Through Tri-Adsorbent Chromatographic Cleanup

	Naphthalene %	Acenaphthylene %	Acenaphthene %	Fluorene %
Method Validation Rep # one	77.3	69.1	78.0	65.3
Method Validation Rep # two	70.5	71.5	82.4	70.8
Method Validation Rep # three	64.9	83.5	90.9	80.9
Column Spike of 9-24-98	78.5	91.0	99.5	99.5
Column Spike of 10-2-98	76.9	83.9	95.5	92.8
Column Spike of 10-7-98	95.8	90.2	102.5	98.4
Column Spike of 10-20-98	51.1	62.2	58.4	71.6
Column Spike of 10-29-98	87.7	92.5	92.9	100
Column Spike of 11-3-98	91.3	92.2	97.4	99.4
Column Spike of 1-26-99	76.0	81.4	80.0	76.9
Column Spike of 2-10-99	88.5	90.4	95.4	97.8
Column Spike of 3-4-99	95.6	92.4	93.9	96.4
Column Spike of 3-10-99	71.6	66.7	75.7	75.1
Column Spike of 5-19-99	55.8	62.6	71.4	74.9
Column Spike of 5-20-99	40.8	52.8	58.3	64.7
Mean	**74.8**	**78.8**	**84.8**	**84.3**
Standard Deviation	16.3	13.4	14.2	13.7
RSD (%)	21.8	17.0	16.8	16.3

	Phenanthrene %	Anthracene %	Fluoranthene %	Pyrene %
Method Validation Rep # one	77.2	76.0	78.1	80.1
Method Validation Rep # two	90.0	88.2	87.9	88.2
Method Validation Rep # three	96.3	94.6	94.0	95.8
Column Spike of 9-24-98	103	118	106	104
Column Spike of 10-2-98	97.9	107	98.7	102
Column Spike of 10-7-98	100	94.8	99.8	100
Column Spike of 10-20-98	92.1	81.2	97.5	98.7
Column Spike of 10-29-98	97.7	92.7	97.1	101
Column Spike of 11-3-98	102	97.3	103	99.8
Column Spike of 1-26-99	81.3	85.2	84.3	83.0
Column Spike of 2-10-99	95.2	93.0	98.9	94.5
Column Spike of 3-4-99	88.8	90.7	89.3	87.9
Column Spike of 3-10-99	76.4	77.7	81.3	80.4
Column Spike of 5-19-99	79.8	79.7	82.0	82.0
Column Spike of 5-20-99	83.1	79.8	86.1	92.2
Mean	**90.7**	**90.4**	**92.2**	**92.7**
Standard Deviation	9.1	11.5	8.7	8.5
RSD (%)	10.0	12.7	9.4	9.1

Table V (Continued)

Recovery of PAHs

Through Tri-Adsorbent Chromatographic Cleanup

	Benzo[a]anthracene %	Chrysene %	Benzo[b]fluoranthene %
Method Validation Rep # one	72.8	75.5	70.4
Method Validation Rep # two	79.0	82.9	82.3
Method Validation Rep # three	98.6	103	97.6
Column Spike of 9-24-98	101	102	101
Column Spike of 10-2-98	99.0	97.3	98.0
Column Spike of 10-7-98	103	106	103
Column Spike of 10-20-98	112	103	107
Column Spike of 10-29-98	101	95.5	98.1
Column Spike of 11-3-98	105	104	107
Column Spike of 1-26-99	85.3	83.2	88.4
Column Spike of 2-10-99	97.1	91.4	101
Column Spike of 3-4-99	83.9	84.6	81.6
Column Spike of 3-10-99	86.3	87.5	82.8
Column Spike of 5-19-99	86.6	81.9	78.6
Column Spike of 5-20-99	95.5	93.8	89.5
Mean	**93.6**	**92.7**	**92.4**
Standard Deviation	10.7	9.6	11.2
RSD (%)	11.5	10.4	12.2

	Benzo[k]fluoranthene %	Benzo[a]pyrene %	Indeno[1,2,3-cd]pyrene %
Method Validation Rep # one	73.1	69.2	71.4
Method Validation Rep # two	80.1	80.7	84.9
Method Validation Rep # three	95.7	91.3	95.0
Column Spike of 9-24-98	99.5	105	101
Column Spike of 10-2-98	95.8	98.8	101
Column Spike of 10-7-98	106	102	102
Column Spike of 10-20-98	104	112	110
Column Spike of 10-29-98	99.8	96.5	101
Column Spike of 11-3-98	109	113	108
Column Spike of 1-26-99	86.7	85.9	89.8
Column Spike of 2-10-99	98.3	86.0	97.2
Column Spike of 3-4-99	84.2	82.6	81.5
Column Spike of 3-10-99	76.9	83.3	80.7
Column Spike of 5-19-99	67.2	82.5	84.7
Column Spike of 5-20-99	86.1	100.3	93.9
Mean	**90.8**	**92.5**	**93.4**
Standard Deviation	12.7	12.5	11.0
RSD (%)	14.0	13.5	11.8

Table V (Continued)

Recovery of PAHs

Through Tri-Adsorbent Chromatographic Cleanup

	Dibenz(a,h)anthracene %	Benzo(g,h,i)perylene %	Over All %
Method Validation Rep # one	69.5	75.4	73.6
Method Validation Rep # two	86.5	82.2	81.8
Method Validation Rep # three	96.5	92.2	91.9
Column Spike of 9-24-98	100	104	101
Column Spike of 10-2-98	104	102	96.9
Column Spike of 10-7-98	99.1	100	100
Column Spike of 10-20-98	105	107	92.0
Column Spike of 10-29-98	102	101	97.3
Column Spike of 11-3-98	112	108	103
Column Spike of 1-26-99	86.4	84.0	83.6
Column Spike of 2-10-99	88.4	96.8	94.3
Column Spike of 3-4-99	80.1	78.2	87.0
Column Spike of 3-10-99	82.3	89.1	79.6
Column Spike of 5-19-99	85.9	74.9	76.9
Column Spike of 5-20-99	96.3	82.0	80.9
Mean	**92.9**	**91.8**	**89.3**
Standard Deviation	11.3	11.7	11.6
RSD (%)	12.1	12.8	13.2

Table VI

Recovery of OC-Pesticides and PCBs

Through Florisil and Silica Gel Chromatographic Cleanup

Sample Name	HCB %	PCA %	α-BHC %	β-BHC %	δ-BHC %
Column Spike #1 of M.V. *	71.6	107.9	86.6	95.4	107
Column Spike #2 of M.V. *	60.0	100	79.1	91.8	98.0
Column Spike #3 of M.V. *	65.6	102	80.5	89.4	96.2
Column Spike of 9-23-98	129	115	71.5	74.3	77.5
Column Spike of 10-5-98	111	139	116	87.2	92.5
Column Spike of 10-21-98	108	137	82.6	88.1	87.6
Column Spike of 10-22-98	0.0	107	91.5	87.5	89.6
Column Spike of 11-3-98	75.7	125	96.6	104	100
Column Spike of 11-23-98	0.0	136	113	101	101
Column Spike of 11-27-98	75.0	119	82.5	85.7	86.9
Column Spike of 2-3-99	89.0	105	70.6	74.7	72.9
Column Spike of 2-18-99	52.5	123	97.4	92.7	93.2
Column Spike of 3-3-99	75.6	113	84.5	81.1	-1.7
Column Spike of 3-4-99	82.0	114	81.4	79.0	89.0
Column Spike # 1 of 5-24-99	70.6	114	73.1	78.8	77.8
Column Spike # 2 of 5-24-99	66.2	108	72.8	79.2	73.6
Mean	**70.7**	**116**	**86.2**	**86.8**	**83.8**
Standard Deviation	34.1	12.3	13.7	8.7	24.9
RSD (%)	48.2	10.6	15.9	10.0	29.7

Sample Name	Lindane %	Dacthal %	Heptachlor %	Heptachlor Epoxide %	Oxychlordane %
Column Spike #1 of M.V. *	93.2	91.5	98.5	97.8	91.6
Column Spike #2 of M.V. *	87.2	88.5	94.1	96.0	92.4
Column Spike #3 of M.V. *	88.0	88.1	101	97.1	92.6
Column Spike of 9-23-98	76.6	79.9	103	79.3	83.7
Column Spike of 10-5-98	110	85.1	97.5	100	122
Column Spike of 10-21-98	87.6	95.5	106.8	98.6	102
Column Spike of 10-22-98	90.6	93.4	5.6	97.2	94.5
Column Spike of 11-3-98	102	90.2	83.6	97.7	94.2
Column Spike of 11-23-98	111	97.1	13.0	107	106
Column Spike of 11-27-98	87.5	91.0	85.0	93.5	91.6
Column Spike of 2-3-99	73.2	76.4	86.2	79.6	79.0
Column Spike of 2-18-99	98.4	103	70.0	98.3	101
Column Spike of 3-3-99	89.6	86.7	83.3	85.4	85.2
Column Spike of 3-4-99	82.9	80.2	85.5	83.4	80.0
Column Spike # 1 of 5-24-99	77.8	87.1	69.3	86.6	86.1
Column Spike # 2 of 5-24-99	75.4	84.0	67.5	87.1	86.9
Mean	**89.5**	**88.6**	**78.2**	**92.8**	**93.1**
Standard Deviation	11.5	6.8	29.5	8.1	10.9
RSD (%)	12.8	7.7	37.7	8.7	11.8

* M.V. = Method Validation

Table VI (Continued)

Recovery of OC-Pesticides and PCBs

Through Florisil and Silica Gel Chromatographic Cleanup

Sample Name	cis-Chlordane %	trans-Chlordane %	cis-Nonachlor %	trans-Nonachlor %	o,p'-DDT %
Column Spike #1 of M.V. *	96.9	96.7	97.3	92.2	106
Column Spike #2 of M.V. *	96.8	95.0	97.0	89.7	105
Column Spike #3 of M.V. *	96.8	96.0	98.2	92.1	103
Column Spike of 9-23-98	85.4	80.7	82.0	80.7	97.4
Column Spike of 10-5-98	98.2	97.1	92.0	94.8	92.9
Column Spike of 10-21-98	94.8	95.4	98.3	95.8	97.9
Column Spike of 10-22-98	94.6	93.6	97.0	92.0	103
Column Spike of 11-3-98	97.3	96.6	96.1	93.6	93.0
Column Spike of 11-23-98	100	102	98.7	100	106
Column Spike of 11-27-98	94.6	93.2	92.1	95.8	102
Column Spike of 2-3-99	78.0	76.6	77.8	78.2	80.9
Column Spike of 2-18-99	96.7	95.6	97.0	93.8	92.0
Column Spike of 3-3-99	88.0	88.2	90.4	78.5	88.4
Column Spike of 3-4-99	84.8	84.9	87.9	83.2	85.9
Column Spike # 1 of 5-24-99	87.9	88.0	88.0	85.1	89.4
Column Spike # 2 of 5-24-99	87.6	89.0	87.6	88.0	92.5
Mean	**92.4**	**91.8**	**92.3**	**89.6**	**95.9**
Standard Deviation	6.3	6.7	6.3	6.7	7.7
RSD (%)	6.8	7.3	6.8	7.4	8.0

Sample Name	o,p'-DDE %	o,p'-DDD %	p,p'-DDT %	p,p'-DDE %	p,p'-DDD %
Column Spike #1 of M.V. *	94.2	96.1	104	100	95.8
Column Spike #2 of M.V. *	90.9	95.9	101	101	94.1
Column Spike #3 of M.V. *	90.9	96.2	100	104	95.8
Column Spike of 9-23-98	80.4	76.7	110	117	73.4
Column Spike of 10-5-98	95.2	89.2	81.4	101	83.6
Column Spike of 10-21-98	96.7	97.2	90.9	107	95.1
Column Spike of 10-22-98	91.9	93.5	100	25.6	94.2
Column Spike of 11-3-98	84.3	94.2	86.1	79.0	92.7
Column Spike of 11-23-98	97.0	92.8	92.9	49.9	90.4
Column Spike of 11-27-98	99.3	89.2	108	11.8	94.9
Column Spike of 2-3-99	81.9	76.0	77.7	19.7	77.0
Column Spike of 2-18-99	95.7	95.3	81.9	80.4	95.9
Column Spike of 3-3-99	86.7	90.7	89.5	70.3	94.1
Column Spike of 3-4-99	86.5	85.9	92.0	37.6	89.4
Column Spike # 1 of 5-24-99	85.6	82.4	84.6	81.6	83.4
Column Spike # 2 of 5-24-99	83.3	81.1	79.4	76.2	79.3
Mean	**90.0**	**89.5**	**92.5**	**72.6**	**89.3**
Standard Deviation	6.0	7.1	10.3	33.8	7.5
RSD (%)	6.7	7.9	11.1	46.6	8.4

* M.V. = Method Validation

Table VI (Continued)

Recovery of OC-Pesticides and PCBs

Through Florisil and Silica Gel Chromatographic Cleanup

Sample Name	Dieldrin %	Endrin %	Methoxychlor %	Mirex %	Endosulfan %	Endosulfan-II %
Column Spike #1 of M.V. *	96.6	110	120	98.8	94.4	90.8
Column Spike #2 of M.V. *	93.7	109	117	99.9	95.5	87.3
Column Spike #3 of M.V. *	95.6	108	113	100	96.9	92.6
Column Spike of 9-23-98	79.8	103	135	105	82.4	84.9
Column Spike of 10-5-98	95.6	90.1	87.2	113	121	85.6
Column Spike of 10-21-98	93.8	92.4	97.9	114	96.9	95.4
Column Spike of 10-22-98	95.5	89.3	94.6	0.0	92.4	89.7
Column Spike of 11-3-98	95.0	102	90.1	102	101	74.5
Column Spike of 11-23-98	96.4	107	93.2	0.0	106	66.1
Column Spike of 11-27-98	88.0	86.7	115	100	96.6	66.1
Column Spike of 2-3-99	72.9	68.4	83.4	105	81.3	73.0
Column Spike of 2-18-99	93.4	87.2	75.8	102	68.0	32.3
Column Spike of 3-3-99	81.1	77.4	24.2	90.7	85.5	0.0
Column Spike of 3-4-99	84.8	81.6	85.3	102	72.3	35.1
Column Spike # 1 of 5-24-99	86.7	78.9	89.8	82.1	89.1	89.3
Column Spike # 2 of 5-24-99	87.3	81.1	88.6	82.1	89.8	88.6
Mean	**89.8**	**92.0**	**94.4**	**87.3**	**91.8**	**72.0**
Standard Deviation	7.1	13.0	24.8	35.2	12.7	27.1
RSD (%)	7.9	14.2	26.3	40.3	13.8	37.6

Sample Name	Endosulfan Sulfate %	Over All %	Total PCBs %
Column Spike #1 of M.V. *	78.7	96.7	82.9
Column Spike #2 of M.V. *	73.2	93.7	80.2
Column Spike #3 of M.V. *	75.1	94.6	82.6
Column Spike of 9-23-98	81.6	90.6	89.2
Column Spike of 10-5-98	85.6	98.6	61.1
Column Spike of 10-21-98	98.1	98.2	95.6
Column Spike of 10-22-98	90.9	81.3	93.7
Column Spike of 11-3-98	72.8	93.3	96.0
Column Spike of 11-23-98	68.9	87.1	101
Column Spike of 11-27-98	79.8	89.3	89.9
Column Spike of 2-3-99	76.8	77.5	91.8
Column Spike of 2-18-99	170	92.0	89.9
Column Spike of 3-3-99	1.0	74.3	82.1
Column Spike of 3-4-99	124	83.7	84.4
Column Spike # 1 of 5-24-99	88.5	84.5	83.2
Column Spike # 2 of 5-24-99	91.1	83.5	95.0
Mean	**84.8**	**88.7**	**96.2**
Standard Deviation	33.5	15.3	87.8
RSD (%)	39.6	18.1	9.6

* M.V. = Method Validation

Table VII

Recovery of Current Use Pesticides

Through Florisil and Silica Gel Chromatographic Cleanup

Sample Name	Trifluralin %	Diazinon %	Chlorpyrifos %	cis-Permethrin %	trans-Permethrin %
Florisil, Rep.# 1 of M.V. *	81.0	86.3	87.2	96.9	95.1
Florisil, Rep.# 2 of M.V. *	80.0	81.2	85.3	97.6	98.5
Florisil, Rep.# 3 of M.V. *	79.1	83.0	85.0	97.8	96.5
Silica Gel, Rep.# 1 of M.V. *	84.3	72.6	76.7	110	108
Silica Gel, Rep.# 2 of M.V. *	85.9	83.0	77.5	95.6	94.5
Silica Gel, Rep.# 3 of M.V. *	82.1	76.4	73.4	95.0	92.7
Column Spike # 1	77.5	63.7	50.9	87.6	99.4
Column Spike # 2	78.1	65.2	50.1	89.9	104.8
Mean	**81.0**	**76.4**	**73.3**	**96.3**	**98.7**
Standard Deviation	2.9	8.5	14.9	6.7	5.3
RSD(%)	3.6	11.2	20.3	6.9	5.4

* M.V. = Method Validation

Table VIII

Recovery of PAHs From SPMD Spikes

Processed Concurrently With Study Samples

	Naphthalene %	Acenaphthylene %	Acenaphthene %	Fluorene %
Method Validation Rep # one	32.7	63.0	67.9	78.2
Method Validation Rep # two	27.2	57.5	77.4	84.2
Method Validation Rep # three	19.1	54.4	61.6	71.0
SPMD Spike of 9-15-98	25.5	55.3	63.3	67.1
SPMD Spike of 9-24-98	43.1	64.2	69.3	84.7
SPMD Spike of 9-28-98	50.7	68.7	75.4	79.8
SPMD Spike of 10-1-98	43.6	63.6	81.2	72.1
SPMD Spike of 10-8-98	49.2	79.8	79.7	98.9
SPMD Spike of 10-15-98	39.2	63.6	66.0	86.8
SPMD Spike of 11-19-98	46.3	90.5	75.9	72.6
SPMD Spike of 12-15-98	33.9	59.5	64.2	62.1
SPMD Spike of 1-11-99	36.8	68.9	69.4	76.5
SPMD Spike of 2-8-99	38.8	71.9	64.2	74.7
SPMD Spike of 2-10-99	57.5	80.8	80.2	77.8
SPMD Spike of 3-29-99	40.9	79.8	86.3	77.6
SPMD Spike of 4-7-99	31.4	46.2	49.8	61.2
SPMD Spike of 4-1-99	30.3	56.4	61.8	55.8
Mean	**38.0**	**66.1**	**70.2**	**75.4**
Standard Deviation	9.9	11.5	9.3	10.5
RSD (%)	26.1	17.4	13.3	13.9

	Phenanthrene %	Anthracene %	Fluoranthene %	Pyrene %
Method Validation Rep # one	100	82.7	93.6	91.3
Method Validation Rep # two	96.2	80.1	85.7	87.9
Method Validation Rep # three	84.2	74.9	88.7	82.6
SPMD Spike of 9-15-98	83.3	72.5	76.7	85.6
SPMD Spike of 9-24-98	85.8	70.0	103	82.9
SPMD Spike of 9-28-98	89.2	84.9	87.9	106
SPMD Spike of 10-1-98	83.5	93.2	84.3	80.9
SPMD Spike of 10-8-98	94.7	92.0	100	90.1
SPMD Spike of 10-15-98	87.7	72.8	96.2	93.6
SPMD Spike of 11-19-98	95.5	88.8	117	95.7
SPMD Spike of 12-15-98	72.5	61.9	76.2	72.7
SPMD Spike of 1-11-99	86.3	82.0	88.5	86.3
SPMD Spike of 2-8-99	92.0	83.5	96.4	99.4
SPMD Spike of 2-10-99	100	88.4	1036	104
SPMD Spike of 3-29-99	108	90.3	126	107
SPMD Spike of 4-7-99	76.4	52.9	74.6	87.8
SPMD Spike of 4-1-99	76.4	66.9	77.2	91.2
Mean	**88.9**	**78.7**	**92.6**	**90.9**
Standard Deviation	9.4	11.3	14.2	9.4
RSD (%)	10.6	14.4	15.3	10.4

Table VIII (Continued)

Recovery of PAHs From SPMD Spikes

Processed Concurrently With Study Samples

	Benz[a]anthracene %	Chrysene %	Benzo[b]fluoranthene %
Method Validation Rep # one	99.5	97.9	104
Method Validation Rep # two	99.0	98.4	101
Method Validation Rep # three	101	103	95.5
SPMD Spike of 9-15-98	86.9	81.8	92.6
SPMD Spike of 9-24-98	91.6	94.0	94.7
SPMD Spike of 9-28-98	88.6	87.4	87.6
SPMD Spike of 10-1-98	78.3	82.2	81.6
SPMD Spike of 10-8-98	102	110	94.3
SPMD Spike of 10-15-98	97.7	105	96.8
SPMD Spike of 11-19-98	92.1	99.5	87.7
SPMD Spike of 12-15-98	73.3	73.0	69.1
SPMD Spike of 1-11-99	132	108	69.0
SPMD Spike of 2-8-99	156	137	88.6
SPMD Spike of 2-10-99	112	93.9	97.4
SPMD Spike of 3-29-99	100	119	93.3
SPMD Spike of 4-7-99	75.9	94.6	71.2
SPMD Spike of 4-1-99	73.7	84.9	65.2
Mean	**97.6**	**98.2**	**87.6**
Standard Deviation	20.9	15.3	12.1
RSD (%)	21.5	15.6	13.8

	Benzo[k]fluoranthene %	Benzo[a]pyrene %	Indeno[1,2,3-cd]pyrene %
Method Validation Rep # one	102	104	107
Method Validation Rep # two	104	99.7	102
Method Validation Rep # three	93.8	96.4	90.9
SPMD Spike of 9-15-98	97.6	86.3	85.6
SPMD Spike of 9-24-98	94.3	92.6	88.1
SPMD Spike of 9-28-98	95.7	93.0	79.8
SPMD Spike of 10-1-98	91.9	72.9	75.5
SPMD Spike of 10-8-98	98.5	98.8	97.0
SPMD Spike of 10-15-98	104	97.2	94.2
SPMD Spike of 11-19-98	87.3	77.6	83.0
SPMD Spike of 12-15-98	79.8	62.6	63.1
SPMD Spike of 1-11-99	0.0	0.0	0.0
SPMD Spike of 2-8-99	82.8	90.8	93.0
SPMD Spike of 2-10-99	118	101	107
SPMD Spike of 3-29-99	125	70.2	84.3
SPMD Spike of 4-7-99	96.9	69.4	66.0
SPMD Spike of 4-1-99	78.7	74.6	62.7
Mean	**91.2**	**81.6**	**81.1**
Standard Deviation	26.4	24.7	25.0
RSD (%)	28.9	30.3	30.8

Table VIII (Continued)

Recovery of PAHs From SPMD Spikes

Processed Concurrently With Study Samples

	Dibenz[a,h]anthracene %	Benzo[g,h,i]perylene %	Over All %
Method Validation Rep # one	107	105	89.7
Method Validation Rep # two	104	103	88.0
Method Validation Rep # three	88.5	91.5	81.1
SPMD Spike of 9-15-98	89.3	78.7	76.8
SPMD Spike of 9-24-98	90.4	84.4	83.3
SPMD Spike of 9-28-98	67.9	84.9	83.0
SPMD Spike of 10-1-98	78.3	73.5	77.3
SPMD Spike of 10-8-98	102	92.1	92.5
SPMD Spike of 10-15-98	90.4	95.9	86.7
SPMD Spike of 11-19-98	88.5	78.9	86.0
SPMD Spike of 12-15-98	58.6	38.3	63.8
SPMD Spike of 1-11-99	0.0	0.0	56.5
SPMD Spike of 2-8-99	98.3	79.9	90.4
SPMD Spike of 2-10-99	122	112	97.1
SPMD Spike of 3-29-99	103	125	95.9
SPMD Spike of 4-7-99	77.0	78.2	69.3
SPMD Spike of 4-1-99	80.8	96.3	70.8
Mean	**85.0**	**83.4**	**81.7**
Standard Deviation	26.8	28.6	16.6
RSD (%)	31.5	34.2	20.5

Table IX

Recovery of OC-Pesticides and PCBs From SPMD Spikes

Processed Concurrently With Study Samples

Sample Name	HCB %	PCA %	α-BHC %	β-BHC %	δ-BHC %
SPMD Spike #1 of M.V. *	16.1	37.2	37.5	54.9	41.3
SPMD Spike #2 of M.V. *	54.2	277	218	152	119
SPMD Spike #3 of M.V. *	58.9	131	102	66.7	57.5
SPMD Spike of 9-15-98	105	103	51.9	38.5	31.3
SPMD Spike of 9-24-98	107	92.3	58.0	48.5	41.8
SPMD Spike of 9-28-98	97.0	112	64.3	50.4	45.4
SPMD Spike of 10-1-98	0.0	89.5	58.5	50.6	42.0
SPMD Spike of 10-8-98	46.3	93.6	64.6	59.0	48.0
SPMD Spike of 10-15-98	0.0	75.0	49.2	41.5	34.5
SPMD Spike of 11-19-98	74.3	122	73.5	51.9	45.1
SPMD Spike of 12-15-98	77.7	119	71.8	67.5	45.9
SPMD Spike of 1-11-99	60.2	124	77.1	58.3	39.6
SPMD Spike of 2-8-99	79.3	118	68.0	54.0	0.0
SPMD Spike of 2-10-99	81.8	114	67.7	55.8	46.2
SPMD Spike of 3-29-99	64.4	112	71.6	0.0	39.6
SPMD Spike of 4-7-99	66.8	107	73.0	0.0	72.5
SPMD Spike of 4-14-99	69.9	112	78.0	0.0	46.0
Mean	**62.3**	**114**	**75.5**	**50.0**	**46.8**
Standard Deviation	32.0	47.4	39.2	34.3	23.4
RSD (%)	51.4	41.6	51.9	68.7	50.1

Sample Name	Lindane %	Dacthal %	Heptachlor %	Heptachlor Epoxide %	Oxychlordane %
SPMD Spike #1 of M.V. *	60.1	29.5	45.6	56.4	57.7
SPMD Spike #2 of M.V. *	257	197	82.2	170	180
SPMD Spike #3 of M.V. *	100	63.0	75.7	75.8	71.0
SPMD Spike of 9-15-98	61.7	39.6	67.9	54.8	78.1
SPMD Spike of 9-24-98	67.4	61.1	88.8	61.1	87.6
SPMD Spike of 9-28-98	72.4	28.4	86.6	70.1	85.3
SPMD Spike of 10-1-98	70.8	86.0	2.7	68.2	66.3
SPMD Spike of 10-8-98	71.7	26.0	66.9	75.6	68.1
SPMD Spike of 10-15-98	54.7	42.0	14.0	64.2	88.9
SPMD Spike of 11-19-98	87.6	108	74.8	113	111
SPMD Spike of 12-15-98	79.3	57.4	75.6	78.6	73.6
SPMD Spike of 1-11-99	83.5	50.0	72.8	86.1	71.1
SPMD Spike of 2-8-99	76.6	45.3	81.5	83.7	62.0
SPMD Spike of 2-10-99	78.2	37.3	82.4	84.7	61.8
SPMD Spike of 3-29-99	89.0	8.7	62.1	71.3	91.7
SPMD Spike of 4-7-99	90.4	24.1	67.8	96.8	88.0
SPMD Spike of 4-14-99	96.9	26.8	60.2	83.8	85.5
Mean	**88.1**	**54.7**	**65.1**	**82.0**	**84.0**
Standard Deviation	45.3	43.9	24.0	26.9	28.2
RSD (%)	51.4	80.3	36.8	32.8	33.6

* M.V. = Method Validation

Table IX (Continued)

Recovery of OC-Pesticides and PCBs From SPMD Spikes

Processed Concurrently With Study Samples

Sample Name	cis-Chlordane %	trans-Chlordane %	cis-Nonachlor %	trans-Nonachlor %	o,p'-DDT %
SPMD Spike #1 of M.V. *	56.6	52.6	37.4	47.3	77.9
SPMD Spike #2 of M.V. *	155	142	99.3	131	179
SPMD Spike #3 of M.V. *	68.2	65.5	45.0	61.6	90.1
SPMD Spike of 9-15-98	70.0	53.2	38.5	48.5	72.6
SPMD Spike of 9-24-98	55.7	63.2	50.5	54.9	78.5
SPMD Spike of 9-28-98	61.9	69.3	52.1	60.9	75.9
SPMD Spike of 10-1-98	59.1	65.6	51.4	59.9	74.8
SPMD Spike of 10-8-98	64.7	71.8	57.0	62.6	76.6
SPMD Spike of 10-15-98	46.5	52.4	43.8	47.9	61.3
SPMD Spike of 11-19-98	78.5	121	51.0	83.9	95.7
SPMD Spike of 12-15-98	60.3	68.9	62.7	56.0	93.5
SPMD Spike of 1-11-99	59.6	69.3	71.1	54.5	70.7
SPMD Spike of 2-8-99	56.2	64.9	46.8	57.8	76.6
SPMD Spike of 2-10-99	55.7	66.7	61.5	57.7	82.8
SPMD Spike of 3-29-99	54.1	67.3	61.6	44.1	77.0
SPMD Spike of 4-7-99	73.2	87.1	86.3	73.1	78.2
SPMD Spike of 4-14-99	54.6	68.0	47.2	48.9	64.2
Mean	**66.5**	**73.5**	**56.7**	**61.8**	**83.8**
Standard Deviation	24.1	23.7	16.4	20.4	26.1
RSD (%)	36.3	32.2	28.9	33.1	31.1

Sample Name	o,p'-DDE %	o,p'-DDD %	p,p'-DDT %	p,p'-DDE %	p,p'-DDD %
SPMD Spike #1 of M.V. *	62.2	61.9	48.6	73.0	50.5
SPMD Spike #2 of M.V. *	162	167	134	121	123
SPMD Spike #3 of M.V. *	79.6	68.3	60.7	79.6	59.1
SPMD Spike of 9-15-98	68.9	59.9	56.3	88.7	52.4
SPMD Spike of 9-24-98	76.4	78.2	59.0	77.6	72.4
SPMD Spike of 9-28-98	77.9	72.0	59.0	123.9	67.8
SPMD Spike of 10-1-98	73.0	60.1	62.1	39.4	65.7
SPMD Spike of 10-8-98	67.1	75.9	59.9	62.1	76.7
SPMD Spike of 10-15-98	53.6	51.9	51.8	32.5	50.4
SPMD Spike of 11-19-98	121	67.9	93.4	101.5	72.0
SPMD Spike of 12-15-98	77.4	64.4	74.7	40.6	71.6
SPMD Spike of 1-11-99	73.1	85.1	58.5	80.6	62.7
SPMD Spike of 2-8-99	73.6	72.4	54.3	50.1	63.1
SPMD Spike of 2-10-99	72.3	94.8	75.7	43.3	65.1
SPMD Spike of 3-29-99	47.7	64.9	58.8	128.8	69.4
SPMD Spike of 4-7-99	63.0	81.4	56.7	139.7	86.7
SPMD Spike of 4-14-99	55.0	69.8	52.4	81.4	72.9
Mean	**76.7**	**76.2**	**65.7**	**80.2**	**69.5**
Standard Deviation	27.1	25.5	20.7	33.7	16.8
RSD (%)	35.3	33.5	31.6	42.0	24.2

* M.V. = Method Validation

Table IX (Continued)

Recovery of OC-Pesticides and PCBs From SPMD Spikes

Processed Concurrently With Study Samples

Sample Name	Dieldrin %	Endrin %	Methoxychlor %	Mirex %	Endosulfan %
SPMD Spike #1 of M.V. *	52.0	82.0	43.6	68.5	63.1
SPMD Spike #2 of M.V. *	174	189	139	77.6	168
SPMD Spike #3 of M.V. *	53.3	94.3	66.6	73.5	74.1
SPMD Spike of 9-15-98	58.3	66.7	40.0	74.7	65.0
SPMD Spike of 9-24-98	54.4	71.5	60.0	76.5	105
SPMD Spike of 9-28-98	63.7	70.3	46.4	90.4	86.1
SPMD Spike of 10-1-98	69.4	62.4	46.7	0.0	67.9
SPMD Spike of 10-8-98	61.5	80.5	36.2	91.0	75.2
SPMD Spike of 10-15-98	73.0	55.6	25.8	0.0	69.8
SPMD Spike of 11-19-98	98.6	85.4	67.5	79.0	98.5
SPMD Spike of 12-15-98	71.1	61.1	65.1	85.4	77.1
SPMD Spike of 1-11-99	77.6	74.3	35.5	87.4	66.9
SPMD Spike of 2-8-99	41.8	63.0	0.0	82.2	63.1
SPMD Spike of 2-10-99	57.9	80.7	46.3	81.7	65.9
SPMD Spike of 3-29-99	56.6	75.5	7.5	60.0	66.5
SPMD Spike of 4-7-99	63.8	85.4	36.2	86.6	83.3
SPMD Spike of 4-14-99	57.9	74.8	23.4	63.3	71.7
Mean	**69.7**	**80.7**	**46.2**	**69.3**	**80.4**
Standard Deviation	29.8	29.7	30.6	27.5	25.6
RSD (%)	42.7	36.8	66.3	39.7	31.9

Sample Name	ENDO-II %	ENDO-S %	Over All %	Total PCBs %
SPMD Spike #1 of M.V. *	52.1	32.3	51.8	74.5
SPMD Spike #2 of M.V. *	125	78.7	151	84.7
SPMD Spike #3 of M.V. *	59.2	38.9	71.8	85.8
SPMD Spike of 9-15-98	63.9	43.0	61.2	77.3
SPMD Spike of 9-24-98	66.0	57.1	69.3	64.2
SPMD Spike of 9-28-98	64.2	57.4	70.8	85.4
SPMD Spike of 10-1-98	58.0	48.6	55.5	83.8
SPMD Spike of 10-8-98	66.7	58.7	65.3	84.6
SPMD Spike of 10-15-98	33.9	30.9	46.1	73.6
SPMD Spike of 11-19-98	53.9	48.8	84.4	93.2
SPMD Spike of 12-15-98	60.0	51.3	69.9	86.3
SPMD Spike of 1-11-99	49.1	53.8	68.6	82.8
SPMD Spike of 2-8-99	0.6	0.0	56.9	76.8
SPMD Spike of 2-10-99	46.3	61.8	67.6	80.1
SPMD Spike of 3-29-99	58.1	41.3	61.1	85.0
SPMD Spike of 4-7-99	84.5	83.9	75.4	92.6
SPMD Spike of 4-14-99	58.9	50.1	62.0	89.1
Mean	**58.8**	**49.2**	**69.9**	**82.3**
Standard Deviation	24.4	18.9	28.4	7.3
RSD (%)	41.4	38.4	41.6	8.9

* M.V. = Method Validation

Table X

Recovery of Current Use Pesticides From SPMD Spikes

Processed Concurrently With Study Samples

Sample Name	Trifluralin %	Diazinon %	Chlorpyrifos %	*cis*-Permethrin %	*trans*-Permethrin %
SPMD Spike of 3-29-99	92.7	88.8	91.7	109	94.0
SPMD Spike of 4-7-99	102	94.0	87.3	98.0	75.9
SPMD Spike of 4-14-99	86.4	49.8	6.7	98.1	101
Mean	**93.8**	**77.5**	**61.9**	**102**	**90.2**
Standard Deviation	7.9	24.2	47.9	6.5	12.8
RSD(%)	8.4	31.2	77.4	6.4	14.2

Table XI

Elution Order of Targeted Analytes During

Gas Chromatographic Analysis*

OC-Pesticides (on DB-35 MS)	Retention Time **Min.**	**PAHs** (on DB-5)	Retention Time **Min.**
HCB	10.8	Naphthalene	6.7
PCA	11.2	Acenaphthylene	13.1
α-BHC	11.6	Acenaphthene	14.5
Lindane	13.1	Fluorene	18.3
β-BHC	14.9	Phenanthrene	24.5
Heptachlor	15.1	Anthracene	25.4
δ-BHC	16.3	Fluoranthene	34.3
Dacthal	18.7	Pyrene	35.7
Oxychlordane	19.8	D_{14}-4-Terphenyl as Internal Std	38.9
Heptachlor Epoxide	20.6	Benz[a]anthracene	46.7
trans-Chlordane	21.6	Chrysene	46.8
trans-Nonachlor	21.8	Benzo[b]fluoranthene	59.5
o,p'-DDE	22.0	Benzo[k]fluoranthene	59.6
cis-Chlordane	22.2	Benzo[a]pyrene	61.7
Endosulfan	22.3	Indeno[1,2,3-cd]pyrene	68.6
p,p'-DDE	24.8	Dibenz[a,h]anthracene	68.8
Dieldrin	25.1	Benzo[g,h,i]perylene	69.7
o,p'-DDD	26.3		
Endrin	27.1	Total PID Response *	8.0 to 75.0
cis-Nonachlor	27.8	*As pyrene	
o,p'-DDT	28.0		
p,p'-DDD	28.9	**Additional Compounds**	
Endosulfan-II	29.3	(on DB-35 MS)	
p,p'-DDT	31.0	Trifluralin	7.9
Endosulfan Sulfate	32.9	Diazinon	11.8
Methoxychlor	36.7	Chlorpyrifos	17.7
Mirex	37.2	cis-Permethrin	38.4
OCN as Internal Std.	44.1	trans-Permethrin	39.0
Total PCBs	10.0 to 30	OCN as Internal Std.	41.2

* NOTE: Slight variations in retention times were noted on a run by run basis. Retention times as given reflect the example provided in Figures 1,2,3 and 4.

Table XII

Total Analytes per Sample (n= 4 SPMDs)

Site # 1
EPA # 79 12128
House # 671981A

OC-Pesticides	ng
HCB	62
PCA	420
α-BHC	11
β-BHC	230
δ-BHC	56
Lindane	36
Dacthal	37
Heptachlor	3800
Heptachlor Epoxide	120
Oxychlordane	53
cis-Chlordane	850
trans-Chlordane	2000
cis-Nonachlor	42
trans-Nonachlor	650
o,p'-DDT	78
o,p'-DDE	100
o,p'-DDD	<MDL
p,p'-DDT	88
p,p'-DDE	100
p,p'-DDD	<MQL
Dieldrin	96
Endrin	19
Methoxychlor	<MDL
Mirex	0.41
Endosulfan	52
Endosulfan-II	120
Endosulfan Sulfate	<MDL
Sum of Identified OCs	9000
Total PCBs	5500

PAHs	μg
Naphthalene	5.4
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MQL
Phenanthrene	1.6
Anthracene	<MQL
Fluoranthene	1.3
Pyrene	1.3
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MQL
Total PID Response *	200

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 2
EPA # 79 12157
House # 672867A

OC-Pesticides	**ng**
HCB	15
PCA	110
α-BHC	87
β-BHC	23
δ-BHC	<MDL
Lindane	100
Dacthal	<MDL
Heptachlor	160
Heptachlor Epoxide	57
Oxychlordane	<MDL
cis-Chlordane	160
trans-Chlordane	290
cis-Nonachlor	32
trans-Nonachlor	61
o,p'-DDT	7200
o,p'-DDE	2000
o,p'-DDD	350
p,p'-DDT	6300
p,p'-DDE	1500
p,p'-DDD	920
Dieldrin	<MQL
Endrin	220
Methoxychlor	<MDL
Mirex	0.43
Endosulfan	130
Endosulfan-II	240
Endosulfan Sulfate	<MDL
Sum of Identified OCs	20000
Total PCBs	2700

PAHs	**μg**
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.1
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	1.3
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	260

Additional Compounds	**Ng**
Trifluralin	<MDL
Diazinon	27000
Chlorpyrifos	72000
cis-Permethrin	1100
trans-Permethrin	1200

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 3
EPA # 79 12186
House # 671529A

OC-Pesticides	ng	PAHs	µg
HCB	30	Naphthalene	<MDL
PCA	51	Acenaphthylene	0.33
α-BHC	3.2	Acenaphthene	<MQL
β-BHC	24	Fluorene	<MDL
δ-BHC	<MQL	Phenanthrene	3.9
Lindane	<MQL	Anthracene	0.70
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	160	Pyrene	1.1
Heptachlor Epoxide	<MQL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	79	Benzo[b]fluoranthene	<MDL
trans-Chlordane	150	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	8.6	Benzo[a]pyrene	<MDL
trans-Nonachlor	44	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	18	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	<MDL	Total PID Response *	160
p,p'-DDE	17		
p,p'-DDD	12		
Dieldrin	110		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	<MQL		
Endosulfan	39		
Endosulfan-II	20		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	860		
Total PCBs	1300		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 4
EPA # 79 12346
House # 673697A

OC-Pesticides	ng
HCB	20
PCA	56
α-BHC	5.8
β-BHC	10
δ-BHC	<MDL
Lindane	86
Dacthal	53
Heptachlor	35
Heptachlor Epoxide	27
Oxychlordane	<MDL
cis-Chlordane	430
trans-Chlordane	390
cis-Nonachlor	36
trans-Nonachlor	210
o,p'-DDT	460
o,p'-DDE	100
o,p'-DDD	170
p,p'-DDT	930
p,p'-DDE	510
p,p'-DDD	23
Dieldrin	200
Endrin	41
Methoxychlor	<MQL
Mirex	1.8
Endosulfan	35
Endosulfan-II	150
Endosulfan Sulfate	<MDL
Sum of Identified OCs	4000
Total PCBs	2000

PAHs	µg
Naphthalene	2.2
Acenaphthylene	1.2
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	5.4
Anthracene	<MQL
Fluoranthene	4.2
Pyrene	3.6
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	140

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 5
EPA # 79 12362
House # 673697A

OC-Pesticides	ng	PAHs	µg
HCB	9.3	Naphthalene	2.0
PCA	33	Acenaphthylene	1.3
α-BHC	8.8	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.4
Lindane	<MQL	Anthracene	<MQL
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	11	Pyrene	<MDL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	93	Benzo[b]fluoranthene	<MDL
trans-Chlordane	91	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	12	Benzo[a]pyrene	<MDL
trans-Nonachlor	57	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	55	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	19	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	19		
p,p'-DDT	100	Total PID Response *	<MDL
p,p'-DDE	33		
p,p'-DDD	<MDL		
Dieldrin	<MQL		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	0.77		
Endosulfan	100		
Endosulfan-II	44		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	690		
Total PCBs	<MDL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 6
EPA # 79 12391
House # 671529A

OC-Pesticides	**ng**	**PAHs**	**µg**
HCB	8.0	Naphthalene	2.6
PCA	24	Acenaphthylene	0.67
α-BHC	6.4	Acenaphthene	<MDL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	<MQL
Lindane	<MQL	Anthracene	<MDL
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	10	Pyrene	<MDL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	28	Benzo[b]fluoranthene	<MDL
trans-Chlordane	42	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MQL	Benzo[a]pyrene	<MDL
trans-Nonachlor	19	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MQL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	<MDL
p,p'-DDE	0.75		
p,p'-DDD	<MDL		
Dieldrin	<MDL		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	<MQL		
Endosulfan	71		
Endosulfan-II	15		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	230		
Total PCBs	<MDL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 8
EPA # 79 14212
House # 731528A

OC-Pesticides	ng
HCB	40
PCA	20
α-BHC	4.8
β-BHC	13
δ-BHC	<MDL
Lindane	20
Dacthal	26
Heptachlor	10
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	12
trans-Chlordane	20
cis-Nonachlor	<MDL
trans-Nonachlor	11
o,p'-DDT	<MQL
o,p'-DDE	6.4
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	43
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MQL
Methoxychlor	<MDL
Mirex	<MQL
Endosulfan	110
Endosulfan-II	11
Endosulfan Sulfate	<MDL
Sum of Identified OCs	340
Total PCBs	<MDL

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.1
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	0.82
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 9
EPA # 79 12463
House # 671819A

OC-Pesticides	ng	PAHs	µg
HCB	13	Naphthalene	<MDL
PCA	40	Acenaphthylene	<MDL
α-BHC	3.8	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	0.80
Lindane	<MDL	Anthracene	<MQL
Dacthal	<MDL	Fluoranthene	<MQL
Heptachlor	57	Pyrene	1.9
Heptachlor Epoxide	<MQL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	92	Benzo[b]fluoranthene	<MDL
trans-Chlordane	160	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	9.0	Benzo[a]pyrene	<MDL
trans-Nonachlor	60	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MDL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	11	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	130	Total PID Response *	260
p,p'-DDE	120		
p,p'-DDD	<MDL		
Dieldrin	<MQL		
Endrin	<MDL		
Methoxychlor	<MDL	**Additional Compounds**	**ng**
Mirex	<MDL		
Endosulfan	44	Trifluralin	23
Endosulfan-II	<MDL	Diazinon	660
Endosulfan Sulfate	<MDL	Chlorpyrifos	770
		cis-Permethrin	<MDL
Sum of Identified OCs	740	trans-Permethrin	<MQL
Total PCBs	1700		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 10
EPA # 79 12421
House # 671587A

OC-Pesticides	ng	PAHs	µg
HCB	20	Naphthalene	<MDL
PCA	96	Acenaphthylene	<MDL
α-BHC	6.1	Acenaphthene	<MQL
β-BHC	<MQL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.1
Lindane	<MQL	Anthracene	<MQL
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	12	Pyrene	1.1
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	48	Benzo[b]fluoranthene	<MDL
trans-Chlordane	60	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MQL	Benzo[a]pyrene	<MDL
trans-Nonachlor	25	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	22	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	14	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MQL	Total PID Response *	<MQL
p,p'-DDE	39		
p,p'-DDD	<MDL		
Dieldrin	<MQL		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	0.89		
Endosulfan	52		
Endosulfan-II	19		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	410		
Total PCBs	2100		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 11
EPA # 79 12529
House # 673785A

OC-Pesticides	ng	PAHs	µg
HCB	150	Naphthalene	<MQL
PCA	110	Acenaphthylene	<MQL
α-BHC	5.6	Acenaphthene	<MQL
β-BHC	19	Fluorene	7.4
δ-BHC	<MDL	Phenanthrene	15
Lindane	30	Anthracene	3.4
Dacthal	<MDL	Fluoranthene	2.6
Heptachlor	57	Pyrene	2.7
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	32	Benzo[b]fluoranthene	<MDL
trans-Chlordane	49	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	16	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	26	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	5.4	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MQL	Total PID Response *	310
p,p'-DDE	22		
p,p'-DDD	<MDL		
Dieldrin	<MQL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	0.65		
Endosulfan	12		
Endosulfan-II	8.0		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	540		
Total PCBs	2000		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 12
EPA # 79 12867
House # 172514A

OC-Pesticides	ng	PAHs	µg
HCB	22	Naphthalene	<MQL
PCA	75	Acenaphthylene	<MDL
α-BHC	2.8	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	2.4
Lindane	110	Anthracene	<MQL
Dacthal	37	Fluoranthene	<MQL
Heptachlor	100	Pyrene	<MQL
Heptachlor Epoxide	56	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	640	Benzo[b]fluoranthene	<MDL
trans-Chlordane	690	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	38	Benzo[a]pyrene	<MDL
trans-Nonachlor	450	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	150	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	76	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	250	Total PID Response *	<MQL
p,p'-DDE	210		
p,p'-DDD	7.7		
Dieldrin	<MQL		
Endrin	17		
Methoxychlor	<MQL		
Mirex	0.85		
Endosulfan	<MDL		
Endosulfan-II	150		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	3100		
Total PCBs	4400		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 13
EPA # 79 12636
House # 172152A

OC-Pesticides	ng
HCB	51
PCA	87
α-BHC	5.8
β-BHC	18
δ-BHC	<MDL
Lindane	300
Dacthal	<MQL
Heptachlor	45
Heptachlor Epoxide	32
Oxychlordane	<MDL
cis-Chlordane	190
trans-Chlordane	180
cis-Nonachlor	17
trans-Nonachlor	110
o,p'-DDT	66
o,p'-DDE	34
o,p'-DDD	<MQL
p,p'-DDT	140
p,p'-DDE	200
p,p'-DDD	<MQL
Dieldrin	160
Endrin	18
Methoxychlor	<MDL
Mirex	6.7
Endosulfan	<MQL
Endosulfan-II	59
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1700
Total PCBs	4300

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	3.0
Anthracene	1.0
Fluoranthene	<MQL
Pyrene	<MQL
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	160

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 14
EPA # 79 12548
House # 731212A

OC-Pesticides	ng	PAHs	µg
HCB	51	Naphthalene	1.6
PCA	44	Acenaphthylene	<MDL
α-BHC	5.7	Acenaphthene	0.74
β-BHC	10	Fluorene	<MQL
δ-BHC	<MDL	Phenanthrene	4.0
Lindane	37	Anthracene	<MQL
Dacthal	1100	Fluoranthene	1.0
Heptachlor	10	Pyrene	1.0
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	72	Benzo[b]fluoranthene	<MDL
trans-Chlordane	89	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	12	Benzo[a]pyrene	<MDL
trans-Nonachlor	55	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	2700	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	65	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	140		
p,p'-DDT	9000	Total PID Response *	<MQL
p,p'-DDE	1800		
p,p'-DDD	370		
Dieldrin	330		
Endrin	46		
Methoxychlor	510		
Mirex	0.89		
Endosulfan	1200		
Endosulfan-II	240		
Endosulfan Sulfate	19		
Sum of Identified OCs	18000		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 15
EPA # 79 12593
House # 171768A

OC-Pesticides	**ng**	**PAHs**	**µg**
HCB	<MDL	Naphthalene	<MQL
PCA	22	Acenaphthylene	<MDL
α-BHC	15	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MQL
δ-BHC	<MQL	Phenanthrene	6.5
Lindane	41	Anthracene	0.68
Dacthal	<MDL	Fluoranthene	1.6
Heptachlor	<MDL	Pyrene	1.4
Heptachlor Epoxide	20	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	60	Benzo[b]fluoranthene	<MDL
trans-Chlordane	76	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	18	Benzo[a]pyrene	<MDL
trans-Nonachlor	26	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	84	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	10	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MQL	Total PID Response *	340
p,p'-DDE	<MDL		
p,p'-DDD	<MDL		
Dieldrin	710		
Endrin	36		
Methoxychlor	<MDL	**Additional Compounds**	**ng**
Mirex	<MDL		
Endosulfan	35	Trifluralin	25
Endosulfan-II	<MDL	Diazinon	510
Endosulfan Sulfate	<MDL	Chlorpyrifos	2100
		cis-Permethrin	<MDL
Sum of Identified OCs	1200	trans-Permethrin	<MQL
Total PCBs	1600		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 16
EPA # 79 12681
House # 731241A

OC-Pesticides	ng
HCB	20
PCA	61
α-BHC	3.0
β-BHC	<MQL
δ-BHC	<MDL
Lindane	35
Dacthal	170
Heptachlor	4.4
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	12
trans-Chlordane	25
cis-Nonachlor	<MDL
trans-Nonachlor	8.7
o,p'-DDT	31
o,p'-DDE	10
o,p'-DDD	<MDL
p,p'-DDT	<MQL
p,p'-DDE	190
p,p'-DDD	<MQL
Dieldrin	89
Endrin	<MQL
Methoxychlor	<MDL
Mirex	3.2
Endosulfan	360
Endosulfan-II	42
Endosulfan Sulfate	<MDL
Sum of Identified OCs	110
Total PCBs	4700

PAHs	μg
Naphthalene	<MQL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.6
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	1.0
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MQL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	92

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 17
EPA # 79 12652
House # 172194A

OC-Pesticides	ng	PAHs	µg
HCB	15	Naphthalene	<MDL
PCA	20	Acenaphthylene	<MDL
α-BHC	20	Acenaphthene	<MQL
β-BHC	18	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.7
Lindane	77	Anthracene	<MQL
Dacthal	42	Fluoranthene	<MQL
Heptachlor	14	Pyrene	<MQL
Heptachlor Epoxide	<MQL	Benz[a]anthracene	<MDL
Oxychlordane	<MQL	Chrysene	<MDL
cis-Chlordane	30	Benzo[b]fluoranthene	<MDL
trans-Chlordane	47	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	45	Benzo[a]pyrene	<MDL
trans-Nonachlor	15	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	22	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	7.5	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MQL	Total PID Response *	<MQL
p,p'-DDE	80		
p,p'-DDD	<MQL		
Dieldrin	320		
Endrin	24		
Methoxychlor	<MDL	**Additional Compounds**	**ng**
Mirex	1.8		
Endosulfan	49	Trifluralin	<MQL
Endosulfan-II	18	Diazinon	330
Endosulfan Sulfate	<MQL	Chlorpyrifos	2200
		cis-Permethrin	<MQL
Sum of Identified OCs	870	trans-Permethrin	<MQL
Total PCBs	1300		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 18
EPA # 79 12753
House # 731238A

OC-Pesticides	ng	PAHs	µg
HCB	78	Naphthalene	2.1
PCA	81	Acenaphthylene	<MDL
α-BHC	3.9	Acenaphthene	<MQL
β-BHC	62	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.9
Lindane	<MQL	Anthracene	0.6
Dacthal	850	Fluoranthene	1.8
Heptachlor	13	Pyrene	3.3
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	43	Benzo[b]fluoranthene	<MDL
trans-Chlordane	40	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	29	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	28	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MQL	Total PID Response *	270
p,p'-DDE	230		
p,p'-DDD	<MDL		
Dieldrin	450		
Endrin	44		
Methoxychlor	<MDL	**Additional Compounds**	**ng**
Mirex	1.4		
Endosulfan	1600	Trifluralin	100
Endosulfan-II	210	Diazinon	1100
Endosulfan Sulfate	<MQL	Chlorpyrifos	5400
		cis-Permethrin	530
Sum of Identified OCs	3800	trans-Permethrin	610
Total PCBs	1500		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 19
EPA # 79 12795
House # 731254A

OC-Pesticides	ng
HCB	52
PCA	87
α-BHC	7.4
β-BHC	13
δ-BHC	140
Lindane	48
Dacthal	480
Heptachlor	40
Heptachlor Epoxide	100
Oxychlordane	110
cis-Chlordane	210
trans-Chlordane	280
cis-Nonachlor	<MQL
trans-Nonachlor	150
o,p'-DDT	130
o,p'-DDE	110
o,p'-DDD	200
p,p'-DDT	200
p,p'-DDE	470
p,p'-DDD	11
Dieldrin	240
Endrin	120
Methoxychlor	<MDL
Mirex	13
Endosulfan	1100
Endosulfan-II	140
Endosulfan Sulfate	<MQL
Sum of Identified OCs	4400
Total PCBs	<MQL

PAHs	μg
Naphthalene	<MDL
Acenaphthylene	2.1
Acenaphthene	<MQL
Fluorene	<MQL
Phenanthrene	2.8
Anthracene	<MQL
Fluoranthene	1.2
Pyrene	1.9
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	190

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 20
EPA # 79 12724
House # 171595A

OC-Pesticides	ng
HCB	91
PCA	26
α-BHC	3.8
β-BHC	10
δ-BHC	<MDL
Lindane	31
Dacthal	<MQL
Heptachlor	37
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	110
trans-Chlordane	110
cis-Nonachlor	9.3
trans-Nonachlor	44
o,p'-DDT	140
o,p'-DDE	24
o,p'-DDD	<MQL
p,p'-DDT	290
p,p'-DDE	140
p,p'-DDD	11
Dieldrin	<MQL
Endrin	<MQL
Methoxychlor	<MQL
Mirex	5.1
Endosulfan	17
Endosulfan-II	41
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1200
Total PCBs	<MQL

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	1.9
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	1.8
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	74

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 21
EPA # 79 12838
House # 172686A

OC-Pesticides	ng
HCB	200
PCA	40
α-BHC	4.3
β-BHC	<MQL
δ-BHC	<MDL
Lindane	27
Dacthal	25
Heptachlor	16
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	47
trans-Chlordane	49
cis-Nonachlor	<MQL
trans-Nonachlor	19
o,p'-DDT	37
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	<MQL
p,p'-DDE	27
p,p'-DDD	<MQL
Dieldrin	<MQL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	0.43
Endosulfan	20
Endosulfan-II	19
Endosulfan Sulfate	<MDL
Sum of Identified OCs	530
Total PCBs	<MQL

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	0.92
Anthracene	<MQL
Fluoranthene	<MDL
Pyrene	<MQL
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 22
EPA # 79 12913
House # 171524A

OC-Pesticides	ng	PAHs	µg
HCB	37	Naphthalene	<MQL
PCA	56	Acenaphthylene	<MQL
α-BHC	2.4	Acenaphthene	0.66
β-BHC	19	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	8.6
Lindane	56	Anthracene	2.5
Dacthal	<MQL	Fluoranthene	4.4
Heptachlor	32	Pyrene	10
Heptachlor Epoxide	<MQL	Benz[a]anthracene	<MQL
Oxychlordane	<MDL	Chrysene	<MQL
cis-Chlordane	44	Benzo[b]fluoranthene	<MDL
trans-Chlordane	57	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MQL	Benzo[a]pyrene	<MQL
trans-Nonachlor	21	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	38	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	15	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	<MQL	Total PID Response *	370
p,p'-DDE	120		
p,p'-DDD	<MQL		
Dieldrin	<MDL		
Endrin	<MQL		
Methoxychlor	150		
Mirex	<MQL		
Endosulfan	18		
Endosulfan-II	18		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	680		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 23
EPA # 79 12939
House # 173272A

OC-Pesticides	**ng**
HCB	20
PCA	35
α-BHC	6.4
β-BHC	20
δ-BHC	<MQL
Lindane	43
Dacthal	<MQL
Heptachlor	20
Heptachlor Epoxide	<MQL
Oxychlordane	<MQL
cis-Chlordane	24
trans-Chlordane	32
cis-Nonachlor	<MQL
trans-Nonachlor	13
o,p'-DDT	<MQL
o,p'-DDE	<MQL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	<MDL
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	<MQL
Endosulfan	10
Endosulfan-II	10
Endosulfan Sulfate	<MDL
Sum of Identified OCs	230
Total PCBs	<MQL

PAHs	**µg**
Naphthalene	1.0
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	1.2
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	0.90
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	90

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 24
EPA # 79 12841
House # 172598A

OC-Pesticides	ng
HCB	21
PCA	16
α-BHC	<MDL
β-BHC	<MDL
δ-BHC	<MQL
Lindane	41
Dacthal	<MDL
Heptachlor	82
Heptachlor Epoxide	25
Oxychlordane	96
cis-Chlordane	200
trans-Chlordane	200
cis-Nonachlor	38
trans-Nonachlor	110
o,p'-DDT	53
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	<MQL
p,p'-DDE	110
p,p'-DDD	<MDL
Dieldrin	1600
Endrin	110
Methoxychlor	<MDL
Mirex	0.79
Endosulfan	<MDL
Endosulfan-II	160
Endosulfan Sulfate	<MDL
Sum of Identified OCs	2800
Total PCBs	10000

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.2
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	0.82
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	<MQL

Additional Compounds	ng
Trifluralin	67
Diazinon	700
Chlorpyrifos	38000
cis-Permethrin	<MDL
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 25
EPA # 79 12968
House # 171579A

OC-Pesticides	ng
HCB	62
PCA	50
α-BHC	3.6
β-BHC	<MDL
δ-BHC	<MQL
Lindane	370
Dacthal	<MQL
Heptachlor	80
Heptachlor Epoxide	<MQL
Oxychlordane	<MDL
cis-Chlordane	180
trans-Chlordane	200
cis-Nonachlor	12
trans-Nonachlor	110
o,p'-DDT	<MQL
o,p'-DDE	25
o,p'-DDD	28
p,p'-DDT	<MDL
p,p'-DDE	4.6
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	40
Methoxychlor	<MDL
Mirex	<MQL
Endosulfan	15
Endosulfan-II	90
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1300
Total PCBs	<MQL

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	0.58
Fluorene	<MDL
Phenanthrene	3.0
Anthracene	1.0
Fluoranthene	<MQL
Pyrene	<MQL
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	150

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 26
EPA # 79 13121
House # 172152A

OC-Pesticides	ng	PAHs	µg
HCB	17	Naphthalene	2.3
PCA	69	Acenaphthylene	<MQL
α-BHC	6.4	Acenaphthene	<MDL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.1
Lindane	<MQL	Anthracene	<MDL
Dacthal	<MQL	Fluoranthene	<MDL
Heptachlor	2.0	Pyrene	<MDL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	16	Benzo[b]fluoranthene	<MDL
trans-Chlordane	20	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MQL
trans-Nonachlor	19	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	<MDL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	8.3	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	<MQL
p,p'-DDE	2.2		
p,p'-DDD	<MDL		
Dieldrin	<MDL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	<MQL		
Endosulfan	25		
Endosulfan-II	5.0		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	190		
Total PCBs	<MDL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 27
EPA # 79 14182
House # 171393A

OC-Pesticides	ng	PAHs	µg
HCB	35	Naphthalene	<MQL
PCA	37	Acenaphthylene	<MQL
α-BHC	3.6	Acenaphthene	<MQL
β-BHC	17	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.4
Lindane	77	Anthracene	0.72
Dacthal	<MDL	Fluoranthene	1.9
Heptachlor	77	Pyrene	2.8
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MQL
cis-Chlordane	30	Benzo[b]fluoranthene	<MDL
trans-Chlordane	42	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	18	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	45	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	8.4	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	17		
p,p'-DDT	<MQL	Total PID Response *	170
p,p'-DDE	73		
p,p'-DDD	<MQL		
Dieldrin	<MQL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	0.31		
Endosulfan	15		
Endosulfan-II	13		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	510		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 28
EPA # 79 13176
House # 673147A

OC-Pesticides	ng	PAHs	µg
HCB	30	Naphthalene	<MQL
PCA	170	Acenaphthylene	<MDL
α-BHC	2.4	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	150	Phenanthrene	1.6
Lindane	52	Anthracene	<MQL
Dacthal	160	Fluoranthene	<MQL
Heptachlor	420	Pyrene	0.76
Heptachlor Epoxide	170	Benz[a]anthracene	<MDL
Oxychlordane	38	Chrysene	<MDL
cis-Chlordane	1100	Benzo[b]fluoranthene	<MDL
trans-Chlordane	1400	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	55	Benzo[a]pyrene	<MDL
trans-Nonachlor	730	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	61	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	120	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	<MQL	Total PID Response *	94
p,p'-DDE	24		
p,p'-DDD	<MQL		
Dieldrin	110		
Endrin	110		
Methoxychlor	<MDL		
Mirex	12.7		
Endosulfan	78		
Endosulfan-II	260		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	5300		
Total PCBs	8700		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 29
EPA # 79 13235
House # 673831A

OC-Pesticides	ng	PAHs	µg
HCB	26	Naphthalene	0.72
PCA	120	Acenaphthylene	<MDL
α-BHC	3.0	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.9
Lindane	21	Anthracene	<MQL
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	44	Pyrene	0.88
Heptachlor Epoxide	<MQL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	49	Benzo[b]fluoranthene	<MDL
trans-Chlordane	88	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MQL	Benzo[a]pyrene	<MDL
trans-Nonachlor	34	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	430	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	23	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	510	Total PID Response *	<MQL
p,p'-DDE	84		
p,p'-DDD	<MQL		
Dieldrin	<MQL		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	0.95		
Endosulfan	37		
Endosulfan-II	28		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	1500		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 30
EPA # 79 13424
House # 731371A

OC-Pesticides	ng	PAHs	µg
HCB	34	Naphthalene	<MDL
PCA	17	Acenaphthylene	<MDL
α-BHC	<MDL	Acenaphthene	<MQL
β-BHC	19	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	1.2
Lindane	<MQL	Anthracene	<MQL
Dacthal	58	Fluoranthene	<MQL
Heptachlor	3.6	Pyrene	<MQL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	<MQL	Benzo[b]fluoranthene	<MDL
trans-Chlordane	8.9	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	4.1	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MDL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MQL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	110
p,p'-DDE	16		
p,p'-DDD	<MDL		
Dieldrin	<MDL		
Endrin	22		
Methoxychlor	<MDL		
Mirex	<MQL		
Endosulfan	170		
Endosulfan-II	12		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	360		
Total PCBs	<MDL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 31
EPA # 79 13219
House # 673596A

OC-Pesticides	ng
HCB	47
PCA	81
α-BHC	3.9
β-BHC	32
δ-BHC	<MQL
Lindane	31
Dacthal	<MQL
Heptachlor	83
Heptachlor Epoxide	25
Oxychlordane	<MDL
cis-Chlordane	280
trans-Chlordane	310
cis-Nonachlor	20
trans-Nonachlor	190
o,p'-DDT	20
o,p'-DDE	39
o,p'-DDD	13
p,p'-DDT	<MDL
p,p'-DDE	60
p,p'-DDD	<MQL
Dieldrin	140
Endrin	21
Methoxychlor	<MDL
Mirex	<MDL
Endosulfan	16
Endosulfan-II	110
Endosulfan Sulfate	<MQL
Sum of Identified OCs	1500
Total PCBs	1500

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	2.3
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	4.7
Anthracene	1.2
Fluoranthene	1.2
Pyrene	1.4
Benz[a]anthracene	0.88
Chrysene	0.53
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MQL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	420

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 32
EPA # 79 13482
House # 172989A

OC-Pesticides	ng
HCB	16
PCA	30
α-BHC	9.2
β-BHC	<MDL
δ-BHC	<MDL
Lindane	<MQL
Dacthal	<MDL
Heptachlor	6.8
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	<MDL
trans-Chlordane	<MDL
cis-Nonachlor	10
trans-Nonachlor	<MDL
o,p'-DDT	13
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	35
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	<MDL
Endosulfan	<MQL
Endosulfan-II	<MDL
Endosulfan Sulfate	<MDL
Sum of Identified OCs	120
Total PCBs	<MQL

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.6
Anthracene	<MQL
Fluoranthene	1.3
Pyrene	1.1
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	450

Additional Compounds	ng
Trifluralin	65
Diazinon	490
Chlorpyrifos	380
cis-Permethrin	<MQL
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 33
EPA # 79 13189
House # 672434A

OC-Pesticides	**ng**
HCB	22
PCA	120
α-BHC	3.7
β-BHC	<MQL
δ-BHC	<MDL
Lindane	23
Dacthal	<MQL
Heptachlor	41
Heptachlor Epoxide	<MQL
Oxychlordane	<MQL
cis-Chlordane	54
trans-Chlordane	87
cis-Nonachlor	11
trans-Nonachlor	41
o,p'-DDT	82
o,p'-DDE	22
o,p'-DDD	15
p,p'-DDT	150
p,p'-DDE	78
p,p'-DDD	8.6
Dieldrin	290
Endrin	<MQL
Methoxychlor	<MDL
Mirex	<MQL
Endosulfan	24
Endosulfan-II	22
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1100
Total PCBs	<MQL

PAHs	**µg**
Naphthalene	<MQL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.5
Anthracene	0.48
Fluoranthene	1.1
Pyrene	1.6
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	160

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 34
EPA # 79 13453
House # 172846A

OC-Pesticides	ng
HCB	26
PCA	160
α-BHC	<MDL
β-BHC	13
δ-BHC	<MQL
Lindane	45
Dacthal	<MDL
Heptachlor	60
Heptachlor Epoxide	<MDL
Oxychlordane	<MQL
cis-Chlordane	28
trans-Chlordane	43
cis-Nonachlor	<MDL
trans-Nonachlor	24
o,p'-DDT	<MQL
o,p'-DDE	<MDL
o,p'-DDD	20
p,p'-DDT	<MDL
p,p'-DDE	7.3
p,p'-DDD	<MQL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	0.69
Endosulfan	<MDL
Endosulfan-II	16
Endosulfan Sulfate	<MDL
Sum of Identified OCs	440
Total PCBs	1400

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MDL
Fluorene	<MDL
Phenanthrene	<MQL
Anthracene	<MQL
Fluoranthene	<MDL
Pyrene	<MDL
Benz[a]anthracene	<MQL
Chrysene	<MQL
Benzo[b]fluoranthene	<MQL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MQL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	260

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 35
EPA # 79 14153
House # 732387A

OC-Pesticides	**ng**	**PAHs**	**µg**
HCB	32	Naphthalene	<MQL
PCA	25	Acenaphthylene	<MDL
α-BHC	3.0	Acenaphthene	<MQL
β-BHC	6.3	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.4
Lindane	<MQL	Anthracene	0.7
Dacthal	<MQL	Fluoranthene	1.3
Heptachlor	5.9	Pyrene	1.8
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	17	Benzo[b]fluoranthene	<MDL
trans-Chlordane	26	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	13	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	12	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MQL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	<MQL
p,p'-DDE	86		
p,p'-DDD	<MDL		
Dieldrin	<MQL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	1.0		
Endosulfan	130		
Endosulfan-II	25		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	380		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 37
EPA # 79 13264
House # 172383A

OC-Pesticides	**ng**	**PAHs**	**µg**
HCB	120	Naphthalene	<MQL
PCA	56	Acenaphthylene	<MDL
α-BHC	2.0	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MQL	Phenanthrene	2.9
Lindane	26	Anthracene	0.58
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	110	Pyrene	1.0
Heptachlor Epoxide	69	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	490	Benzo[b]fluoranthene	<MDL
trans-Chlordane	520	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	40	Benzo[a]pyrene	<MDL
trans-Nonachlor	280	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	230	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	78	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	350	Total PID Response *	150
p,p'-DDE	130		
p,p'-DDD	11		
Dieldrin	<MDL		
Endrin	30		
Methoxychlor	<MDL		
Mirex	0.77		
Endosulfan	34		
Endosulfan-II	260		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	2800		
Total PCBs	2300		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 38
EPA # 79 13714
House # 173285A

OC-Pesticides	ng
HCB	14
PCA	240
α-BHC	9.5
β-BHC	<MDL
δ-BHC	<MDL
Lindane	81
Dacthal	<MDL
Heptachlor	41
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	60
trans-Chlordane	86
cis-Nonachlor	<MQL
trans-Nonachlor	30
o,p'-DDT	180
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	92
p,p'-DDE	510
p,p'-DDD	8.9
Dieldrin	<MQL
Endrin	<MQL
Methoxychlor	<MDL
Mirex	0.67
Endosulfan	10
Endosulfan-II	14
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1400
Total PCBs	<MQL

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MQL
Phenanthrene	8.1
Anthracene	1.3
Fluoranthene	1.2
Pyrene	1.4
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	350

Additional Compounds	ng
Trifluralin	<MDL
Diazinon	4000
Chlorpyrifos	58
cis-Permethrin	<MQL
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 39
EPA # 79 13147
House # 671369A

OC-Pesticides	ng	PAHs	µg
HCB	27	Naphthalene	3.1
PCA	100	Acenaphthylene	<MDL
α-BHC	4.7	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MQL
δ-BHC	<MQL	Phenanthrene	2.6
Lindane	200	Anthracene	<MQL
Dacthal	12	Fluoranthene	1.9
Heptachlor	40	Pyrene	1.4
Heptachlor Epoxide	29	Benz[a]anthracene	2.6
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	260	Benzo[b]fluoranthene	<MDL
trans-Chlordane	270	Benzo[k]fluoranthene	<MQL
cis-Nonachlor	16	Benzo[a]pyrene	<MDL
trans-Nonachlor	84	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	390	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	100	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	30		
p,p'-DDT	710	Total PID Response *	290
p,p'-DDE	810		
p,p'-DDD	18		
Dieldrin	260		
Endrin	19		
Methoxychlor	<MQL		
Mirex	7.4		
Endosulfan	11		
Endosulfan-II	130		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	3500		
Total PCBs	3100		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 40
EPA # 79 14241
House # 172716A

OC-Pesticides	ng	PAHs	µg
HCB	22	Naphthalene	<MQL
PCA	120	Acenaphthylene	<MDL
α-BHC	4.7	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	4.7
Lindane	180	Anthracene	0.94
Dacthal	<MQL	Fluoranthene	1.6
Heptachlor	9.2	Pyrene	2.0
Heptachlor Epoxide	29	Benz[a]anthracene	0.64
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	340	Benzo[b]fluoranthene	<MDL
trans-Chlordane	350	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	24	Benzo[a]pyrene	<MDL
trans-Nonachlor	130	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	540	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	120	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	31		
p,p'-DDT	730	Total PID Response *	230
p,p'-DDE	170		
p,p'-DDD	49		
Dieldrin	300		
Endrin	47		
Methoxychlor	<MQL		
Mirex	0.79		
Endosulfan	11		
Endosulfan-II	170		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	3400		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 41
EPA # 79 13596
House # 172178A

OC-Pesticides	**ng**
HCB	54
PCA	19
α-BHC	<MQL
β-BHC	<MDL
δ-BHC	<MDL
Lindane	50
Dacthal	<MQL
Heptachlor	15
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	17
trans-Chlordane	21
cis-Nonachlor	<MDL
trans-Nonachlor	10
o,p'-DDT	25
o,p'-DDE	<MQL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	26
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	15
Endosulfan	19
Endosulfan-II	6.8
Endosulfan Sulfate	<MDL
Sum of Identified OCs	280
Total PCBs	<MQL

PAHs	**µg**
Naphthalene	1.7
Acenaphthylene	3.7
Acenaphthene	0.5
Fluorene	<MQL
Phenanthrene	7.8
Anthracene	2.3
Fluoranthene	1.1
Pyrene	2.3
Benz[a]anthracene	0.52
Chrysene	<MQL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MQL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	380

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 42
EPA # 79 13932
House # 672421A

OC-Pesticides	ng
HCB	15
PCA	76
α-BHC	2.3
β-BHC	<MDL
δ-BHC	<MDL
Lindane	15
Dacthal	<MQL
Heptachlor	460
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	17
trans-Chlordane	22
cis-Nonachlor	<MDL
trans-Nonachlor	10
o,p'-DDT	15
o,p'-DDE	<MQL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	66
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	1.1
Endosulfan	<MQL
Endosulfan-II	6.9
Endosulfan Sulfate	<MDL
Sum of Identified OCs	710
Total PCBs	3800

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	1.7
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	1.7
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	180

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 43
EPA # 79 13626
House # 173139A

OC-Pesticides	ng
HCB	26
PCA	93
α-BHC	6.1
β-BHC	<MDL
δ-BHC	<MDL
Lindane	17
Dacthal	<MQL
Heptachlor	42
Heptachlor Epoxide	<MQL
Oxychlordane	<MDL
cis-Chlordane	580
trans-Chlordane	850
cis-Nonachlor	55
trans-Nonachlor	360
o,p'-DDT	110
o,p'-DDE	83
o,p'-DDD	<MDL
p,p'-DDT	100
p,p'-DDE	110
p,p'-DDD	<MQL
Dieldrin	260
Endrin	120
Methoxychlor	<MDL
Mirex	14
Endosulfan	39
Endosulfan-II	210
Endosulfan Sulfate	<MDL
Sum of Identified OCs	3100
Total PCBs	1900

PAHs	µg
Naphthalene	220
Acenaphthylene	1.7
Acenaphthene	<MQL
Fluorene	<MQL
Phenanthrene	7.3
Anthracene	1.0
Fluoranthene	8.5
Pyrene	35
Benz[a]anthracene	<MQL
Chrysene	<MQL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MQL
Benzo[a]pyrene	<MQL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MQL
Total PID Response *	1400

Additional Compounds	ng
Trifluralin	280
Diazinon	14000
Chlorpyrifos	43000
cis-Permethrin	46
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 44
EPA # 79 13684
House # 173197A

OC-Pesticides	ng	PAHs	µg
HCB	57	Naphthalene	<MQL
PCA	120	Acenaphthylene	<MQL
α-BHC	25	Acenaphthene	<MQL
β-BHC	45	Fluorene	<MDL
δ-BHC	<MQL	Phenanthrene	2.6
Lindane	<MDL	Anthracene	1.2
Dacthal	<MDL	Fluoranthene	<MQL
Heptachlor	97	Pyrene	0.84
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	<MDL	Benzo[b]fluoranthene	<MDL
trans-Chlordane	260	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	130	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MDL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	100	Total PID Response *	220
p,p'-DDE	14		
p,p'-DDD	<MDL		
Dieldrin	180		
Endrin	17		
Methoxychlor	220		
Mirex	<MQL		
Endosulfan	<MDL		
Endosulfan-II	<MDL		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	1300		
Total PCBs	<MDL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 45
EPA # 79 13642
House # 172123A

OC-Pesticides	ng	PAHs	µg
HCB	32	Naphthalene	<MQL
PCA	20	Acenaphthylene	<MDL
α-BHC	2.0	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	14
Lindane	14	Anthracene	1.6
Dacthal	<MQL	Fluoranthene	1.5
Heptachlor	16	Pyrene	1.1
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MQL
Oxychlordane	<MDL	Chrysene	<MQL
cis-Chlordane	11	Benzo[b]fluoranthene	<MQL
trans-Chlordane	12	Benzo[k]fluoranthene	<MQL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	6.9	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MQL	Dibenz[a,h]anthracene	<MQL
o,p'-DDE	<MQL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	430
p,p'-DDE	130		
p,p'-DDD	<MDL		
Dieldrin	<MDL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	0.35		
Endosulfan	13		
Endosulfan-II	3.7		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	260		
Total PCBs	1100		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 46
EPA # 79 13583
House # 732374A

OC-Pesticides	**ng**	**PAHs**	**µg**
HCB	47	Naphthalene	1.9
PCA	58	Acenaphthylene	<MDL
α-BHC	5.9	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MQL
δ-BHC	<MDL	Phenanthrene	9.2
Lindane	47	Anthracene	1.2
Dacthal	<MQL	Fluoranthene	1.7
Heptachlor	17	Pyrene	1.4
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	250	Benzo[b]fluoranthene	<MDL
trans-Chlordane	250	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	13	Benzo[a]pyrene	<MDL
trans-Nonachlor	130	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	210	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	59	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	200	Total PID Response *	420
p,p'-DDE	150		
p,p'-DDD	<MQL		
Dieldrin	120		
Endrin	<MQL		
Methoxychlor	<MDL	**Additional Compounds**	**ng**
Mirex	<MQL		
Endosulfan	130	Trifluralin	42
Endosulfan-II	90	Diazinon	840
Endosulfan Sulfate	<MDL	Chlorpyrifos	49
		cis-Permethrin	160
Sum of Identified OCs	1800	trans-Permethrin	92
Total PCBs	1400		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 47
EPA # 79 13873
House # 731935A

OC-Pesticides	**ng**
HCB	40
PCA	82
α-BHC	2.2
β-BHC	<MDL
δ-BHC	<MDL
Lindane	13
Dacthal	37
Heptachlor	18
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	<MDL
trans-Chlordane	19
cis-Nonachlor	<MDL
trans-Nonachlor	15
o,p'-DDT	<MQL
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	110
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MQL
Mirex	<MDL
Endosulfan	<MDL
Endosulfan-II	<MDL
Endosulfan Sulfate	100
Sum of Identified OCs	430
Total PCBs	<MDL

PAHs	**µg**
Naphthalene	<MQL
Acenaphthylene	<MDL
Acenaphthene	0.82
Fluorene	<MDL
Phenanthrene	0.82
Anthracene	<MQL
Fluoranthene	<MDL
Pyrene	<MQL
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	160

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 48
EPA # 79 13916
House # 674124A

OC-Pesticides	ng	PAHs	µg
HCB	31	Naphthalene	20
PCA	19	Acenaphthylene	<MQL
α-BHC	1.8	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.2
Lindane	<MQL	Anthracene	<MQL
Dacthal	23	Fluoranthene	1.2
Heptachlor	40	Pyrene	1.7
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MQL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	<MQL	Benzo[b]fluoranthene	<MDL
trans-Chlordane	7.8	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	<MQL	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MDL	Dibenz[a,h]anthracene	<MQL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	<MDL	Total PID Response *	250
p,p'-DDE	150		
p,p'-DDD	<MDL		
Dieldrin	<MDL		
Endrin	<MDL		
Methoxychlor	<MDL		
Mirex	2.5		
Endosulfan	52		
Endosulfan-II	<MQL		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	330		
Total PCBs	1400		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 49
EPA # 79 13815
House # 671978A

OC-Pesticides	ng	PAHs	µg
HCB	20	Naphthalene	1.0
PCA	96	Acenaphthylene	<MDL
α-BHC	3.3	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	2.3
Lindane	31	Anthracene	<MQL
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	970	Pyrene	1.1
Heptachlor Epoxide	26	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	260	Benzo[b]fluoranthene	<MDL
trans-Chlordane	260	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	26	Benzo[a]pyrene	<MDL
trans-Nonachlor	140	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	87	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	52	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MDL		
p,p'-DDT	88	Total PID Response *	120
p,p'-DDE	540		
p,p'-DDD	<MQL		
Dieldrin	290		
Endrin	15		
Methoxychlor	<MDL		
Mirex	1.7		
Endosulfan	15		
Endosulfan-II	80		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	3000		
Total PCBs	3400		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 50
EPA # 79 13785
House # 732592A

OC-Pesticides	ng	PAHs	µg
HCB	44	Naphthalene	<MQL
PCA	110	Acenaphthylene	<MDL
α-BHC	2.5	Acenaphthene	0.52
β-BHC	170	Fluorene	<MQL
δ-BHC	50	Phenanthrene	4.6
Lindane	45	Anthracene	1.1
Dacthal	<MQL	Fluoranthene	<MQL
Heptachlor	47	Pyrene	<MQL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MDL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	840	Benzo[b]fluoranthene	<MDL
trans-Chlordane	1400	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	76	Benzo[a]pyrene	<MDL
trans-Nonachlor	470	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	610	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	180	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	950	Total PID Response *	160
p,p'-DDE	280		
p,p'-DDD	22		
Dieldrin	1200		
Endrin	120		
Methoxychlor	<MDL		
Mirex	5.5		
Endosulfan	41		
Endosulfan-II	250		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	6900		
Total PCBs	2900		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 51
EPA # 79 13974
House # 732143A

OC-Pesticides	ng
HCB	79
PCA	62
α-BHC	2.2
β-BHC	<MDL
δ-BHC	<MDL
Lindane	38
Dacthal	190
Heptachlor	37
Heptachlor Epoxide	21
Oxychlordane	30
cis-Chlordane	100
trans-Chlordane	200
cis-Nonachlor	<MQL
trans-Nonachlor	69
o,p'-DDT	32
o,p'-DDE	16
o,p'-DDD	<MQL
p,p'-DDT	<MDL
p,p'-DDE	160
p,p'-DDD	<MDL
Dieldrin	<MQL
Endrin	<MQL
Methoxychlor	<MDL
Mirex	0.45
Endosulfan	370
Endosulfan-II	30
Endosulfan Sulfate	<MDL
Sum of Identified OCs	1400
Total PCBs	1200

PAHs	μg
Naphthalene	1.3
Acenaphthylene	<MQL
Acenaphthene	0.60
Fluorene	<MDL
Phenanthrene	5.9
Anthracene	2.0
Fluoranthene	<MQL
Pyrene	1.8
Benz[a]anthracene	<MQL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	400

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 52
EPA # 79 13538
House # 731456A

OC-Pesticides	ng	PAHs	µg
HCB	130	Naphthalene	0.90
PCA	110	Acenaphthylene	<MDL
α-BHC	2.4	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.7
Lindane	39	Anthracene	0.86
Dacthal	140	Fluoranthene	1.0
Heptachlor	10	Pyrene	<MDL
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MQL
Oxychlordane	<MDL	Chrysene	<MQL
cis-Chlordane	34	Benzo[b]fluoranthene	<MDL
trans-Chlordane	57	Benzo[k]fluoranthene	<MQL
cis-Nonachlor	<MQL	Benzo[a]pyrene	<MDL
trans-Nonachlor	24	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	88	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	27	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	<MQL	Total PID Response *	390
p,p'-DDE	73		
p,p'-DDD	<MQL		
Dieldrin	<MQL		
Endrin	<MQL		
Methoxychlor	<MDL		
Mirex	<MDL		
Endosulfan	270		
Endosulfan-II	11		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	1000		
Total PCBs	<MQL		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 53
EPA # 79 13512
House # 732619A

OC-Pesticides	ng
HCB	30
PCA	46
α-BHC	3.4
β-BHC	<MDL
δ-BHC	<MDL
Lindane	66
Dacthal	120
Heptachlor	14
Heptachlor Epoxide	77
Oxychlordane	<MDL
cis-Chlordane	16
trans-Chlordane	24
cis-Nonachlor	<MDL
trans-Nonachlor	14
o,p'-DDT	<MQL
o,p'-DDE	8.5
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	14
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MDL
Methoxychlor	<MDL
Mirex	3.3
Endosulfan	110
Endosulfan-II	5.0
Endosulfan Sulfate	<MDL
Sum of Identified OCs	550
Total PCBs	1800

PAHs	µg
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MQL
Phenanthrene	7.8
Anthracene	2.1
Fluoranthene	<MQL
Pyrene	1.9
Benz[a]anthracene	<MQL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MQL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	650

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 54
EPA # 79 13831
House # 672841A

OC-Pesticides	ng
HCB	15
PCA	60
α-BHC	2.1
β-BHC	<MDL
δ-BHC	<MDL
Lindane	18
Dacthal	<MQL
Heptachlor	410
Heptachlor Epoxide	<MDL
Oxychlordane	<MDL
cis-Chlordane	11
trans-Chlordane	33
cis-Nonachlor	<MDL
trans-Nonachlor	7.6
o,p'-DDT	<MDL
o,p'-DDE	<MQL
o,p'-DDD	<MDL
p,p'-DDT	<MDL
p,p'-DDE	160
p,p'-DDD	<MDL
Dieldrin	<MDL
Endrin	<MQL
Methoxychlor	<MDL
Mirex	5.1
Endosulfan	92
Endosulfan-II	7.0
Endosulfan Sulfate	<MDL
Sum of Identified OCs	820
Total PCBs	4200

PAHs	µg
Naphthalene	<MDL
Acenaphthylene	<MDL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.3
Anthracene	<MQL
Fluoranthene	<MQL
Pyrene	<MQL
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MDL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	320

Additional Compounds	ng
Trifluralin	<MQL
Diazinon	390
Chlorpyrifos	220
cis-Permethrin	<MDL
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 55
EPA # 79 13743
House # 731472A

OC-Pesticides	**ng**
HCB	31
PCA	79
α-BHC	9.4
β-BHC	<MDL
δ-BHC	110
Lindane	<MQL
Dacthal	25
Heptachlor	20
Heptachlor Epoxide	<MDL
Oxychlordane	<MQL
cis-Chlordane	1100
trans-Chlordane	1500
cis-Nonachlor	130
trans-Nonachlor	600
o,p'-DDT	160
o,p'-DDE	<MDL
o,p'-DDD	<MDL
p,p'-DDT	280
p,p'-DDE	110
p,p'-DDD	29
Dieldrin	<MDL
Endrin	140
Methoxychlor	560
Mirex	14.0
Endosulfan	1300
Endosulfan-II	490
Endosulfan Sulfate	<MQL
Sum of Identified OCs	6600
Total PCBs	<MQL

PAHs	**µg**
Naphthalene	<MQL
Acenaphthylene	<MQL
Acenaphthene	<MQL
Fluorene	<MDL
Phenanthrene	2.3
Anthracene	<MQL
Fluoranthene	1.1
Pyrene	0.84
Benz[a]anthracene	<MDL
Chrysene	<MDL
Benzo[b]fluoranthene	<MDL
Benzo[k]fluoranthene	<MDL
Benzo[a]pyrene	<MQL
Indeno[1,2,3-cd]pyrene	<MDL
Dibenz[a,h]anthracene	<MDL
Benzo[g,h,i]perylene	<MDL
Total PID Response *	1300

Additional Compounds	**ng**
Trifluralin	190
Diazinon	780
Chlorpyrifos	1600
cis-Permethrin	47
trans-Permethrin	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 56
EPA # 79 13958
House # 732345A

OC-Pesticides	ng	PAHs	µg
HCB	41	Naphthalene	<MQL
PCA	40	Acenaphthylene	<MQL
α-BHC	3.1	Acenaphthene	<MQL
β-BHC	<MDL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	4.6
Lindane	28	Anthracene	1.1
Dacthal	130	Fluoranthene	1.3
Heptachlor	34	Pyrene	1.7
Heptachlor Epoxide	<MDL	Benz[a]anthracene	<MQL
Oxychlordane	<MDL	Chrysene	<MDL
cis-Chlordane	14	Benzo[b]fluoranthene	<MDL
trans-Chlordane	47	Benzo[k]fluoranthene	<MDL
cis-Nonachlor	<MDL	Benzo[a]pyrene	<MDL
trans-Nonachlor	20	Indeno[1,2,3-cd]pyrene	<MDL
o,p'-DDT	<MQL	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	<MDL	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	<MQL		
p,p'-DDT	<MDL	Total PID Response *	550
p,p'-DDE	240		
p,p'-DDD	70		
Dieldrin	120		
Endrin	15		
Methoxychlor	<MDL		
Mirex	1.3		
Endosulfan	300		
Endosulfan-II	88		
Endosulfan Sulfate	<MDL		
Sum of Identified OCs	1200		
Total PCBs	3000		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XII (Continued)

Total Analytes per Sample (n= 4 SPMDs)

Site # 57
EPA # 79 14137
House # 672854A

OC-Pesticides	ng	PAHs	µg
HCB	220	Naphthalene	3.8
PCA	65	Acenaphthylene	<MQL
α-BHC	2.0	Acenaphthene	<MQL
β-BHC	<MQL	Fluorene	<MDL
δ-BHC	<MDL	Phenanthrene	3.5
Lindane	56	Anthracene	0.94
Dacthal	180	Fluoranthene	1.1
Heptachlor	2000	Pyrene	1.3
Heptachlor Epoxide	<MQL	Benz[a]anthracene	0.52
Oxychlordane	<MQL	Chrysene	<MQL
cis-Chlordane	150	Benzo[b]fluoranthene	<MDL
trans-Chlordane	230	Benzo[k]fluoranthene	1.1
cis-Nonachlor	13	Benzo[a]pyrene	<MDL
trans-Nonachlor	130	Indeno[1,2,3-cd]pyrene	<MQL
o,p'-DDT	31	Dibenz[a,h]anthracene	<MDL
o,p'-DDE	21	Benzo[g,h,i]perylene	<MDL
o,p'-DDD	28		
p,p'-DDT	<MDL	Total PID Response *	290
p,p'-DDE	230		
p,p'-DDD	10		
Dieldrin	170		
Endrin	25		
Methoxychlor	<MDL		
Mirex	1.2		
Endosulfan	590		
Endosulfan-II	82		
Endosulfan Sulfate	24		
Sum of Identified OCs	4200		
Total PCBs	6400		

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XIII

Comparison of Inside/Outside Levels of Contaminants at House 673697A

OC-Pesticides	**Site # 4 Inside ng**	**Site # 5 Outside ng**
HCB	20	9.3
PCA	56	33
α-BHC	5.8	8.8
β-BHC	10	<MDL
δ-BHC	<MDL	<MDL
Lindane	86	<MQL
Dacthal	53	<MQL
Heptachlor	35	11
Heptachlor Epoxide	27	<MDL
Oxychlordane	<MDL	<MDL
cis-Chlordane	430	93
trans-Chlordane	390	91
cis-Nonachlor	36	12
trans-Nonachlor	210	57
o,p'-DDT	460	55
o,p'-DDE	100	19
o,p'-DDD	170	19
p,p'-DDT	930	100
p,p'-DDE	510	33
p,p'-DDD	23	<MDL
Dieldrin	200	<MQL
Endrin	41	<MQL
Methoxychlor	<MQL	<MDL
Mirex	1.8	0.77
Endosulfan	35	100
Endosulfan-II	150	44
Endosulfan Sulfate	<MDL	<MDL
Sum of Identified OCs	4000	690
Total PCBs	2000	<MDL

PAHs	**Site # 4 Inside µg**	**Site # 5 Outside µg**
Naphthalene	2.2	2.0
Acenaphthylene	1.2	1.3
Acenaphthene	<MQL	<MQL
Fluorene	<MDL	<MDL
Phenanthrene	5.4	1.4
Anthracene	<MQL	<MQL
Fluoranthene	4.2	<MQL
Pyrene	3.6	<MDL
Benz[a]anthracene	<MDL	<MDL
Chrysene	<MDL	<MDL
Benzo[b]fluoranthene	<MDL	<MDL
Benzo[k]fluoranthene	<MDL	<MDL
Benzo[a]pyrene	<MDL	<MDL
Indeno[1,2,3-cd]pyrene	<MDL	<MDL
Dibenz[a,h]anthracene	<MDL	<MDL
Benzo[g,h,i]perylene	<MDL	<MDL
Total PID Response *	140	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XIV

Comparison of Inside/Outside Levels of Contaminants at House 671529A

OC-Pesticides	**Site # 3 Inside ng**	**Site # 6 Outside ng**
HCB	30	8.0
PCA	51	24
α-BHC	3.2	6.4
β-BHC	24	<MDL
δ-BHC	<MQL	<MDL
Lindane	<MQL	<MQL
Dacthal	<MQL	<MQL
Heptachlor	160	10
Heptachlor Epoxide	<MQL	<MDL
Oxychlordane	<MDL	<MDL
cis-Chlordane	79	28
trans-Chlordane	150	42
cis-Nonachlor	8.6	<MQL
trans-Nonachlor	44	19
o,p'-DDT	18	<MQL
o,p'-DDE	<MDL	<MDL
o,p'-DDD	<MQL	<MDL
p,p'-DDT	<MDL	<MDL
p,p'-DDE	17	0.8
p,p'-DDD	12	<MDL
Dieldrin	110	<MDL
Endrin	<MQL	<MQL
Methoxychlor	<MDL	<MDL
Mirex	<MQL	<MQL
Endosulfan	39	71
Endosulfan-II	20	15
Endosulfan Sulfate	<MDL	<MDL
Sum of Identified OCs	860	230
Total PCBs	1300	<MDL

PAHs	**Site # 3 Inside µg**	**Site # 6 Outside µg**
Naphthalene	<MDL	2.6
Acenaphthylene	0.3	0.7
Acenaphthene	<MQL	<MDL
Fluorene	<MDL	<MDL
Phenanthrene	3.9	<MQL
Anthracene	0.7	<MDL
Fluoranthene	<MQL	<MQL
Pyrene	1.1	<MDL
Benz[a]anthracene	<MDL	<MDL
Chrysene	<MDL	<MDL
Benzo[b]fluoranthene	<MDL	<MDL
Benzo[k]fluoranthene	<MDL	<MDL
Benzo[a]pyrene	<MDL	<MDL
Indeno[1,2,3-cd]pyrene	<MDL	<MDL
Dibenz[a,h]anthracene	<MDL	<MDL
Benzo[g,h,i]perylene	<MDL	<MDL
Total PID Response *	160	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XV

Comparison of Inside/Outside Levels of Contaminants at House 172152A

OC-Pesticides	Site # 13 Inside ng	Site # 26 Outside ng
HCB	51	17
PCA	87	69
α-BHC	5.8	6.4
β-BHC	18	<MDL
δ-BHC	<MDL	<MDL
Lindane	300	<MQL
Dacthal	<MQL	<MQL
Heptachlor	45	2.0
Heptachlor Epoxide	32	<MDL
Oxychlordane	<MDL	<MDL
cis-Chlordane	190	16
trans-Chlordane	180	20
cis-Nonachlor	17	<MDL
trans-Nonachlor	110	19
o,p'-DDT	66	<MDL
o,p'-DDE	34	8.3
o,p'-DDD	<MQL	<MDL
p,p'-DDT	140	<MDL
p,p'-DDE	200	2.2
p,p'-DDD	<MQL	<MDL
Dieldrin	160	<MDL
Endrin	18	<MDL
Methoxychlor	<MDL	<MDL
Mirex	6.7	<MQL
Endosulfan	<MQL	25
Endosulfan-II	59	5.0
Endosulfan Sulfate	<MDL	<MDL
Sum of Identified OCs	1700	190
Total PCBs	4300	<MDL

PAHs	Site # 13 Inside µg	Site # 26 Outside µg
Naphthalene	<MDL	2.3
Acenaphthylene	<MQL	<MQL
Acenaphthene	<MQL	<MDL
Fluorene	<MDL	<MDL
Phenanthrene	3.0	1.1
Anthracene	1.0	<MDL
Fluoranthene	<MQL	<MDL
Pyrene	<MQL	<MDL
Benz[a]anthracene	<MDL	<MDL
Chrysene	<MDL	<MDL
Benzo[b]fluoranthene	<MDL	<MDL
Benzo[k]fluoranthene	<MDL	<MDL
Benzo[a]pyrene	<MDL	<MQL
Indeno[1,2,3-cd]pyrene	<MDL	<MQL
Dibenz[a,h]anthracene	<MDL	<MDL
Benzo[g,h,i]perylene	<MDL	<MDL
Total PID Response *	160	<MQL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XVI

Summary of Analysis Results for Current Use Pesticides

	Trifluralin Total ng in 4 SPMDs	**Diazinon** Total ng in 4 SPMDs	**Chlorpyrifos** Total ng in 4 SPMDs	**cis-Permethrin** Total ng in 4 SPMDs	**trans-Permethrin** Total ng in 4 SPMDs
Site # 2	<MDL	27000	72000	1100	1200
Site # 9	23	660	770	<MDL	<MQL
Site # 15	25	510	2100	<MDL	<MQL
Site # 17	<MQL	330	2200	<MQL	<MQL
Site # 18	100	1100	5400	530	610
Site # 24	67	700	38000	<MDL	<MQL
Site # 32	65	490	380	<MQL	<MQL
Site # 38	<MDL	4000	58	<MQL	<MQL
Site # 43	280	14000	43000	46	<MQL
Site # 46	42	840	49	160	92
Site # 54	<MQL	390	220	<MDL	<MQL
Site # 55	190	780	1600	47	<MQL

Table XVII

Estimated Airborne Concentrations of Select Contaminants

At Representative Sample Sites (ng/m^3)

	Site # 2	Site # 43	Site # 46
Total PAHs*	590	3200	960
Total PCBs	23	16	12
Chlordanes	1.4	3.7	1.5
Nonachlors	0.31	1.4	0.47
Endosulfans	1.7	1.1	0.99
Trifluralin	<MDL	1.3	0.19
Diazinon	240	130	7.6
Chlorpyrifos	650	390	0.44
Permethrins	10	0.21	1.1
o,p'-DDT	33	0.50	0.95
o,p'-DDE	6.0	0.25	0.18
o,p'-DDD	1.2	<MDL	<MDL
p,p'-DDT	28	0.44	0.88
p,p'-DDE	4.0	0.29	0.40
p,p'-DDD	2.7	<MDL	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XVIII

Estimated Airborne Concentrations of Select Contaminants

At Representative Sample Sites (ng/L)

	Site # 2	Site # 43	Site # 46
Total PAHs*	0.59	3.2	0.96
Total PCBs	0.023	0.016	0.012
Chlordanes	0.0014	0.0037	0.0015
Nonachlors	0.00031	0.0014	0.00047
Endosulfans	0.0017	0.0011	0.00099
Trifluralin	<MDL	0.0013	0.00019
Diazinon	0.24	0.13	0.0076
Chlorpyrifos	0.65	0.39	0.00044
Permethrins	0.010	0.00021	0.0011
o,p'-DDT	0.033	0.00050	0.00095
o,p'-DDE	0.0060	0.00025	0.00018
o,p'-DDD	0.0011	<MDL	<MDL
p,p'-DDT	0.028	0.00044	0.00088
p,p'-DDE	0.0040	0.00029	0.00040
p,p'-DDD	0.0027	<MDL	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Table XIX

Estimated Airborne Concentrations of Select Contaminants

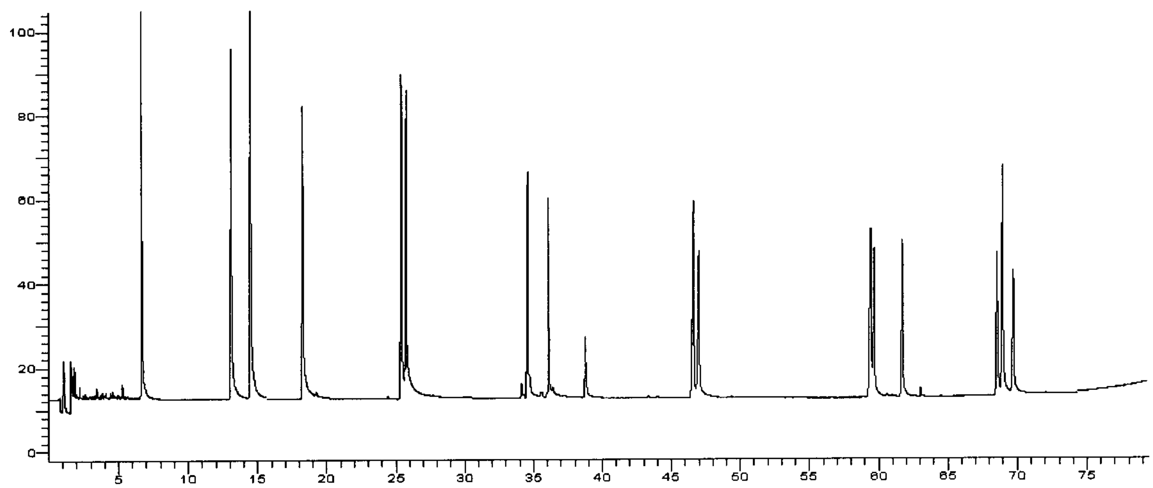
At Representative Sample Sites (ng/g)

	Site # 2	Site # 43	Site # 46
Total PAHs*	0.50	2.7	0.81
Total PCBs	0.019	0.013	0.0099
Chlordanes	0.0011	0.0031	0.0013
Nonachlors	0.00026	0.0012	0.00040
Endosulfans	0.0014	0.00095	0.00084
Trifluralin	<MDL	0.0011	0.00016
Diazinon	0.21	0.11	0.0064
Chlorpyrifos	0.55	0.33	0.00038
Permethrins	0.0088	0.00018	0.00096
o,p'-DDT	0.028	0.00042	0.00080
o,p'-DDE	0.0051	0.00021	0.00015
o,p'-DDD	0.00097	<MDL	<MDL
p,p'-DDT	0.024	0.00037	0.00075
p,p'-DDE	0.0034	0.00025	0.00034
p,p'-DDD	0.0023	<MDL	<MDL

* As pyrene (i.e. total GC-PID response using the response factor of pyrene to quantify)

Figure 1

GC-PID Analysis of PAH Standards

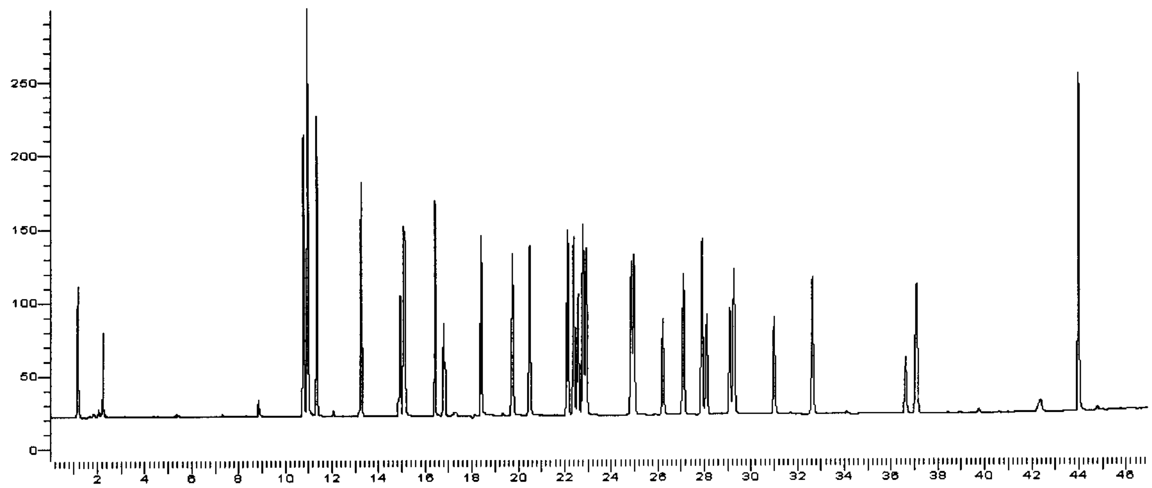


8.0 μg/mL PAH mixed standard. See Table XI for component list and retention times.

Note: Hewlett Packard 5890 series gas chromatograph (GC) equipped with a DB-5 (30 m x 0.25 mm i.d x 0.25 μm film thickness.) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 60°C, then 15°C/min to 165°C, followed by 2.5°C/min to 250°C, then 10°C/min to 320°C and held at 320°C for 1 min.

Figure 2

GC-ECD Analysis of OC-Pesticide Standards

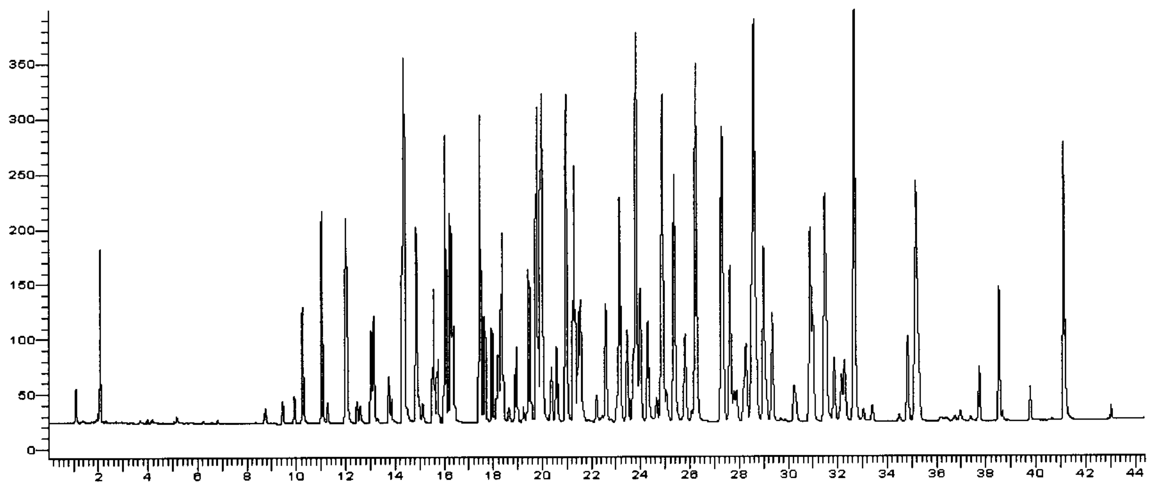


40 ng/mL OC-Pesticide mixed standard. See Table XI for component list and retention times.

Note: Hewlett Packard 5890 series gas chromatograph (GC) equipped with a DB-35MS (30 m x 0.25 mm i.d. x 0.25 μm film thickness) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 90°C; then 15°C/min to 165°C; followed by 2.5°C/min to 250°C; then at 10°C/min to 320°C. The electron capture detector (ECD) was maintained at 330°C (Hewlett Packard, Inc., Palo Alto, CA).

Figure 3

GC-ECD Analysis of PCB Standard

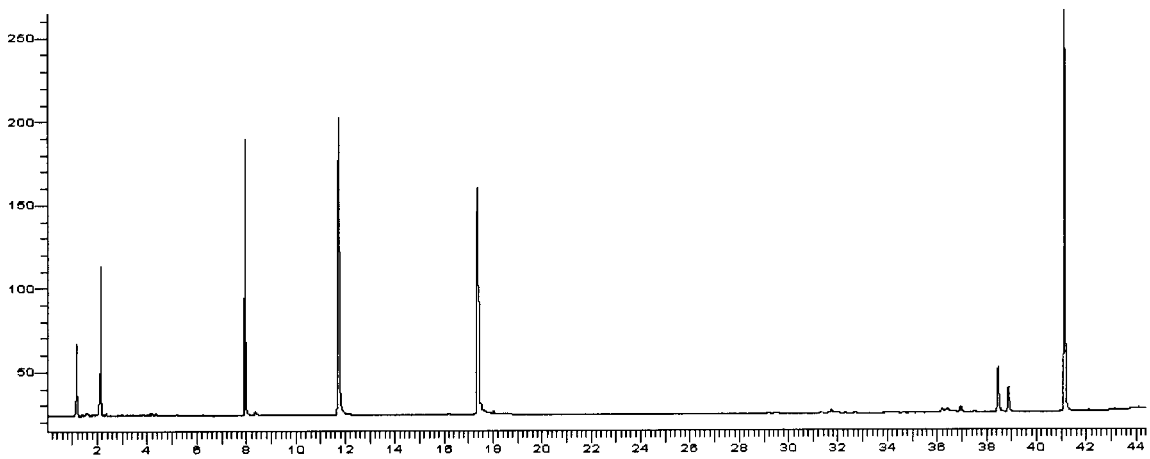


4,000 total ng/mL 1:1:1:1 mixture of Aroclor® (1242:1248:1254:1260) standard. See Table XI for component list and retention times.

Note: Hewlett Packard 5890 series gas chromatograph (GC) equipped with a DB-35MS (30 m x 0.25 mm i.d. x 0.25 µm film thickness) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 90°C; then 15°C/min to 165°C; followed by 2.5°C/min to 250°C; then at 10°C/min to 320°C. The electron capture detector (ECD) was maintained at 330°C (Hewlett Packard, Inc., Palo Alto, CA).

Figure 4

GC-ECD Analysis of Current Use Pesticide Standard



Standard mixture of current use pesticides (800 ng/mL of diazinon and 80 ng/mL each of the rest). See Table XI for component list and retention times.

Note: Hewlett Packard 5890 series gas chromatograph (GC) equipped with a DB-35MS (30 m x 0.25 mm i.d. x 0.25 μm film thickness) capillary column (J&W Scientific, Folsom, CA) with the following temperature program: injection at 90°C; then 15°C/min to 165°C; followed by 2.5°C/min to 250°C; then at 10°C/min to 320°C. The electron capture detector (ECD) was maintained at 330°C (Hewlett Packard, Inc., Palo Alto, CA).

Figure 5

Total Analytes per Sample (n=4 SPMDs)

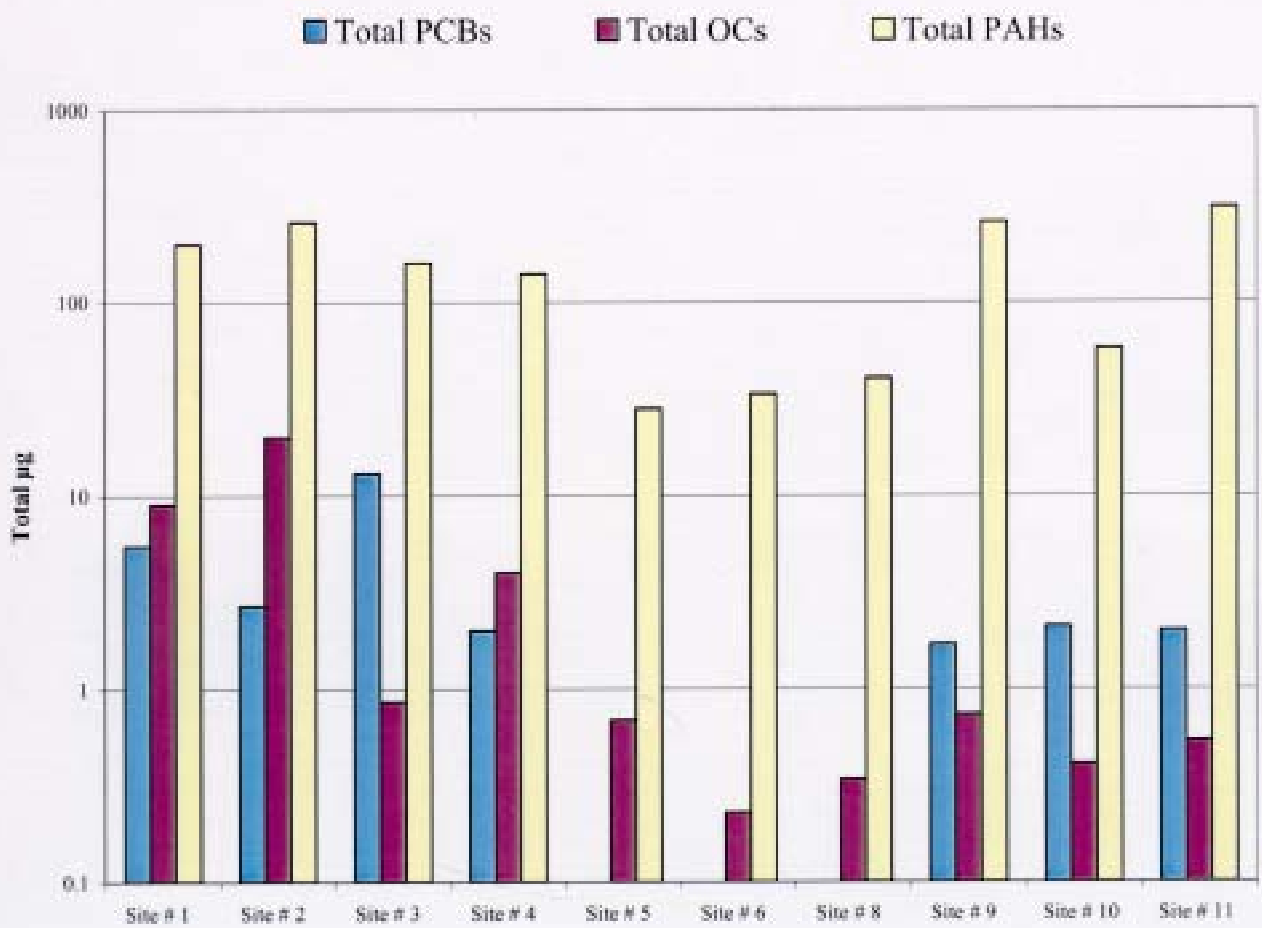


Figure 5 (Continued)

Total Analytes per Sample (n=4 SPMDs)

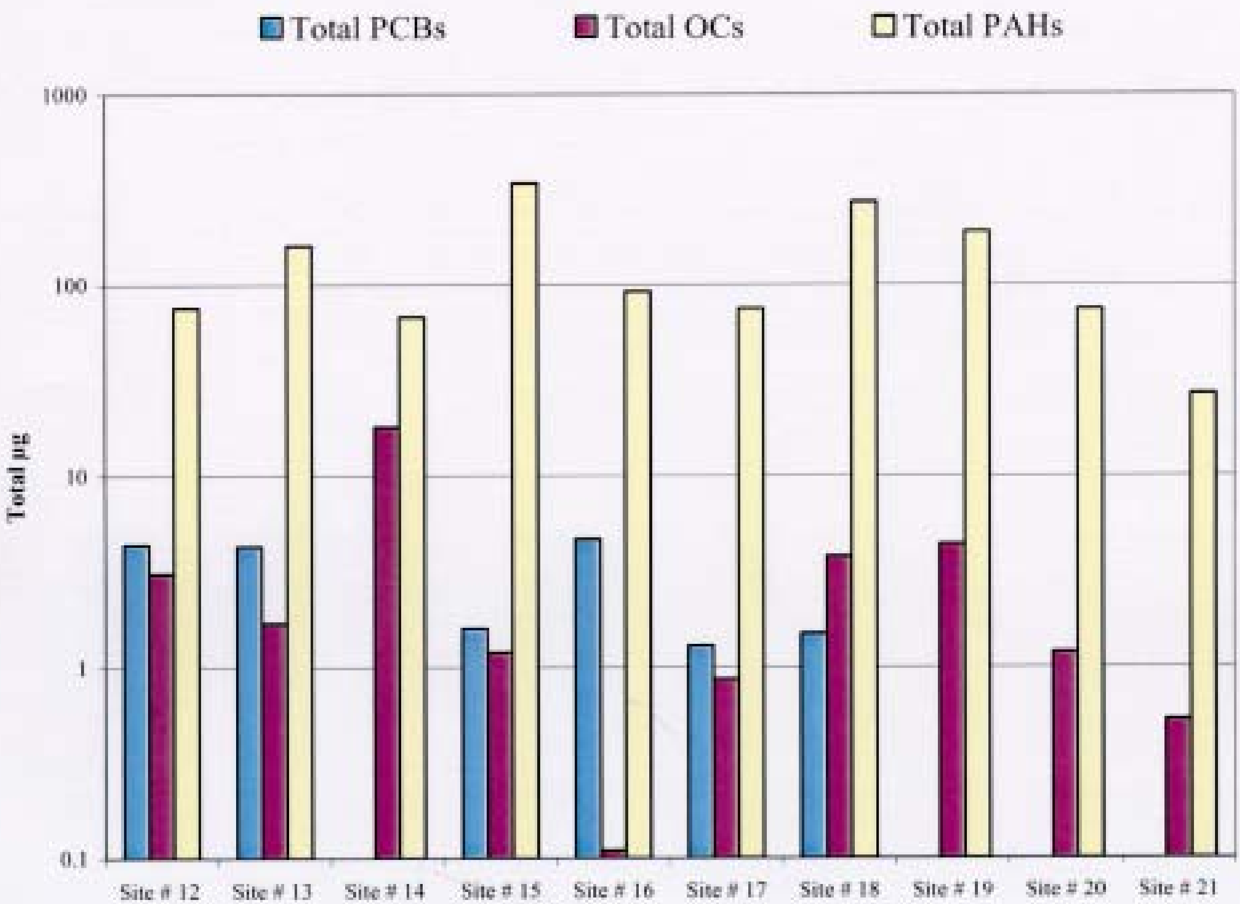


Figure 5 (Continued)

Total Analytes per Sample (n=4 SPMDs)

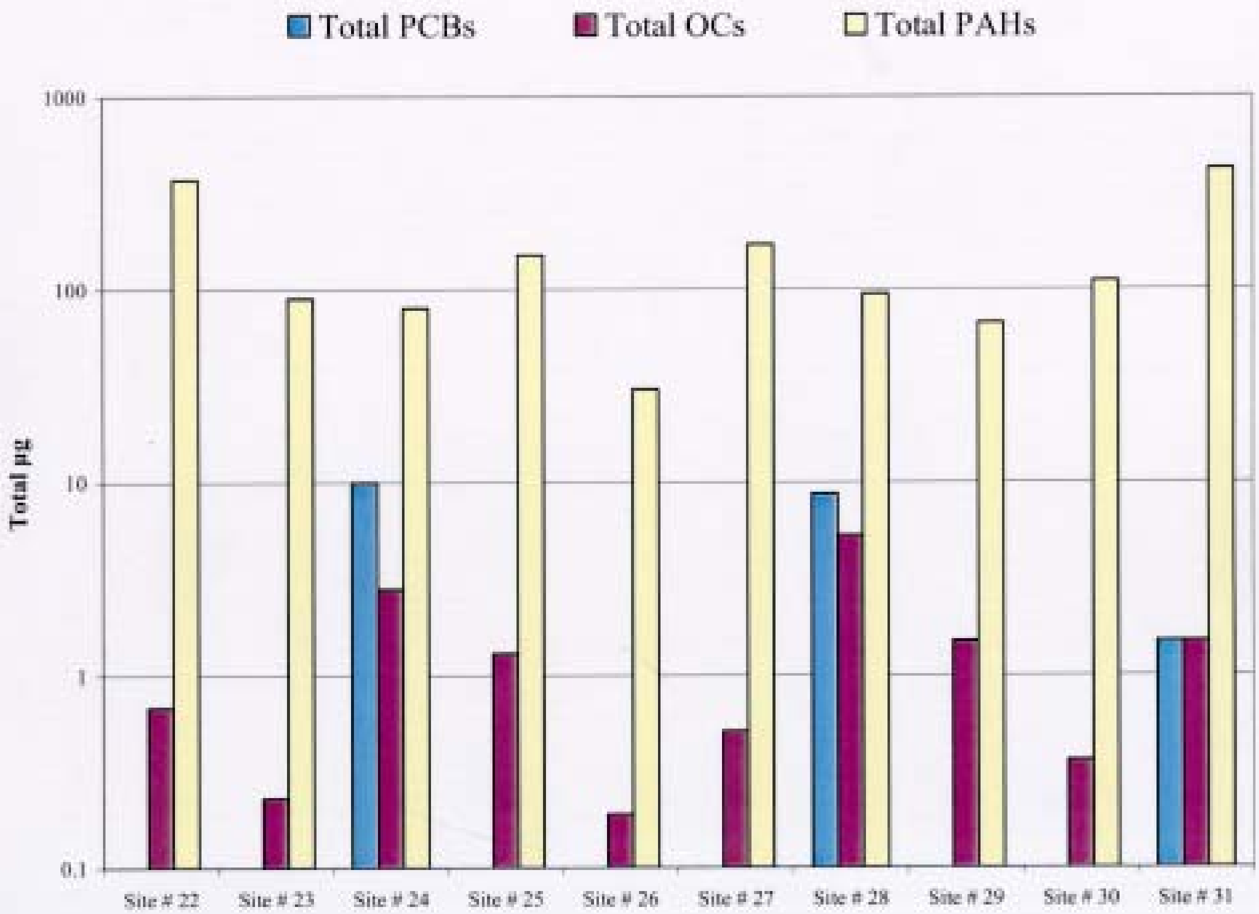


Figure 5 (Continued)

Total Analytes per Sample (n=4 SPMDs)

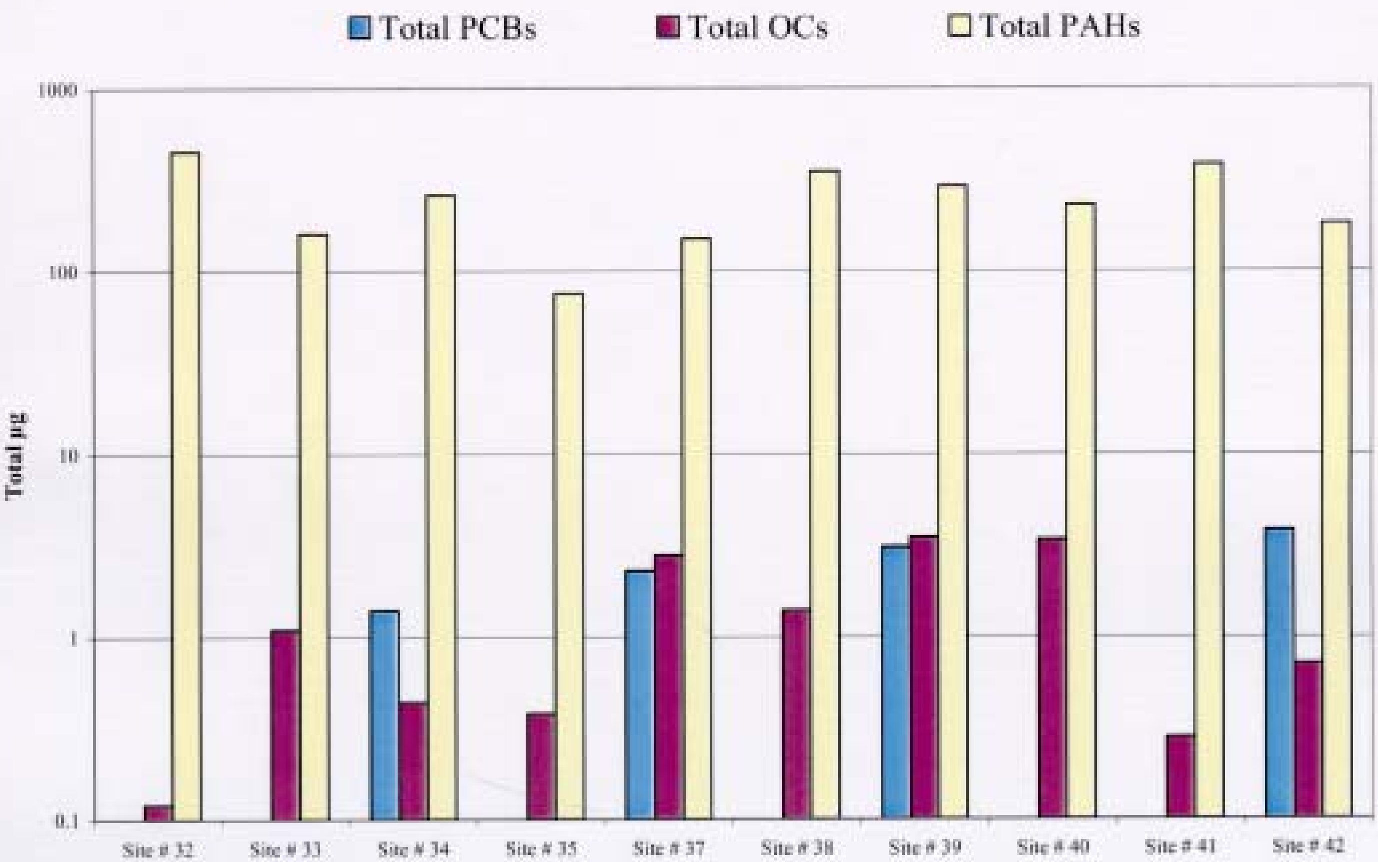


Figure 5 (Continued)

Total Analytes per Sample (n=4 SPMDs)

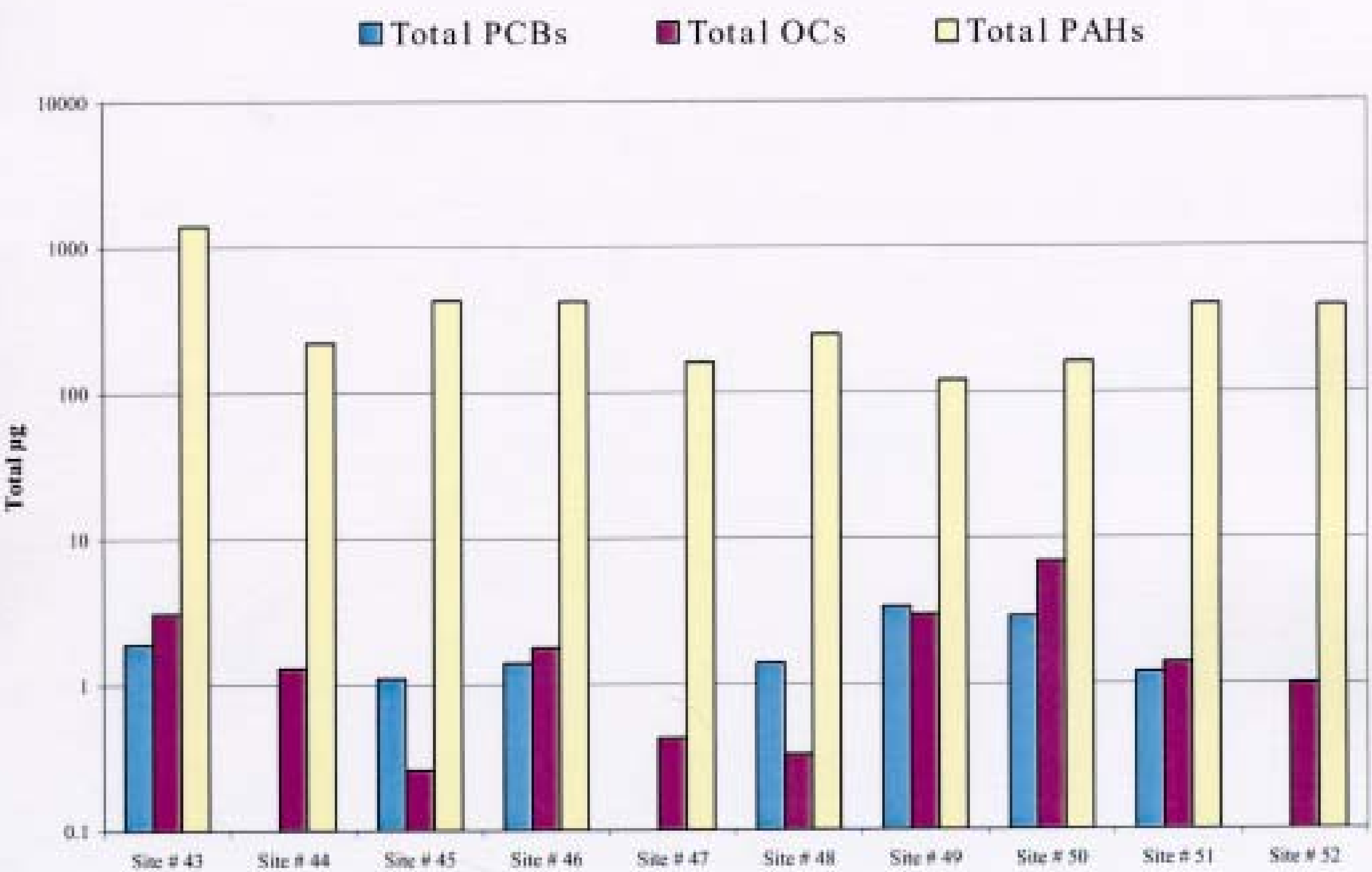


Figure 5 (Continued)

Total Analytes per Sample (n=4 SPMDs)

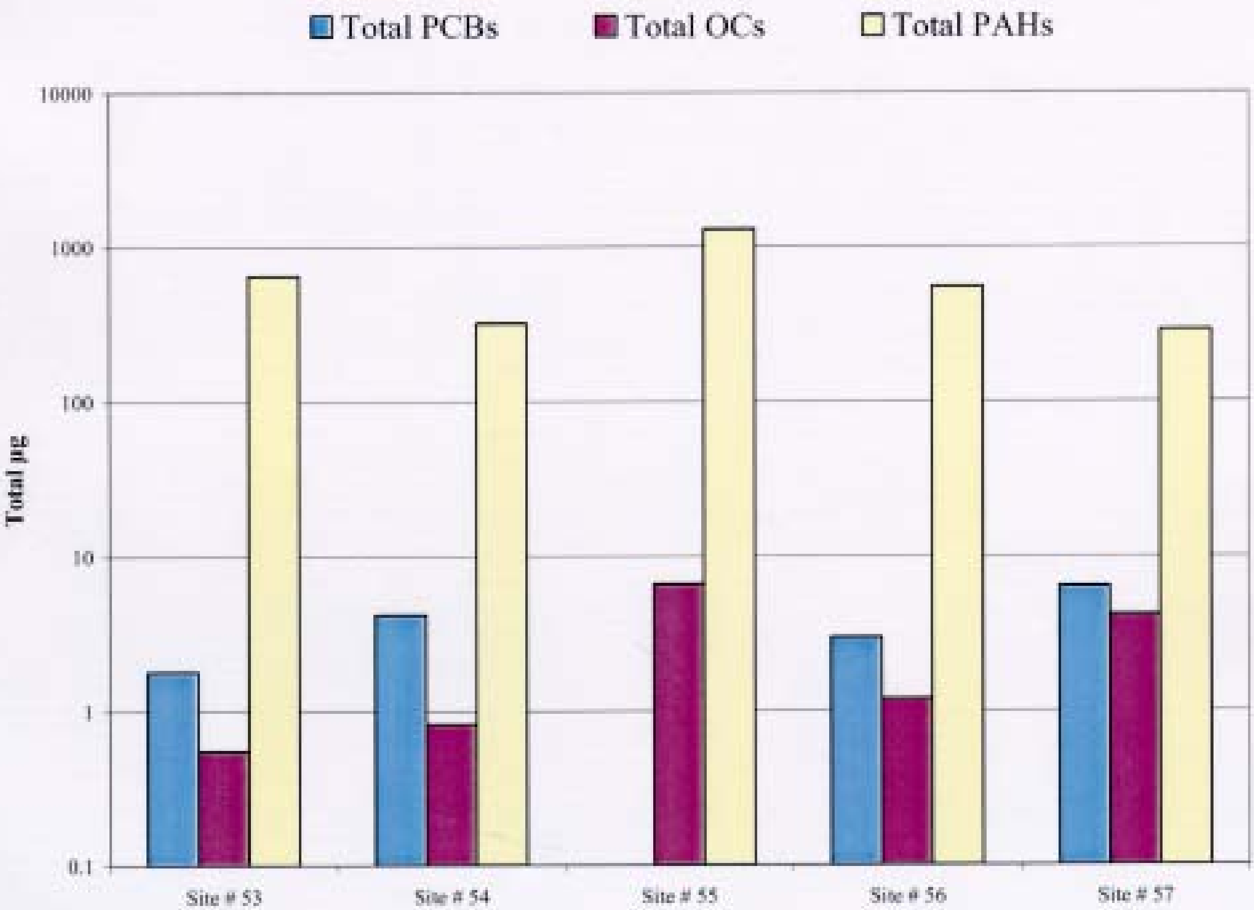


Figure 6

Total Analytes per Sample (n=4 SPMDs)

Inside/Outside Sampling

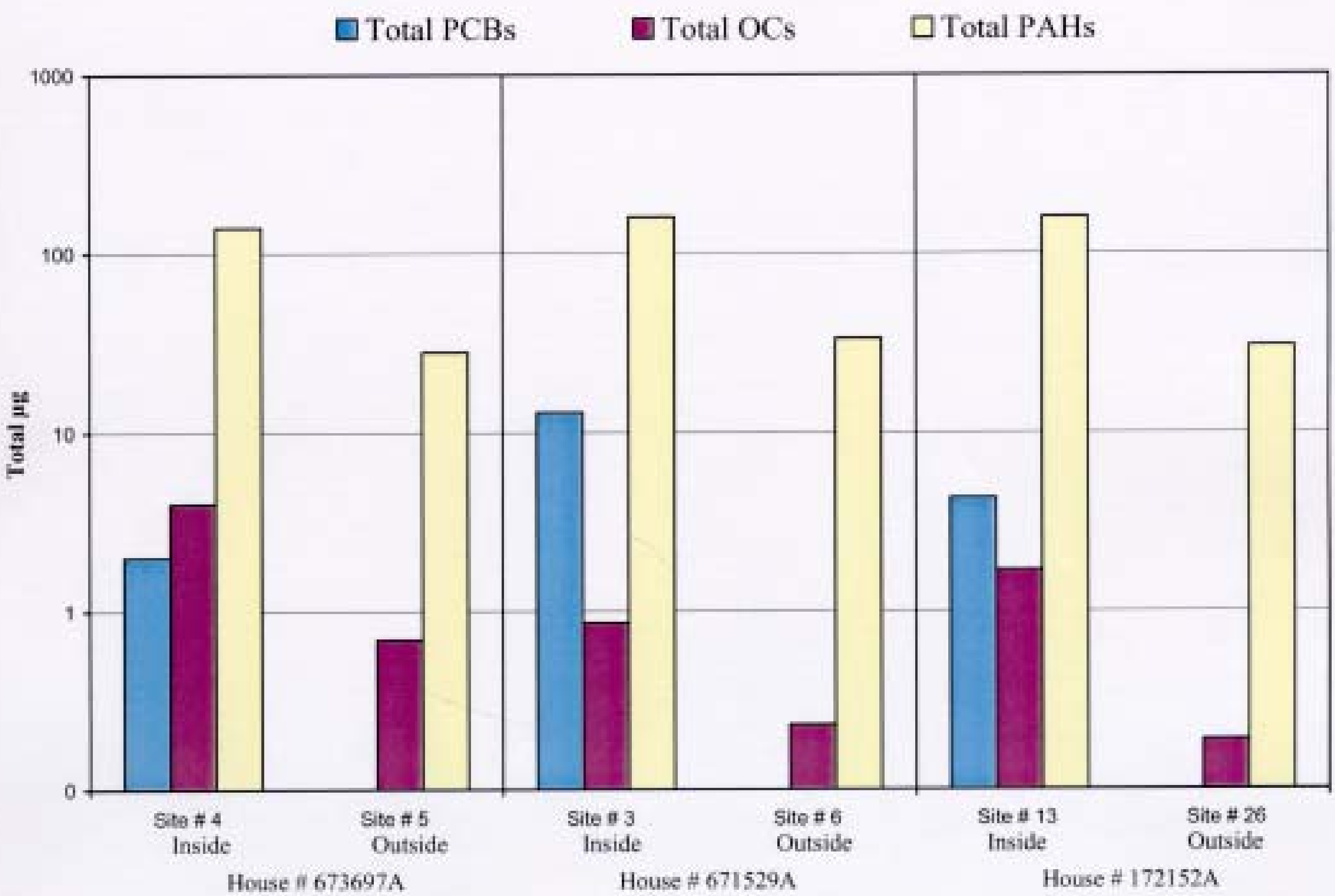


Figure 7

Total Analytes per Sample (n=4 SPMDs)

Current Use Pesticides

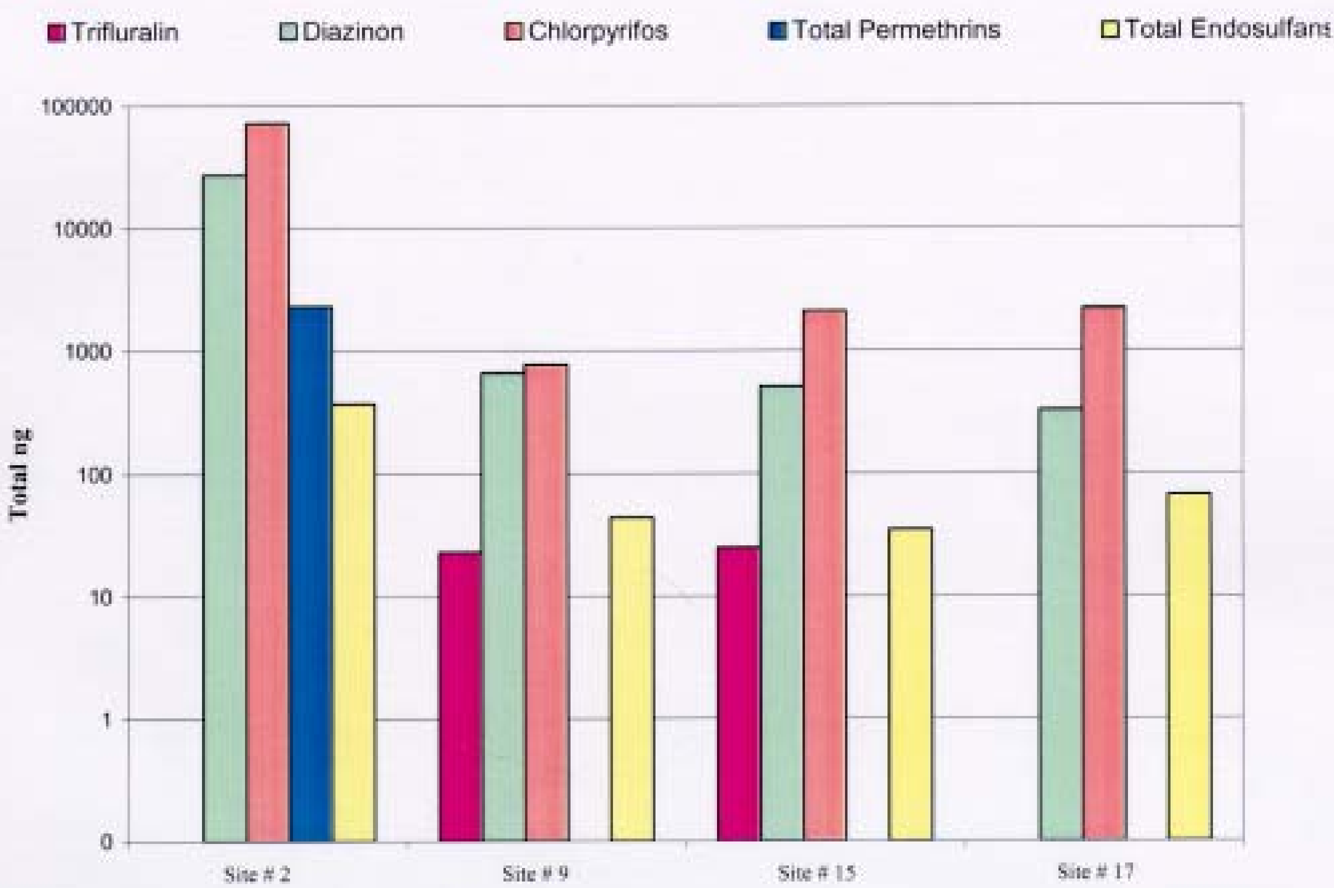


Figure 7 (Continued)

Total Analytes per Sample (n=4 SPMDs)

Current Use Pesticides

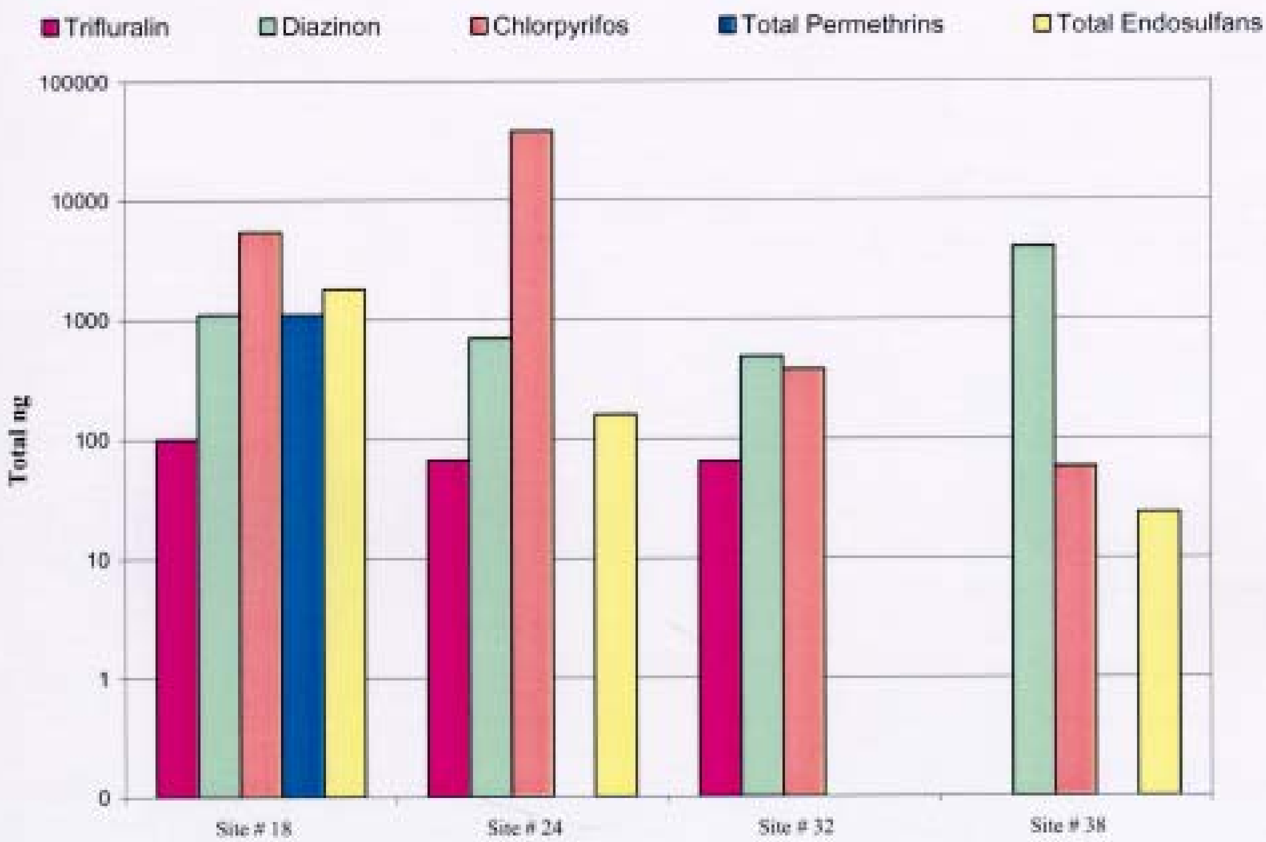


Figure 7 (Continued)

Total Analytes per Sample (n=4 SPMDs)

Current Use Pesticides

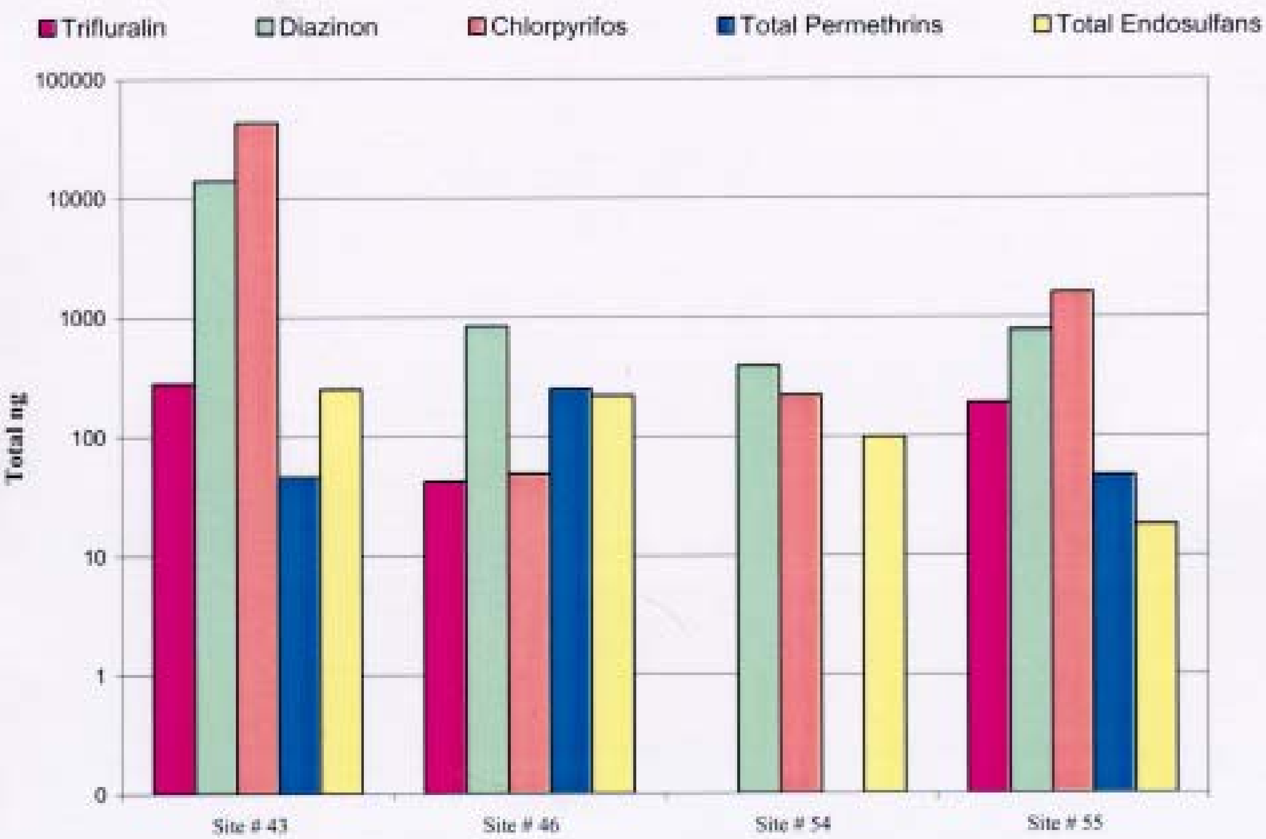
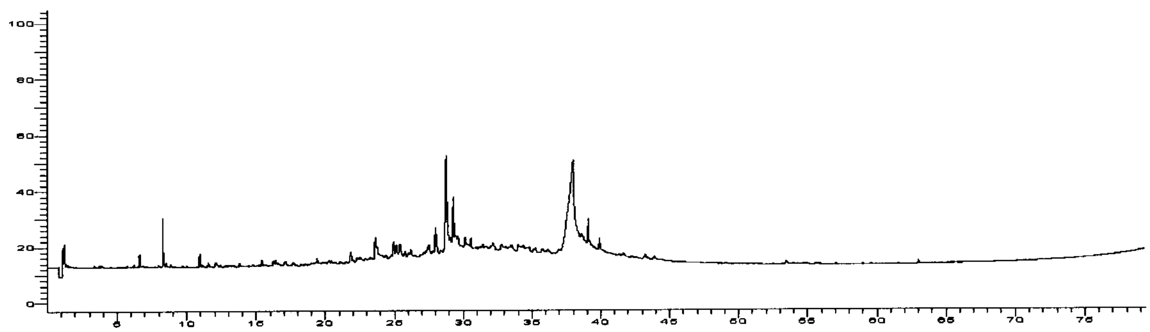


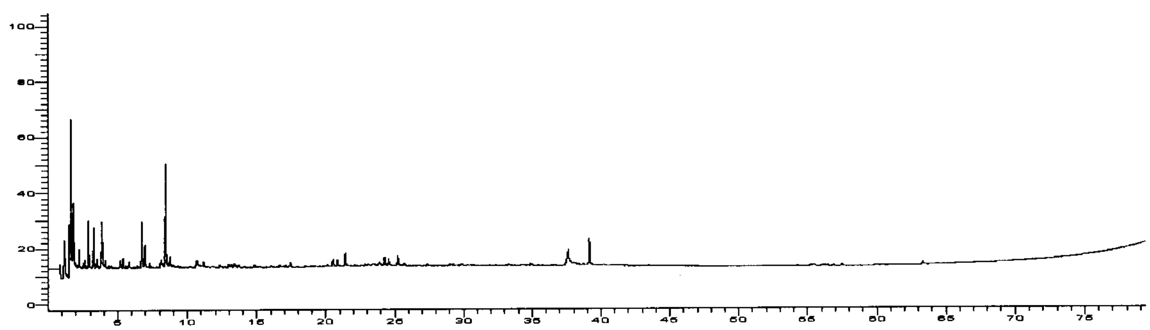
Figure 8

Representative GC-PID Profiles of

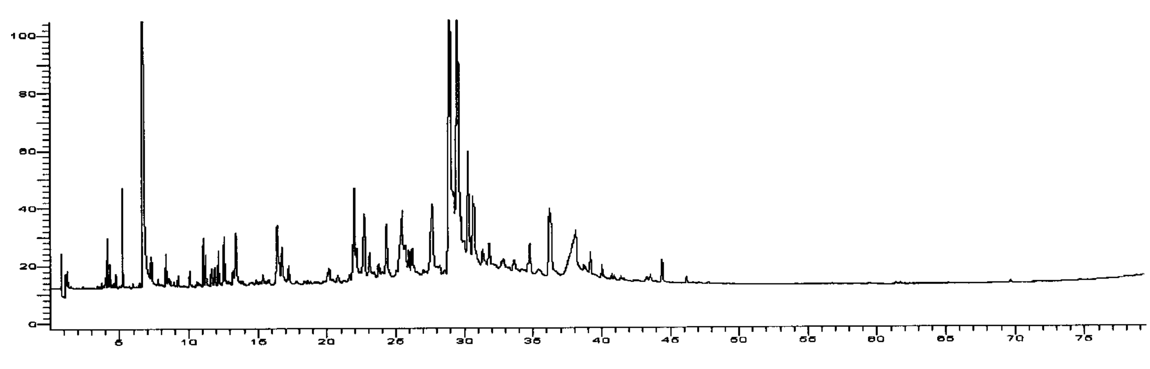
PAH Fractions



Site # 2



Site # 6

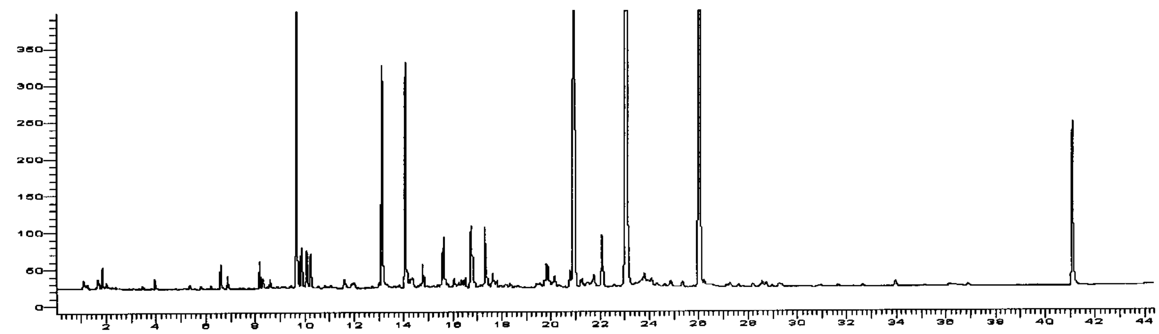


Site # 43

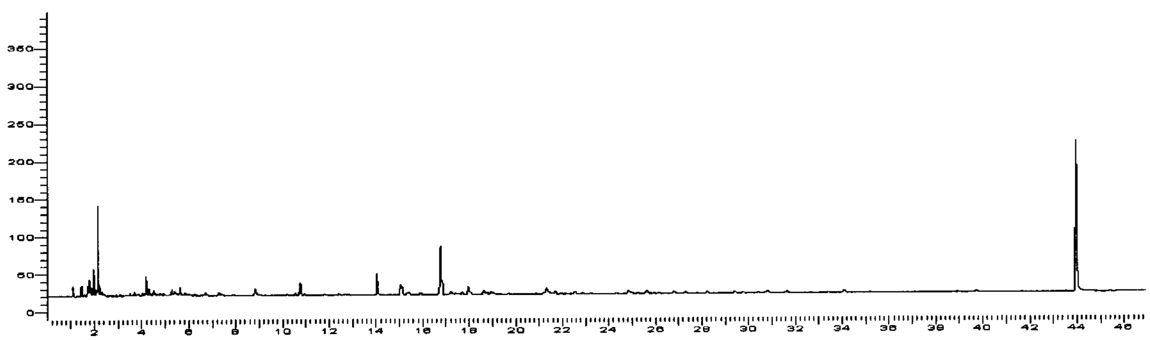
Figure 9

Representative GC-ECD Profiles of

PCB Fractions



Site # 2



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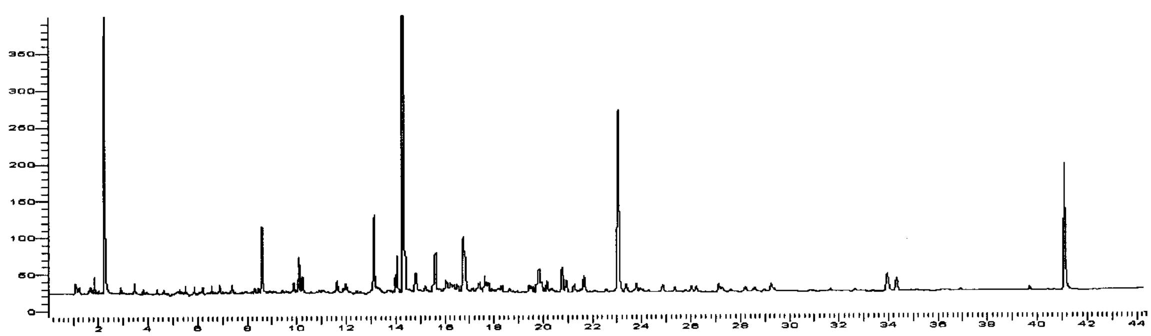
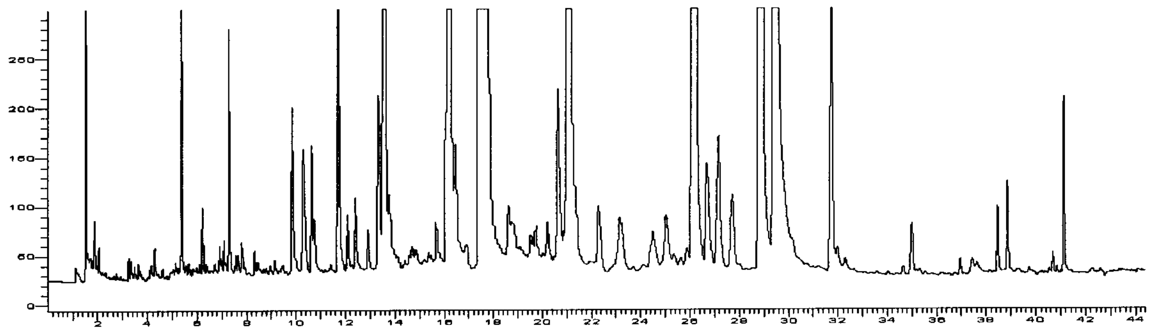


Site # 43

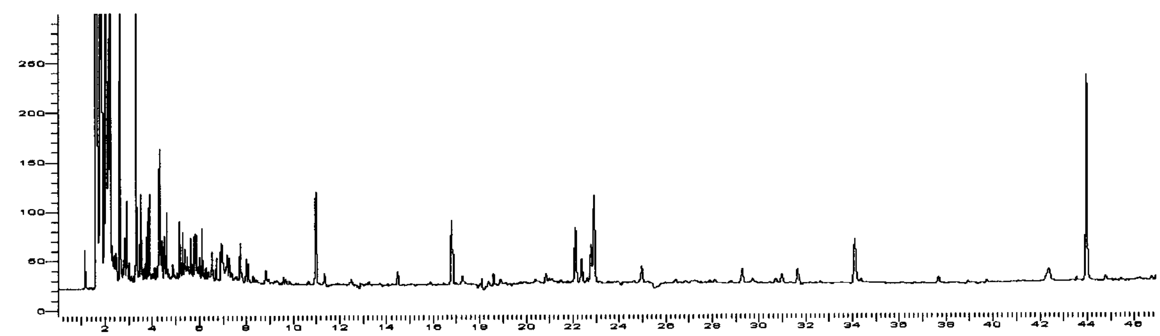
Figure 10

Representative GC-ECD Profiles of

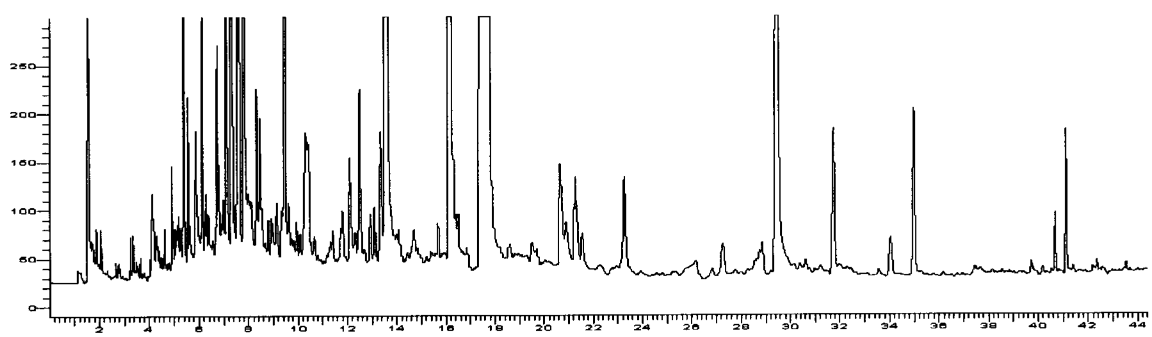
OC-Pesticide Fractions



Site # 2



Site # 6



Site # 43