



Attachment 4-1

Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs)

*Exposure Factors and Bioaccumulation Models for Derivation of
Wildlife Eco-SSLs*

OSWER Directive 9285.7-55

Issued November 2003

Revised February 2005

Revised April 2007

This page intentionally left blank

TABLE OF CONTENTS

| | | |
|-------|--|-----------------------|
| 1.0 | INTRODUCTION | 1 - 1 |
| 1.1 | Basic Equations | 1 - 1 |
| 1.2 | Dealing with Variability | 1 - 2 |
| 2.0 | CALCULATION OF GROUP-SPECIFIC ECO-SSLs | 2 - 1 |
| 2.1 | Food Ingestion Rate (FIR) | 2 - 1 |
| 2.2 | Soil Intake (P_s) | 2 - 2 |
| 3.0 | ESTIMATING BIOACCUMULATION | 3 - 1 |
| 3.1 | Uptake of Inorganics | 3 - 1 |
| 3.1.1 | Antimony | 3 - 1 |
| 3.1.2 | Beryllium | 3 - 2 |
| 3.1.3 | Barium | 3 - 2 |
| 3.1.4 | Nickel | 3 - 2 |
| 3.2 | Uptake of Non-Ionic Organics | 3 - 3 |
| 3.2.1 | Plants | 3 - 4 |
| 3.2.2 | Earthworms | 3 - 5 |
| 3.2.3 | Small Mammals and Birds | 3 - 7 |
| 3.3 | Uptake of Pentachlorophenol | 3 - 7 |
| 3.3.1 | Plants and Earthworms | 3 - 8 |
| 3.3.2 | Small Mammals | 3 - 8 |
| 4.0 | REFERENCES | 4 - 1 |

FIGURES

- Figure 1 Uptake of Antimony from Soil into Plant Foliage
- Figure 2 Uptake of Beryllium from Soil into Plant Foliage
- Figure 3 Correlation of Soil to Plant Tissue Concentrations for PAHs in Unrinsed (Panel A) and Rinsed (Panel B) Plant Foliage
- Figure 4 Uptake of PAHs from Soil into Plant Foliage - Low versus High Molecular Weight PAHs
- Figure 5 Correlation of $\log K_{ow}$ with $\log BAF$ for Non-Ionic Organics in Unrinsed (Panel A) and Rinsed (Panel B) Plant Foliage
- Figure 6 Uptake of DDT, DDD and DDE from Soil by Soil Invertebrates
- Figure 7 Uptake of Dieldrin from Soil by Soil Invertebrates
- Figure 8 Concentration of DDT, DDD and DDE in Diet versus Mammals and Birds
- Figure 9 Concentration of Dieldrin in Diet versus Mammals and Birds
- Figure 10 Uptake of Pentachlorophenol from Soil into Soil Invertebrates

TABLES

- Table 1 Food Intake Data for Surrogate Species
- Table 2 Input Parameters for the Estimation of Soil Ingestion Rate
- Table 3 Estimated Distribution of P_s Values
- Table 4a Uptake Equations for Inorganics
- Table 4b Uptake Equations for Non-Ionic Organics
- Table 4c Uptake Equations for Pentachlorophenol
- Table 5 Estimation of Soil to Earthworm Bioaccumulation Factors for Non-Ionic Organic Contaminants

APPENDICES

- Appendix A Bioaccumulation Data for Antimony and Beryllium in Plants
- Appendix B Bioaccumulation Data for Non-Ionic Organic Contaminants in Plants
- Appendix C BAFs and Regression Equations for the Uptake of Non-Ionic Organic Contaminants into Plant Foliage
- Appendix D Bioaccumulation Data for DDT, DDD and DDE
- Appendix E Bioaccumulation Data for Dieldrin
- Appendix F Bioaccumulation Data for Pentachlorophenol

1.0 INTRODUCTION

1.1 Basic Equations

As discussed in Chapter 4 of the Eco-SSL guidance, wildlife receptors may be exposed to contaminants in soil by two main pathways: incidental ingestion of soil while feeding, and ingestion of food items that have become contaminated due to uptake from soil. The general equation used to estimate the risk from exposure via these two pathways is:

$$HQ_j = \frac{[FIR * (Soil_j * P_s + B_{ij})]}{TRV_j} \quad \text{Equation 4-2}$$

where:

| | | |
|-------------------|---|---|
| HQ _j | = | Hazard Quotient for contaminant (j) (unitless) |
| Soil _j | = | Concentration of contaminant (j) in soil (mg/kg dry weight) |
| FIR | = | Food intake rate (kg of food [dry weight] per kg body weight per day) |
| P _s | = | Proportion of total food intake that is soil (kg soil/kg food) |
| B _{ij} | = | Concentration of contaminant in biota type "i" (mg/kg dry weight) |
| TRV _j | = | Toxicity Reference Value for contaminant (j) (mg chemical/kg body weight per day) |

As described in Chapter 4, the concentration of contaminant (j) in biota or food type type (i) (B_{ij}) was related to the concentration in soil (Soil_j) by an uptake model which has one of the following forms:

| | | |
|---------|---|--------------|
| Case 1) | B _{ij} = BAF _{ij} * Soil _j | (constant) |
| Case 2) | ln(B _{ij}) = I _{ij} + S _{ij} * ln(Soil _j) | (log-linear) |
| Case 3) | B _{ij} = I _{ij} + S _{ij} * Soil _j | (linear) |

where:

| | | |
|-------------------|---|---|
| BAF _{ij} | = | Soil-to-biota Bioaccumulation factor (BAF) for contaminant (j) for biota type (i) |
| I _{ij} | = | Intercept from bioaccumulation model for contaminant (j) for food type (i) |
| S _{ij} | = | Slope from bioaccumulation model for contaminant (j) for food type (i) |

In instances where it was necessary to estimate small mammal tissue concentrations (B_i) based on dietary based BAFs or regressions, the uptake model may have one of the following forms:

$$\text{Case 4) } B_{ij} = C_{\text{diet}} * BAF_{\text{dm}}$$

$$\text{Case 5) } \ln(B_{ij}) = I_{ij} + S_{ij} * \ln(C_{\text{diet}})$$

$$\text{Case 6) } B_{ij} = I_{ij} + S_{ij} * C_{\text{diet}}$$

where:

| | | |
|-------------------|---|---|
| BAF_{dm} | = | Diet-to-biota BAF for contaminant (j) in mammal or bird tissue |
| B_{ij} | = | Concentration of contaminant (j) in food type (i) (where i = small mammal) |
| C_{diet} | = | Concentration of contaminant (j) in diet where diet is 100% earthworms estimated as in Case 1, 2 or 3, above. |

Given appropriate input values for TRV, FIR, P_s , and B_i , Eco-SSLs are calculated by solving the equation above to find the soil concentration (Soil_j) that corresponds to an HQ value of 1.

1.2 Dealing with Variability

In the equations above, most of the input terms are not constants but are variables whose values differ between different individuals within a species and between different species. As discussed in Section 4, the basic strategy used to deal with this variability is as follows:

- Divide wildlife receptors into six groups:
 1. Mammalian herbivores
 2. Mammalian carnivores
 3. Mammalian insectivores
 4. Avian granivores
 5. Avian carnivores
 6. Avian insectivores
- For each group of receptors, calculate a group-specific Eco-SSL based on exposure parameters for a surrogate species that is expected to be at the high end (most exposed) of the exposure distribution for the group, and a TRV that is expected to be at the low end (i.e., most sensitive) of the toxicity distribution for the group. Because the surrogate species is at the high end of the exposure distribution for the group and the TRV is at the low end of the distribution for the group, the species-specific Eco-SSL is expected to provide a high degree of protection to nearly all members of the group.
- Select the lowest group-specific Eco-SSL as the final Eco-SSL. This is expected to provide protection to nearly all types of wildlife (birds and mammals) receptors.

2.0 CALCULATION OF GROUP-SPECIFIC ECO-SSLs

As discussed in Section 4.2 of the Eco-SSL guidance, a surrogate species was selected to represent each group of wildlife receptors. The choice of surrogate species was based on a consideration of body weight (a low body weight is associated with high food intake per unit body weight) and behavior (dietary sources, amount of soil ingested). The surrogates selected are summarized below:

| Group | Surrogate Species |
|------------------------|--------------------|
| Mammalian herbivores | Meadow vole |
| Mammalian carnivores | Long-tailed weasel |
| Mammalian insectivores | Short-tailed shrew |
| Avian granivores | Mourning dove |
| Avian carnivores | Red-tailed hawk |
| Avian insectivores | American woodcock |

As noted above, calculation of an Eco-SSL for a surrogate species representing each group requires input on four variables:

- TRV
- Food Intake Rate (FIR)
- Proportion of total food intake that is soil (P_s)
- Concentration in Diet (B_i)

Attachments 4-2 thru 4-4 of the Eco-SSL guidance document the details of the approach used to derive the TRV for each group of receptors. The following sections detail the selection of the most appropriate inputs for FIR, P_s , and dietary concentration for each selected surrogate species.

2.1 Food Ingestion Rate (FIR)

Data on typical and high end food intake rate for each of the surrogate species were compiled from the Wildlife Exposure Factors Handbook (WEFH) (USEPA, 1993) and from other available sources. These data are summarized in Table 1. Raw data reported in units of wet weight (g wet wt/g bw/day) were converted to units of dry weight (g dw/g bw/day) using actual dietary water content (if reported) or assumed water content for dietary items as provided in the WEFH:

| Dietary Type | Water Content |
|---------------|---------------|
| Plant Foliage | 85% |
| Earthworms | 84% |
| Seeds | 9.3% |
| Small Mammals | 68% |

In order to ensure that the Eco-SSL for each surrogate will protect most of the individuals within the species, an effort was made to select a high-end point estimate of FIR for each species. Depending on the data available from each study, the high-end was estimated either as the high-end value reported in the study, by assuming the distribution of intakes was normal and by calculating the 90th percentile (90th = mean + 1.282 Astdev), or by assuming the high end was 1.25 times higher than the typical value. This is based on the observation that a typical coefficient of variation (CV) for food intake is approximately 15-20% for birds and mammals (Nagy, 2004)¹. An evaluation of CVs for food intake across multiple bird and mammal species, as calculated from data provided in the WEFH, also supports this estimate (USEPA, 1993).

Based on these alternative high-end estimates of FIR for each study in each surrogate species, a point estimate of FIR was selected based on the arithmetic mean across all high-end estimates. This final point estimate for each surrogate species is shown in the right-hand column of Table 1.

2.2 Soil Intake (P_s)

As noted above, ingestion of soil by wildlife species is usually estimated as a fraction of the dietary food ingestion rate:

$$\text{Soil Intake} = P_s \cdot \text{FIR}$$

Beyer et al. (1994) estimated the value of P_s by measuring the ash content of diet and scat in a number of different species, and calculating P_s using the following model:

$$P_s = (b - y + a \cdot c) / (a \cdot c - c + b)$$

where:

- P_s = proportion of soil in diet (g soil per g dry mass)
- a = digestibility of food (g absorbed per g dry mass ingested)

¹CV = standard deviation/mean

- b = concentration of acid-insoluble ash in food (g per g dry mass)
- c = concentration of acid-insoluble ash in soil (g per g dry mass)
- y = concentration of acid-insoluble ash in scat (g per g dry mass)

As above, in order to ensure that the calculation of the species-specific Eco-SSL is protective for a majority of all individuals in the surrogate species, it is necessary to estimate a high-end value for P_s for each surrogate species. This can be done by assigning a Probability Distribution Function (PDF) to each of the variables in the equation above (a, b, c, y) and using Monte Carlo simulation to estimate the 90th percentile of P_s . The distributions selected are summarized in Table 2.

Correlations among parameters in the soil ingestion model are possible. For example, the concentration of acid-insoluble ash in scat (y) is likely to be positively correlated with both ash in food (b) and ash in soil (c). Similarly, digestibility of food (a) is likely to be inversely related to both ash in food (b) and ash in scat (y). The potential importance of accounting for these correlations was investigated by performing Monte Carlo analyses with and without assumed correlations among variables, as follows:

| Assumed Correlations | |
|-----------------------------|----------|
| Pair | r |
| a and b | -0.8 |
| a and c | 0 |
| a and y | -0.6 |
| b and c | 0 |
| b and y | 0.6 |
| c and y | 0.8 |

Comparison of distributions resulting from Monte Carlo analyses with correlated and uncorrelated variables indicated no significant differences. Consequently, soil ingestion distributions resulting from the uncorrelated Monte Carlo analyses were used. The results are shown in Table 3. The 90th percentile value of the estimated distribution of P_s for each species is selected as the most appropriate high-end point estimate value to use in the calculation of Eco-SSL values.

3.0 ESTIMATING BIOACCUMULATION

As noted in Section 1, different forms of uptake models were used to predict the concentration of contaminants in dietary tissues as a function of the concentration in soil. Tables 4a to 4c summarize the bioaccumulation equations for plants, earthworms, and small mammals which were used for inorganics, non-ionic organics, and pentachlorophenol, respectively. A detailed discussion of the derivation and selection of each of these models is presented in the following subsections.

3.1 Uptake of Inorganics

Soil-to-biota bioaccumulation uptake equations, both as simple ratios (bioaccumulation factors (BAFs)) or as regression equations, have recently been developed from published data for earthworms, terrestrial plants, and small mammals, and are presented in Sample et al. (1999), Sample et al. (1998a), Sample et al. (1998b), and Bechtel-Jacobs (1998). Bioaccumulation equations presented in these reports were selected as the primary means for estimation of concentrations of inorganic contaminants in wildlife dietary items. If both a chemical-specific BAF and a chemical-specific regression equation were available for a given contaminant, the regression equation was selected for application provided the equation was significant (i.e., the slope differed significantly [$p \leq 0.05$] from 0) and the coefficient of determination (R^2) was greater than or equal to 0.2. If these criteria were not met, the median BAF was used to estimate bioaccumulation.

Table 4a summarizes the uptake equations that were used to estimate inorganic concentrations in plants, earthworms, and small mammals for all inorganics on the initial Eco-SSL list. Soil-to-biota bioaccumulation models were available from the sources referenced in the preceding paragraphs with some exceptions. The following subsections describe the values selected for antimony, beryllium, barium and nickel that could not be identified from the available sources.

3.1.1 Antimony

The available sources reviewed did not contain any bioaccumulation factors for antimony. Based on limited data presented in Bechtel-Jacobs (1998) and a recently published study by Baroni et al. (2000), a log-linear regression equation was developed for antimony uptake into plants (Figure 1; Appendix A). Because no earthworm bioaccumulation data were located for antimony, a default BAF of 1 was assumed.

Diet-to-biota factors (F_f) for cattle are provided in Baes et al. (1984). Use of uptake factors specific for beef is not optimal for estimating uptake into small mammals; however, these values are used where no other data were available. The BAF factors for antimony for small mammalian prey species (e.g., mouse), are derived from the F_f values in Baes et al. (1984) as follows:

$$\text{BAF}_{\text{diet-to-beef}} = F_f (\text{d/kg tissue}) \text{ AFood intake (kg food/day)}$$

For cattle, the food (plant) intake rate assumed by Baes et al. (1984) was 50 kg/day. Thus:

$$\text{BAF}_{\text{diet-to-beef}} = 50 \text{ A}F_f$$

Combining this equation with the soil-to-plant BAF (or soil-to-diet BAF) yields:

$$\text{BAF}_{\text{soil-to-beef}} = \text{BAF}_{\text{soil-to-diet}} \text{ A}50 \text{ A}F_f$$

3.1.2 Beryllium

The available sources reviewed did not contain any BAF values for the uptake of beryllium from soils by plants or small mammals. Based on a limited review of literature information (search of Toxline), a regression equation was developed for beryllium uptake into plants (Figure 2; Appendix A). The uptake of beryllium from soils into small mammals was estimated using the diet-to-biota factors (F_f) for cattle provided in Baes et al. (1984) as previously described for antimony in Section 3.1.1.

3.1.3 Barium

The available sources reviewed did not contain any BAF values for the uptake of barium from soils into small mammals. The uptake of barium from soils into small mammals was estimated using the diet-to-biota factors (F_f) for cattle provided in Baes et al. (1984) as previously described for antimony in Section 3.1.1.

3.1.4 Nickel

Between 1998 and 1999, authors (Sample et al., 1998b and Sample et al., 1999) attempted to develop a regression model to predict the bioaccumulation of nickel from soil by earthworms. Their analyses concluded that soil concentrations alone did not accurately predict nickel uptake in earthworms. This conclusion was supported by the contradiction of other studies. Neuhauser et al. (1995) indicated a significant positive relationship between soil nickel and concentrations in earthworm tissues while studies by Abdul Rada and Bouche (1995) and Beyer et al., (1982) indicate a negative relationship. An analysis of the Neuhauser et al. (1995) data combined with

data from other studies also shows a negative relationship (Sample et al., 1999). The authors conclude that the uptake of nickel is influenced by pH but this factor did not completely explain uptake and that more research is needed to understand the factors that influence bioaccumulation. The overall conclusion was that an accurate regression model could not be identified.

3.2 Uptake of Non-Ionic Organics

Soil-to-biota bioaccumulation uptake equations for earthworms, terrestrial plants, and small mammals were not available from the literature. For the non-ionic organic chemicals on the Eco-SSL contaminant of concern (COC) list (dieldrin, DDD, DDE, DDT, RDX, TNT and polycyclic aromatic hydrocarbons (PAHs)), data were compiled from the literature and an uptake value was derived.

A limited literature search was completed for bioaccumulation data (paired chemical concentrations for soil and food type). This included paired data for soil-to-plant, soil-to-soil invertebrate, soil-to-mammal, soil-to-bird, diet-to-mammal and diet-to-bird. The general search process included the following steps:

- 1) Review of information from existing reports that collected bioaccumulation data. These reports included Efroymsen (1998), Sample et al. (1998a) and Sample et al. (1998b).
- 2) Review of existing soil screening level guidelines including the Canadian Soil Quality Guidelines (CCME), and the Dutch Maximum Permissible Concentrations and Negligible Concentrations.
- 3) Search of the World Wide Web. The Web was searched for information on bioaccumulation in an attempt to identify other efforts to collect bioaccumulation data or other regulatory uses of bioaccumulation data.
- 4) Literature searches were performed in the Colorado Alliance of Research Libraries, an on-line computer system and through AGRICOLA, an on-line literature search engine. Searches were conducted using different combinations of the following keywords: bioaccumulation factor, bioaccumulation, bioaccumulate, bioaccumulative, bioaccumulated, biomagnify, biomagnification, accumulate, accumulation, accumulated, dieldrin, DDT, DDD, DDE, pentachlorophenol, and PAH.
- 5) Review of the literature identified in the search for toxicity data on wildlife (Attachment 4-1).

- 6) Chemical-specific observations of uptake of organic compounds from soil into plant tissue were assembled based on a review of the literature cited in Travis and Arms (1988).
- 7) In 2007, EPA completed the Eco-SSL document for PAHs and a decision was made to derive Eco-SSLs for two groups of PAHs as low molecular weight PAHs with aromatic rings of 3 or less and high molecular weight PAHs with aromatic rings of 4 or higher. The data for uptake of PAHs from soils into plant foliage was then segregated into LMW and HMW groups.

Table 4b summarizes the uptake equations for the non-ionic organic COCs on the initial Eco-SSL list (RDX, TNT, DDT, dieldrin, and PAHs) that were used to estimate concentrations in plants, earthworms, and small mammals. The following subsections provide a detailed discussion of the derivation of these equations for plants, earthworms, and small mammals. These subsections also serve as examples of how bioaccumulation can be evaluated for other contaminants not on the initial Eco-SSL list. For any additional contaminants, bioaccumulation data will be included in contaminant specific Eco-SSL documents.

3.2.1 Plants

Appendix B provides a summary of all the plant uptake data for non-ionic organic chemicals that were compiled as part of the Eco-SSL effort based on a review of the literature search results. Chemical-specific uptake data were used to derive an uptake equation for each Eco-SSL non-ionic organic COC. First a chemical-specific regression was attempted relating the transformed concentration in soil to the transformed concentration in plant. This regression is used to estimate bioaccumulation if it was identified as significant (i.e., the slope differed significantly [$p \leq 0.05$] from 0) and R^2 is greater than or equal to 0.2. If both of these criteria were not met, the median BAF was used to estimate bioaccumulation. These analyses are provided in Appendix C and the resulting uptake equations are summarized in Table 4b.

It was anticipated that the derivation of Eco-SSLs for PAHs would require the estimation of PAHs as a total in plants. Figure 3 presents correlation figures for the uptake of PAHs into unrinsed foliage (Panel A) and rinsed foliage (Panel B). The regression for rinsed foliage data is significant while the regression for unrinsed foliage is not. Uptake into rinsed foliage was considered appropriate for calculation of the Eco-SSLs as ingestion of soil particles or dust on leaves is included in the fraction of exposure associated with incidental soil ingestion. The data for uptake of PAHs from soils into plant foliage segregated into LMW and HMW groups are plotted in Figure 4.

The procedures provided in the Eco-SSL guidance are intended to be transparent for potential use in deriving Eco-SSLs for chemicals not on the initial Eco-SSL COC list. The use of chemical-specific empirical data is preferred for estimating uptake, however if data are unavailable then an inter-chemical extrapolation approach which relates $\log K_{ow}$ to $\log BAF$ can be used. Using this approach, a BAF (expressed as concentration in plant divided by the concentration in soil on a dry weight basis) is estimated from the $\log K_{ow}$ for the chemical of interest. Based on the data collected and reviewed in Appendix B, Figure 5 presents equations that can be used to predict a BAF based on the $\log K_{ow}$ for non-ionic organic chemicals with $\log K_{ow}$ values ranging from 3 to 8. This method was used to estimate a BAF value for acenaphthylene in Table 4b.

3.2.2 Earthworms

Uptake equations for non-ionic organic chemicals from soils into earthworm (soil invertebrate tissue) are either derived from chemical-specific empirical data or estimated using models. In the cases where empirical data were unavailable, uptake was estimated based on available models.

Empirical Data

Appendix D and E provide compilations of the soil invertebrate uptake data for DDT, DDD, DDE and dieldrin, respectively, compiled as part of the Eco-SSL effort. These chemical-specific uptake data were used to derive an uptake equation for each chemical. First a chemical-specific regression was attempted relating the transformed concentration in soil to the transformed concentration in soil invertebrate. Uptake regressions for DDT and metabolites from soil into soil invertebrates were derived for DDT, DDD and DDE separately and combined as provided in Figure 6. The uptake regression for dieldrin from soil into soil invertebrates is provided as Figure 7. The regression was used to estimate bioaccumulation if it is significant (i.e., the slope differed significantly [$p \leq 0.05$] from 0) and R^2 is greater than or equal to 0.2). If both of these criteria are not met, the median BAF is used to estimate bioaccumulation.

In cases where the back calculation of the Eco-SSL using the significant regression equations resulted in soil concentrations (Eco-SSL values) lower than the range of data used to derive the regressions, the median BAF was used to estimate bioaccumulation. This was the case for Total DDT (DDT, DDD and DDE) and dieldrin. The resulting selected uptake equations are summarized in Table 4b.

Models

Concentrations of non-ionic organic contaminants from soil into earthworms are assumed to be a function of partitioning between soil pore water and the earthworm tissues (Connell and Markwell 1990, Sample et al. 1997, Jager 1998):

$$C_{\text{worm}} = K_{\text{ww}} @ C_{\text{w}}$$

where:

$$\begin{aligned} C_{\text{worm}} &= \text{concentration in worm (mg/kg dry weight)} \\ K_{\text{ww}} &= \text{biota to soil water partitioning coefficient (L soil pore water/kg ww tissue)} \\ C_{\text{w}} &= \text{concentration in soil pore water (mg/L)} \end{aligned}$$

For lipophilic chemicals, K_{ww} is a function of the octanol-water partition coefficient (K_{ow}) and the fraction lipid content of the organism. Jager (1998) derived the following regression equation for K_{ww} (L soil pore water/kg ww tissue) in earthworms based on data for 69 lipophilic chemicals (with $\log K_{\text{ow}}$ values ranging from 2 to 8):

$$\log(K_{\text{ww}}) = 0.87 @ \log(K_{\text{ow}}) - 2.0$$

K_{ww} (L soil pore water/kg ww tissue) was converted to L soil pore water/kg dw tissue by assuming 16% solids and dividing K_{ww} by 0.16.

The concentration of a chemical in soil pore water (C_{w}) is related to the concentration in soil as follows:

$$C_{\text{w}} = C_{\text{s}} / K_{\text{d}}$$

where:

$$\begin{aligned} C_{\text{s}} &= \text{concentration in soil (mg/kg soil)} \\ K_{\text{d}} &= \text{soil to water partitioning coefficient (L soil pore water / kg dw soil)} \end{aligned}$$

For non-ionic organic compounds, K_{d} may be estimated as:

$$K_{\text{d}} = f_{\text{oc}} @ K_{\text{oc}}$$

where

$$\begin{aligned} f_{\text{oc}} &= \text{fraction of organic carbon in soil (kg organic carbon/kg soil)} \\ K_{\text{oc}} &= \text{soil organic carbon to water partitioning coefficient (L soil pore water / kg organic carbon)} \end{aligned}$$

In cases where K_{ow} but not K_{oc} is available, the value of K_{oc} can be estimated using the class-specific models presented in Gerstl (1990). Table 5 provides a summary of the input parameters used to calculate BAFs for the uptake of non-ionic organic chemicals from soil into earthworms.

3.2.3 Small Mammals and Birds

The uptake of non-ionic organic chemicals from soil into small mammals or birds was estimated for the Eco-SSL COCs based on chemical-specific empirical data. Appendix D and E provide respective compilations of the mammal and bird uptake data for DDT, DDD, DDE and dieldrin compiled as part of the Eco-SSL effort. The data compiled represent the uptake of these organic chemicals from the diet into either whole body or carcass tissues. These chemical-specific uptake data were used to derive an uptake equation for each chemical. First a chemical-specific regression was attempted relating the transformed concentration in diet to transformed concentration in either bird or mammal carcass or whole body tissue. This regression was used to estimate bioaccumulation if it was considered significant (i.e., the slope differed significantly [$p \leq 0.05$] from 0) and R^2 is greater than or equal to 0.2. The uptake regressions for DDT from diet into mammals and birds (DDT, and DDE separate and combined) are provided as Figure 8. The uptake regression for dieldrin from diet into mammals and birds is provided as Figure 9.

In cases where the back calculation of the Eco-SSL using the significant regression equations resulted in soil concentrations (Eco-SSL values) lower than the range of data used to derive the regressions, the median BAF was used to estimate bioaccumulation. This was the case for Total DDT (DDT, DDD and DDE) and dieldrin.

No suitable mammalian bioaccumulation data were located for PAHs, RDX or TNT. However, due to the rapid metabolism of these compounds after ingestion by birds and mammals, bioaccumulation is expected to be minimal.

3.3 Uptake of Pentachlorophenol

Pentachlorophenol (PCP) can exist in soil as either a non-ionic species or as an organic anion. In the pH range relevant to most environmental scenarios, PCP can exist as both a neutral species and as an anionic species; however, the primary form is as the organic anion (Lee et al., 1990). The ionic form of PCP has a greater tendency relative to the neutral PCP to remain in the soil pore water, similar to metal anions. Because of this, PCP was evaluated separately from the non-ionic organic chemicals. Table 4c summarizes the uptake equations that were used to estimate PCP concentrations in plants, earthworms, and small mammals for PCP. The following subsections provide a detailed discussion of the derivation of these uptake equations.

3.3.1 *Plants and Earthworms*

Data on PCP uptake from soil into plants and earthworms were compiled from studies identified as part of the literature search previously described. Appendix F provides a summary of the bioaccumulation data for PCP in plants and earthworms. These data were used to derive an uptake regression from soil to earthworm (Figure 10) and a median BAF for the uptake of PCP from soil into plants (Appendix F).

In cases where the back calculation of the Eco-SSL using the significant regression equations resulted in soil concentrations (Eco-SSL values) lower than the range of data used to derive the regressions, the median BAF was used to estimate bioaccumulation. This was the case for PCP.

3.3.2 *Small Mammals*

No data were located on the uptake of PCP into small mammal tissues. However, a study by Stedman et al. (1980) provides an uptake regression from diet into the chicken.

$$C_{\text{chicken}} = 0.00452 C_{\text{diet}} + 0.198$$

where:

C_{chicken} = concentration in the chicken (mg/kg dw)

C_{diet} = concentration in the diet of the chicken (mg/kg dw)

Assuming uptake into mammals is similar to that reported for chickens, and by assuming that the diet of the chicken consists primarily of earthworms, this equation was used to estimate PCP tissue concentrations in small mammals.

EPA has provided detailed bioaccumulation data and the derivation of uptake equations in this Attachment for the subset of initial Eco-SSL COCs that are non-ionic and ionic organic chemicals. Any additional bioaccumulation data used to derive Eco-SSLs should be summarized and provided as part of the contaminant specific documents.

4.0 REFERENCES

- Abdul Rada, A. M. M., and M. B. Bouche. 1995. Earthworm contribution to ecotoxicological assessments. *Acta Zool Fenn.* 196: 307-310.
- Baes, C.F., R. Sharp, A. Sjoreen and R. Shor. 1984. *A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture.* Prepared by Oak Ridge National Laboratory for U.S. Dept. of Energy. 150 pp.
- Barrett, G.W., and K.L. Stueck. 1976. Caloric ingestion rate and assimilation efficiency of the short-tailed shrew, *Blarina brevicauda*. *Ohio J. Sci.* 76: 25-26.
- Baroni F., A. Boscagli, G. Protano, and F. Riccobono. 2000. Antimony accumulation in *Achillea ageratum*, *Plantago lanceolata*, and *Silene vulgaris* growing in an old Sb-mining area. *Environ. Poll.* 109: 347-352.
- Bechtel Jacobs Company LLC. 1998. *Empirical Models for the Uptake of Inorganic Chemicals from Soil by Plants.* Bechtel Jacobs Company LLC, Oak Ridge, Tennessee. BJC/OR-133.
- Beyer, W. N., R. L. Chaney, and B. M. Mulhern. 1982. Heavy metal concentration in earthworms from soil amended with sewage sludge. *J. Environ. Qual.* 11: 381-385.
- Beyer, W. N., E. Conner, and S. Gerould. 1994. Estimates of soil ingestion by wildlife. *J. Wildl. Manage.* 58:375-382.
- Brown, J.H., and R.C. Lasiewski. 1972. Metabolism of weasels: the cost of being long and thin. *Ecology.* 53: 939-943.
- Connell, D. W. and R. D. Markwell. 1990. Bioaccumulation in the soil to earthworm system. *Chemosphere.* 20(1-2): 91-100.
- Craighead, J. C. and F. C. Craighead. 1956. *Hawks, Owls and Wildlife.* Harrisburg PA, the Stackpole Co. and Washington DC Wildl. Manage Inst.
- Dark, J., I. Zucker and G. Wade, 1983. Photoperiodic regulation of body mass, food intake, and reproduction in meadow voles. *Am. J. Physiology.* 245: R334-R338
- Duke, G. E., O. A. Evanson, and A. Jegers. 1976. Metal to pellet intervals in 14 species of captive raptors. *Comp. Biochem. Physiol.* 43A: 1-6.

- Fagerstone, K.A. 1987. Black-footed ferret, long-tailed weasel, short-tailed weasel and least weasel. In: *Wild Fur Bearer Management and Conservation*, Novak et al., Ontario Ministry of Natural Resources.
- Gerstl, Z. 1990. Estimation of organic chemical sorption by soils. *J. Contam. Hydrology*. 6: 357- 375.
- Hanson, H. C. and C. W. Kossack. 1957. Methods and criteria for aging incubated eggs and nestlings of the Mourning dove. *Wilson Bulletin*. 69(1): 91-101.
- Innes D.G.L., and J.S. Millar. 1981. Body weight, litter size, and energetics of reproduction in *Clethrionomys gapperi* and *Microtus pennsylvanicus*. *Can. J. Zool*. 59: 785-789.
- Jager, T. 1998. Mechanistic approach for estimating bioconcentration of organic chemicals in earthworms. *Environ. Toxicol. Chem*. 17: 2080-2090.
- Lee, L. S., P. S. C. Rao, P. Nkedi-Kizza, and J. J. Delfino. 1990. Influence of solvent and sorbent characteristics on distribution of pentachlorophenol in octanol-water and soil-water systems. *Environ. Sci. Tech*. 24: 654-661.
- Morrison, P.R., M. Pierce, and F.A. Ryser. 1957. Food consumption and body weight in the masked and short-tailed shrews (genus *Blarina*) in Kansas, Iowa and Missouri. *Ann. Carnegie Mus*. 51: 111-128.
- Nagy, K.A. 2004. Personal communication.
- Nagy, K.A., I.A. Girard, and T.K. Brown. 1999. Energetics of free-ranging mammals, reptiles, and birds. *Ann. Rev. Nutr*. 19: 247-277.
- Neuhauser, E. F., Z. V. Cukic, M. R. Malecki, R. C. Loehr, and P. R. Durkin. 1995. Bioconcentration and biokinetics of heavy metals in the earthworm. *Environ. Pollut*. 89: 293-301.
- Ognev. S.I. 1950. *Mammals of the U.S.S.R. and adjacent countries*. Translated from Russian by : Israel Program for Scientific Translations (1964) Jerusalem 626 pp. (as cited in US EPA 1993)
- Quick, H. F. 1951. Notes on the ecology of weasels in Gunnison County, Colorado. *Journal of Mammology*. 33 (5): 281-290.

- Randolph, J. C. 1973. Ecological energetics of a homothermic predator, the short-tailed shrew. *Ecology*. 54(5): 1166-1187.
- Richardson. 1973. Locomotory and feeding activity of the shrews, *Blarina brevicauda* and *Suncus murinus*. *Am. Midl. Nat.* 90: 224-227.
- Sample, B., J.J. Beauchamp, R. Efroymson, and G.W. Suter, II. 1999. Literature-derived Bioaccumulation Models for Earthworms: Development and Validation. *Environmental Toxicology and Chemistry*. 18: 2110-2120.
- Sample, B., J.J. Beauchamp, R. Efroymson, G.W. Suter, II, and T. Ashwood. 1998a. *Development and Validation of Bioaccumulation Models for Small Mammals*. Oak Ridge National Laboratory. ES/ER/TM-219.
- Sample, B., J.J. Beauchamp, R. Efroymson, G.W. Suter, II, and T. Ashwood. 1998b. *Development and Validation of Bioaccumulation Models for Earthworms*. Oak Ridge National Laboratory. ES/ER/TM-220.
- Sanderson, G. C. 1949. Growth and behavior of a litter of captive long-tailed weasel. *Journal of Mammology*. 39(4): 412-415.
- Sheldon, W. G. 1967. *The Book of the American Woodcock*. Amherst, MA: University of Massachusetts Press.
- Stedman, T.M., Jr., N. H. Booth, P.B. Bush, R.K. Page, D.D. Goetsch. 1980. Toxicity and bioaccumulation of pentachlorophenol in broiler chickens. *Poult. Sci.* 59: 1018-1026.
- Stickel, W. H., D. W. Hayne, and L. F. Stickel. 1965. Effects of heptachlor-contaminated earthworms on woodcocks. *J. Wildl. Manage.* 29: 132-146.
- Syracuse Research Corporation (SRC). Physical Properties Database. <http://esc.syrres.com/interkow/PhysProp.htm>
- Tabor, W. B. 1928. A method to determine the weight of food digested daily by birds. *Auk*. Volume XLV: 339-340.
- Travis, C.C., and A.D. Arms. 1988. Bioconcentration of organics in beef, milk and vegetation. *Environ. Sci. Technol.* 22: 271-274.

United States Environmental Protection Agency (U.S. EPA). 1995. *Internal report on summary of measured, calculated, and recommended Log K_{ow} values*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. 38 pp.

United States Environmental Protection Agency (U.S. EPA). 1996. *Soil Screening Guidance: Technical Background Document*. EPA/540/R-95/128

United States Environmental Protection Agency (U.S. EPA). 1993. *Wildlife Exposure Factors Handbook*. EPA/600/R-93/1987a. Volumes I & II.

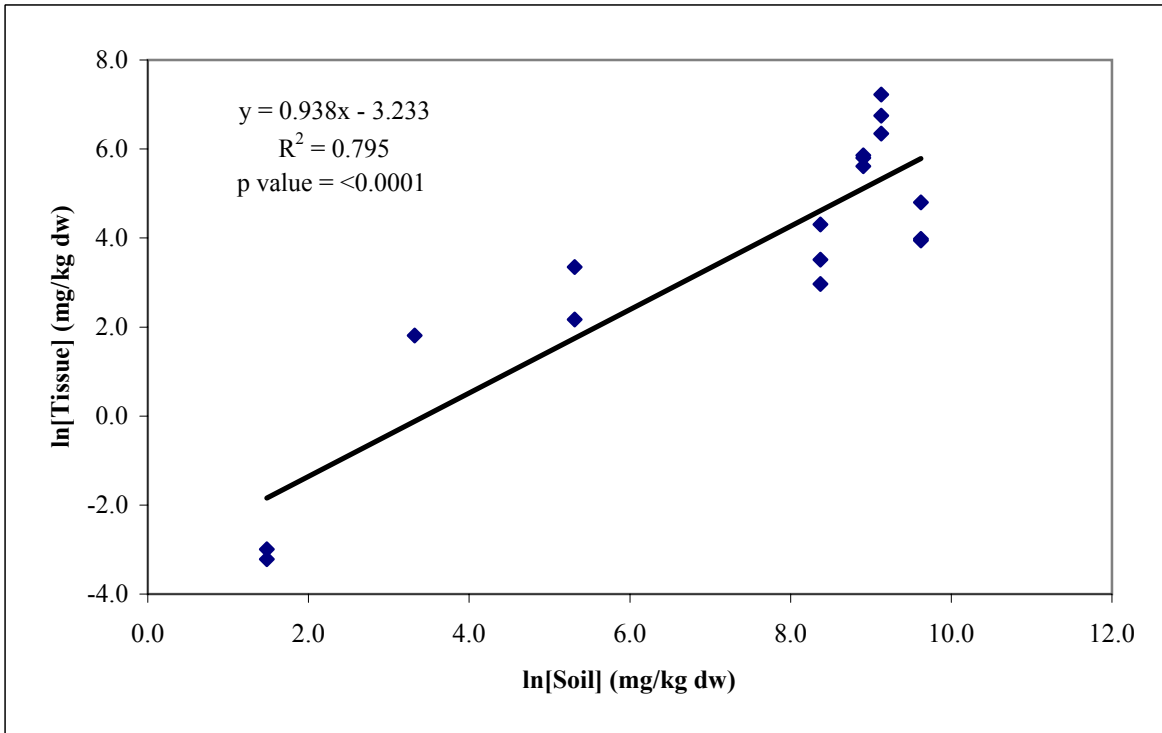


Eco-SSL Attachment 4-1
Figures

February 2005
Revised April 2007

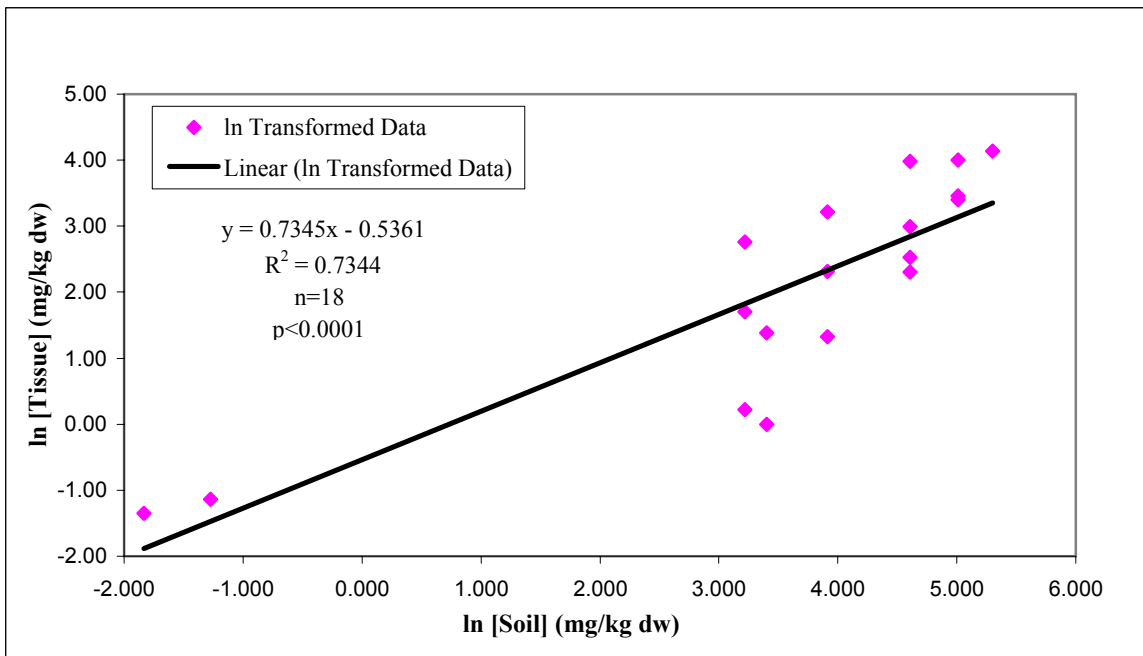
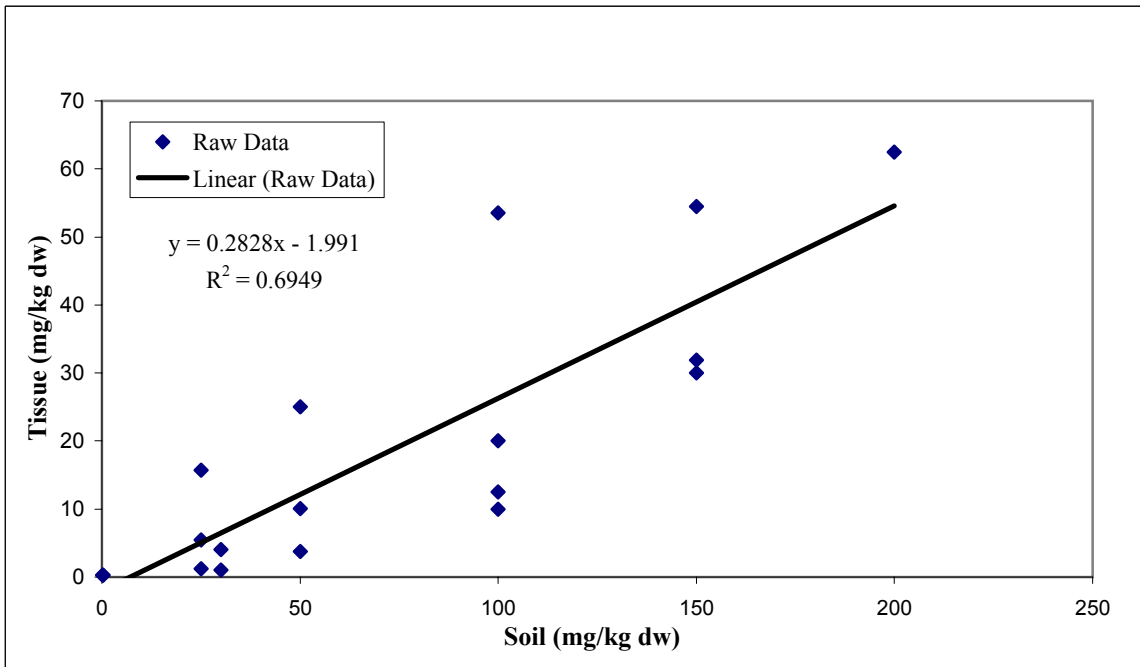
This page intentionally left blank

Figure 1. Uptake of Antimony from Soil into Plant Foliage



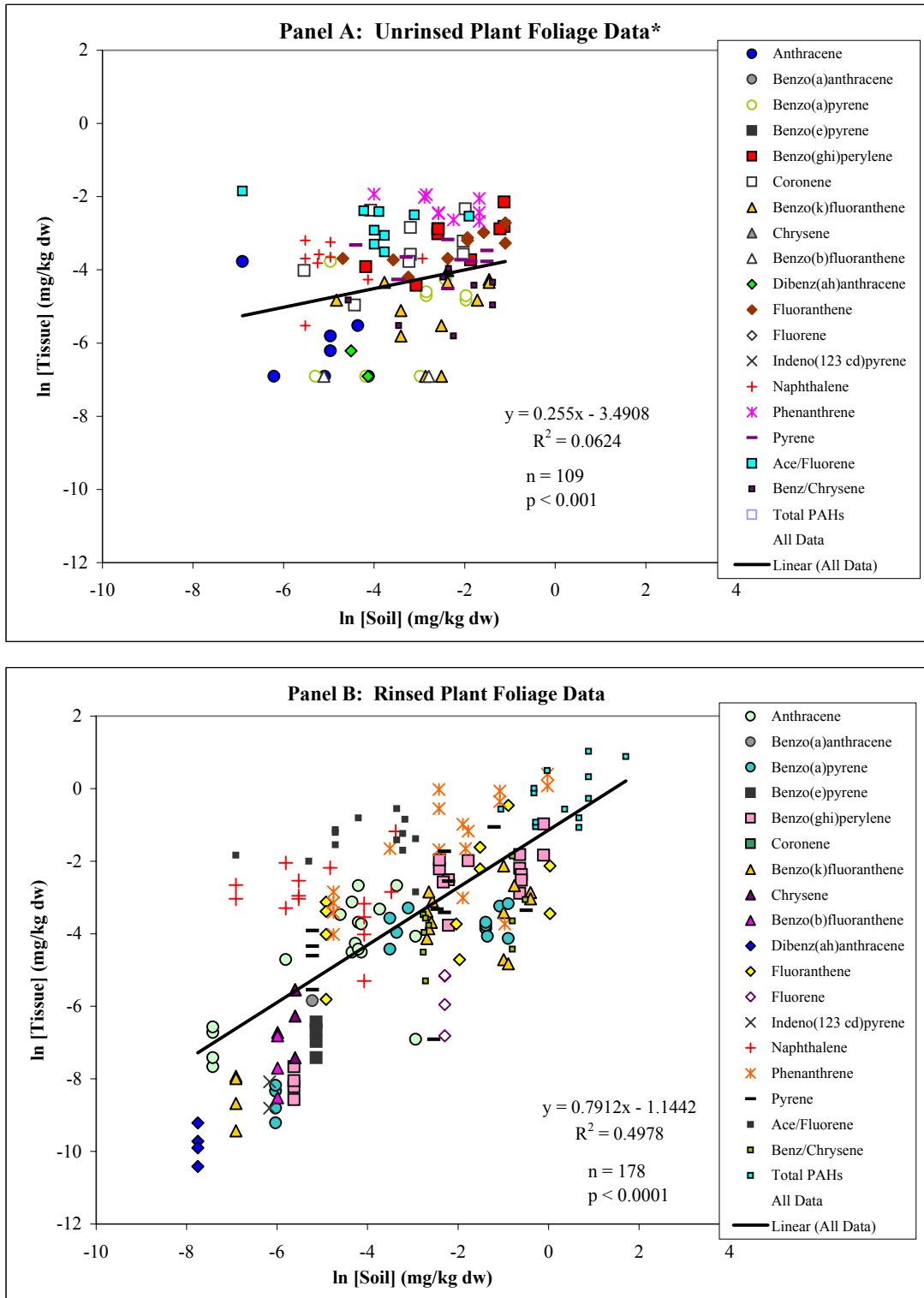
Raw data are provided in Appendix A.

Figure 2
Uptake of Beryllium from Soil into Plant Foliage



Raw data provided in Appendix A.

Figure 3. Uptake of PAHs from Soil into Plant Foliage for Unrinsed (Panel A) and Rinsed (Panel B) Plant Foliage



* Includes data for studies where rinsed status was not specified. Raw data provided in Appendix B.

Figure 4. Uptake of PAHs from Soil into Plant Foliage
Low versus High Molecular Weight PAHs

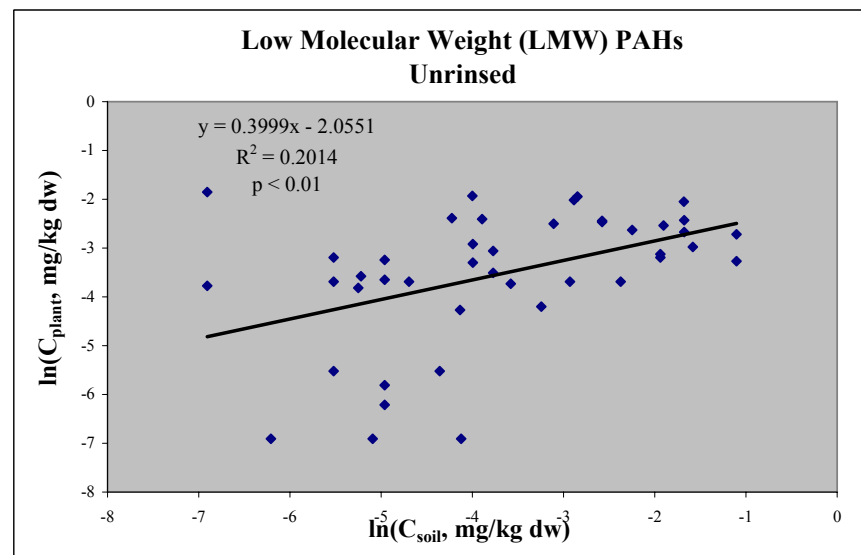
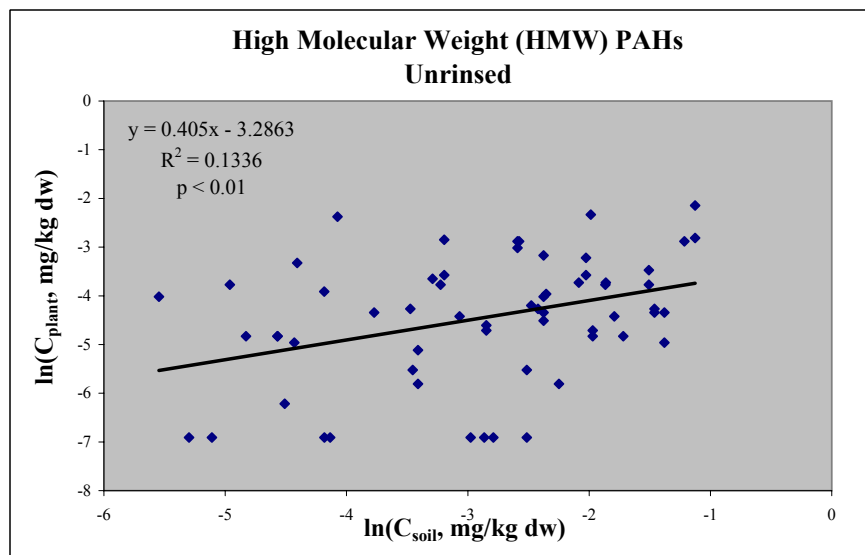
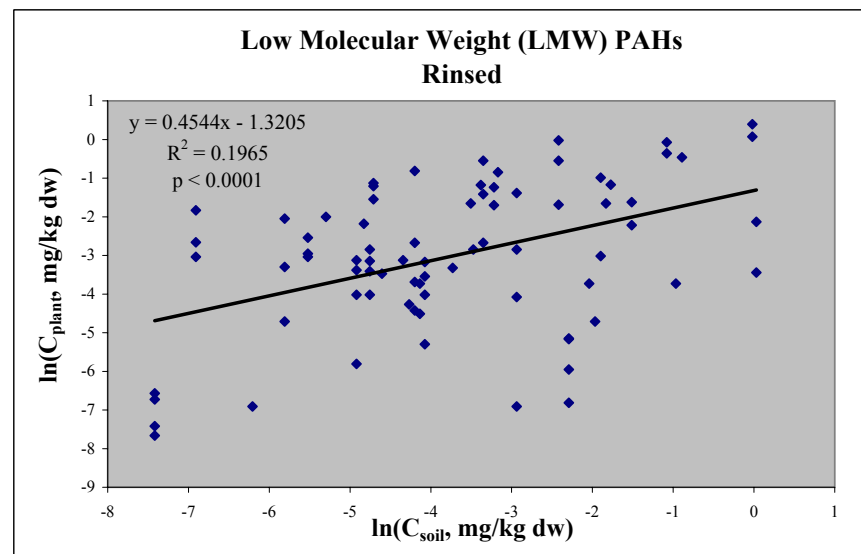
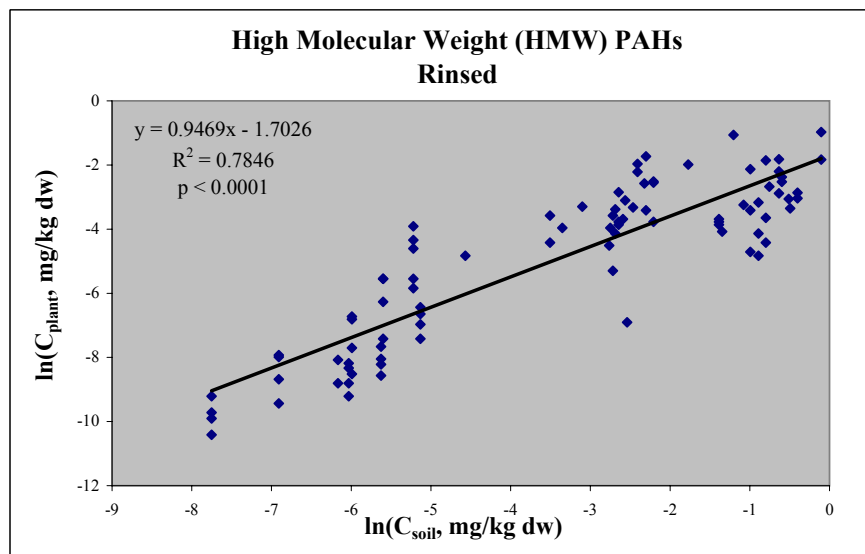
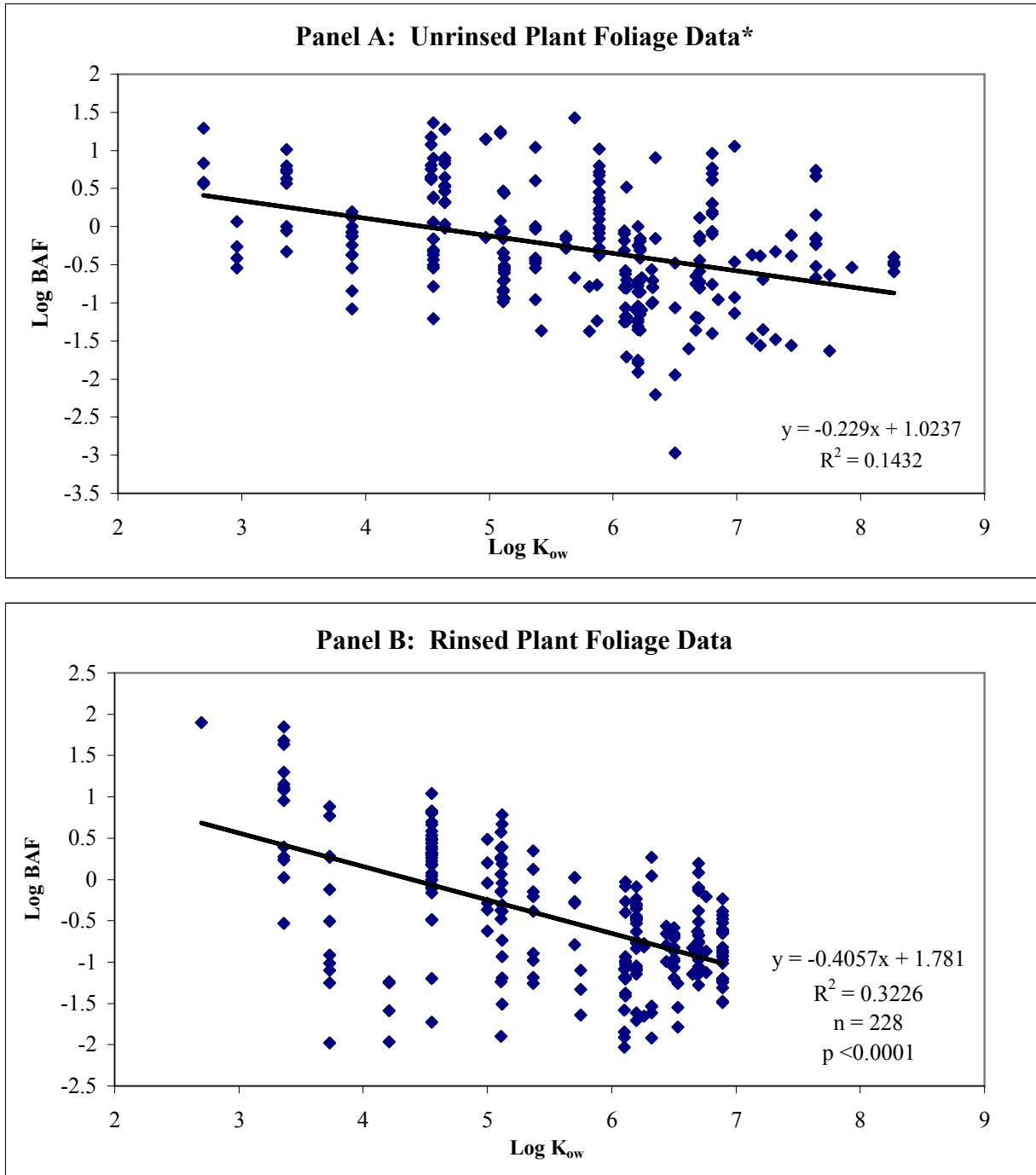
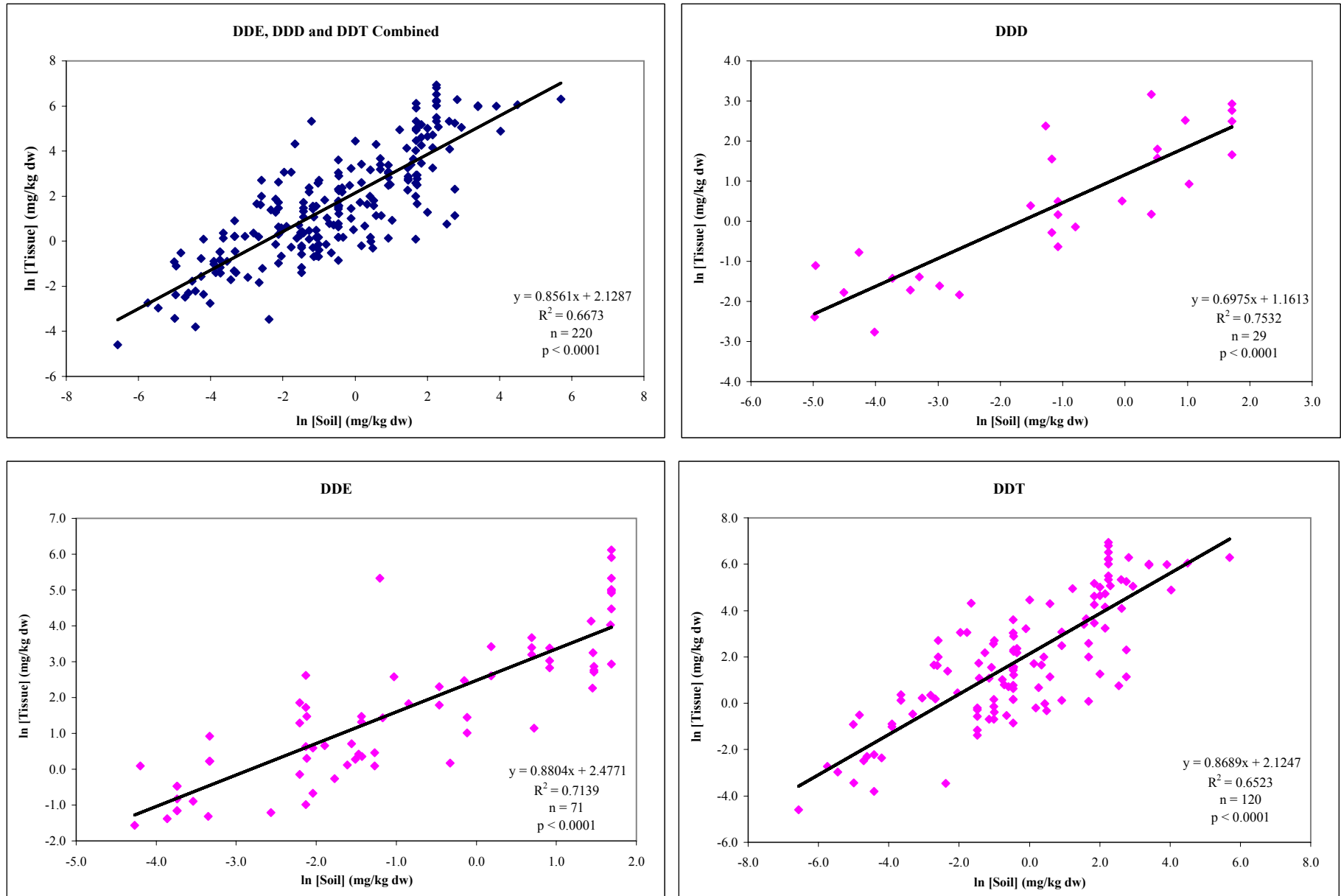


Figure 5. Log K_{ow} versus Log BAF for Non-Ionic Organics in Unrinsed (Panel A) and Rinsed (Panel B) Plant Foliage



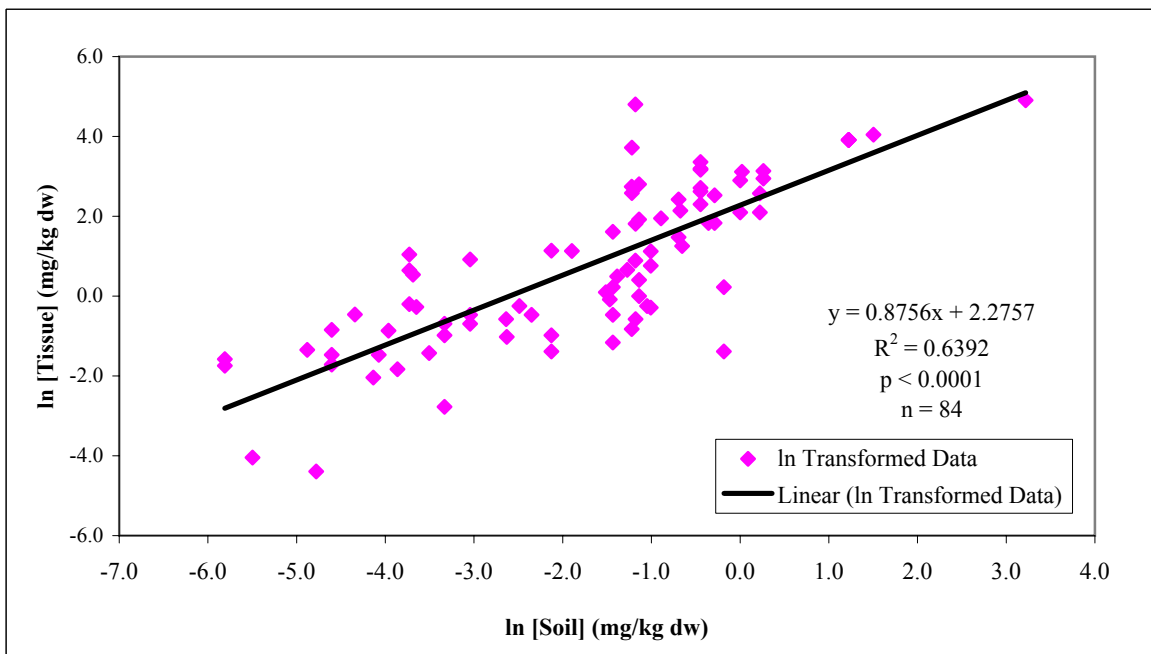
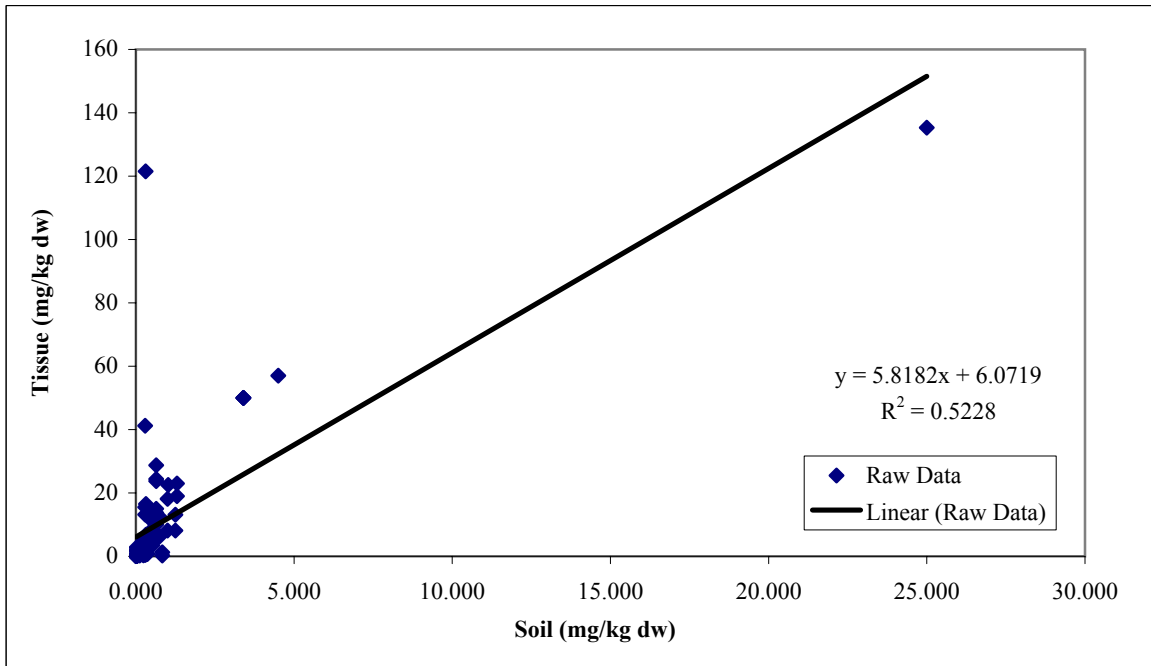
* Includes data for studies where rinsed status was not reported. Raw data provided in Appendix B.

Figure 6
Uptake of DDT, DDD and DDE from Soil by Soil Invertebrates



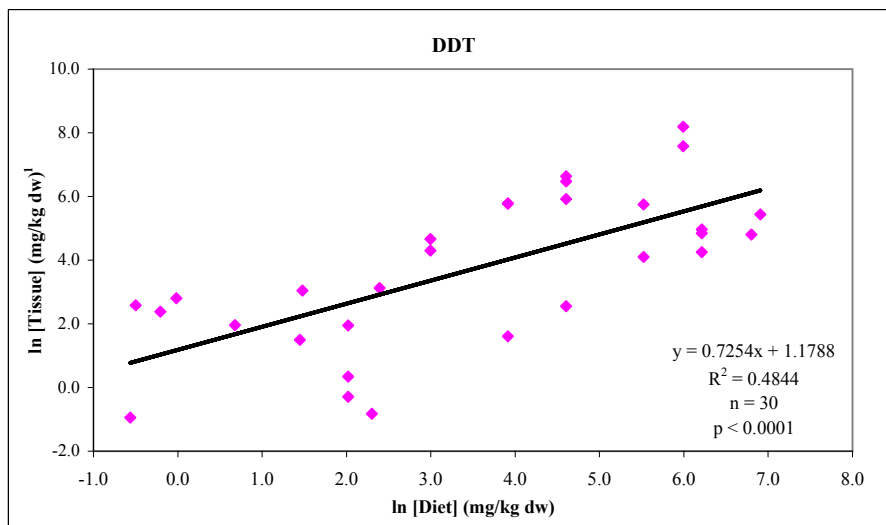
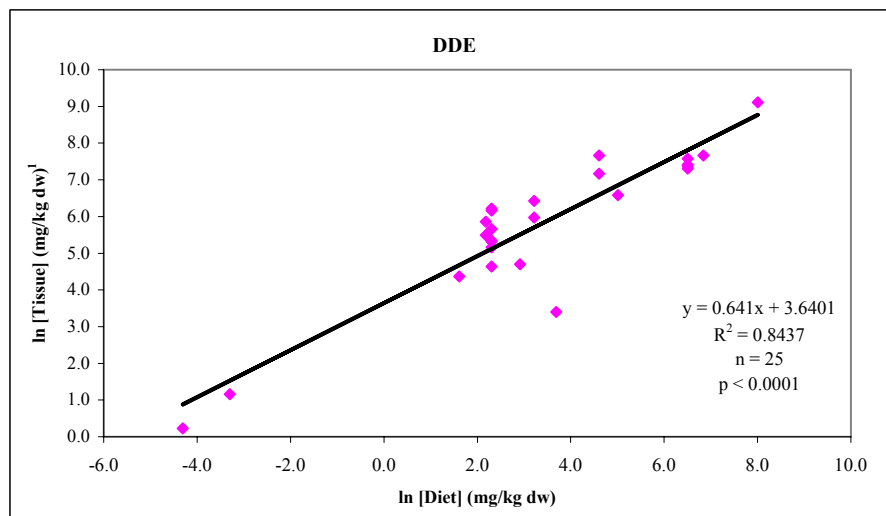
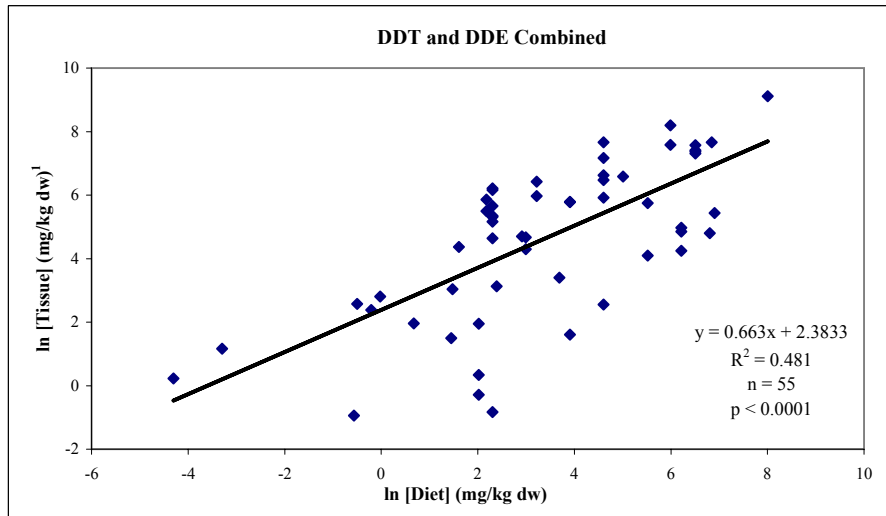
Raw data provided in Appendix D.

Figure 7
Uptake of Dieldrin from Soil by Soil Invertebrates



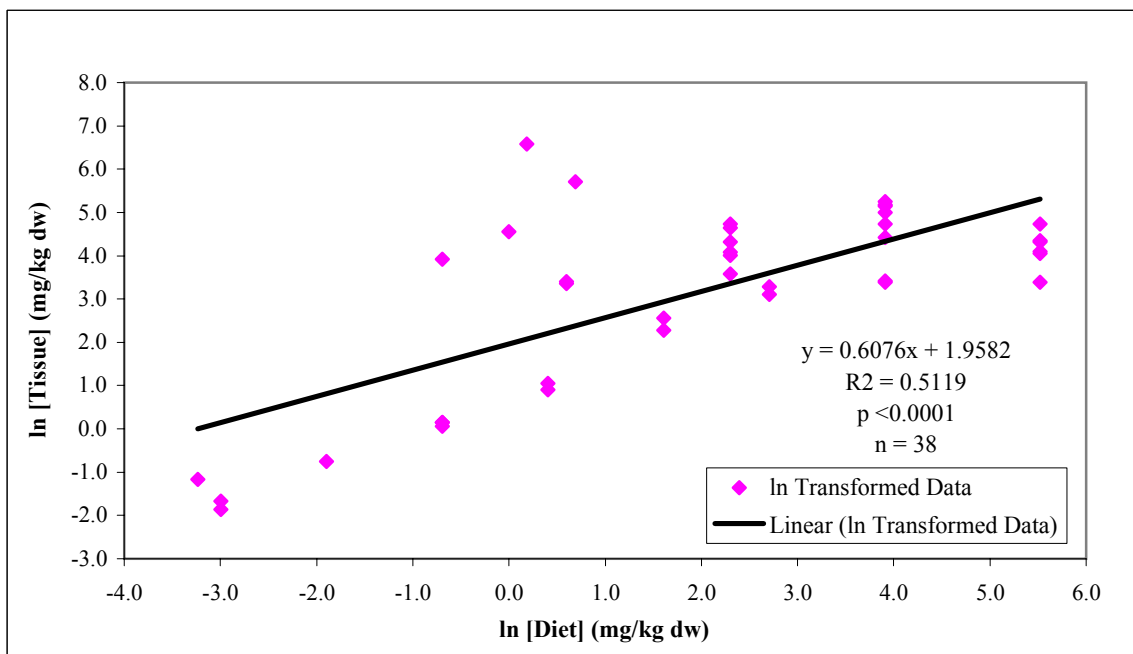
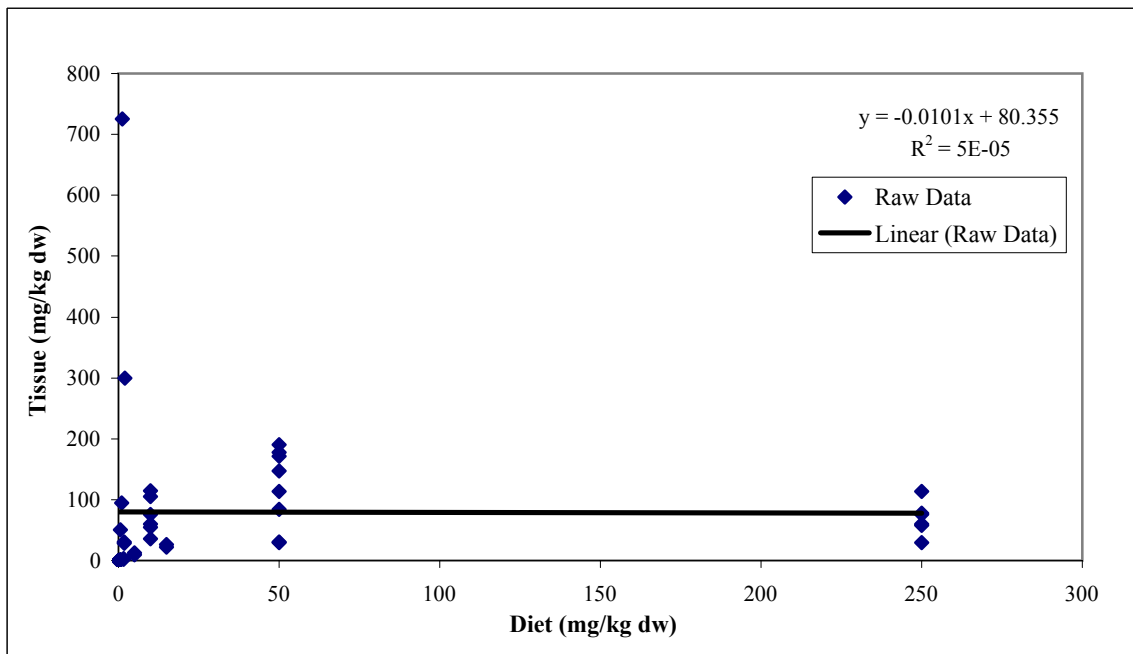
Raw data provided in Appendix E.

Figure 8
Concentration of DDT, and DDT in Diet versus
Mammal and Bird Whole Body or Carcass Tissue



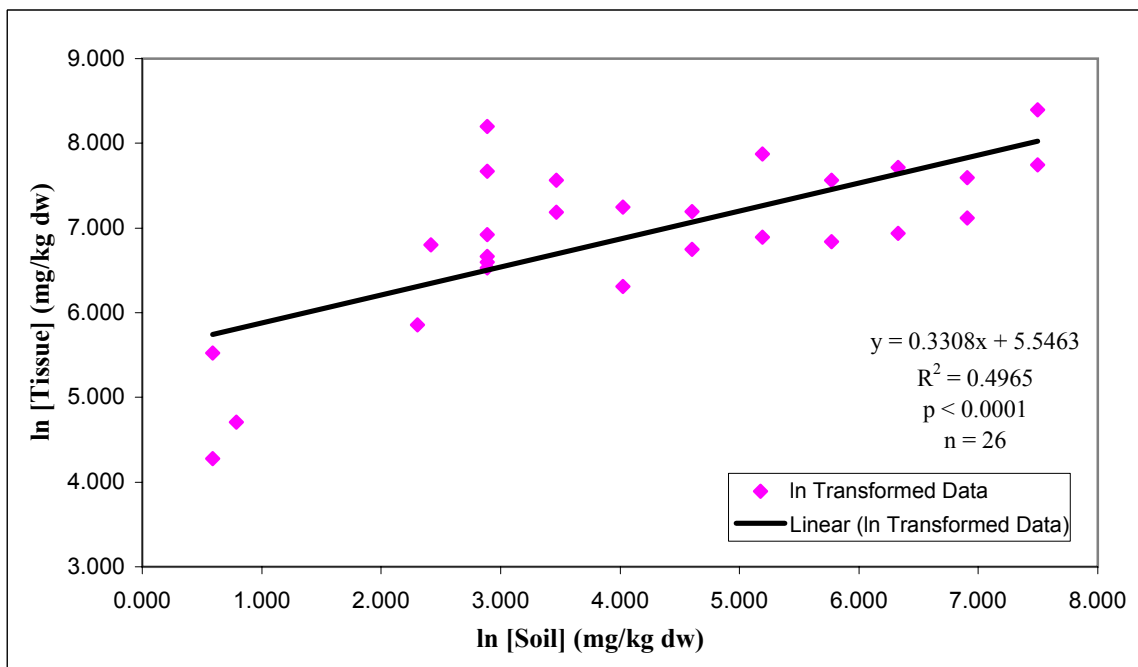
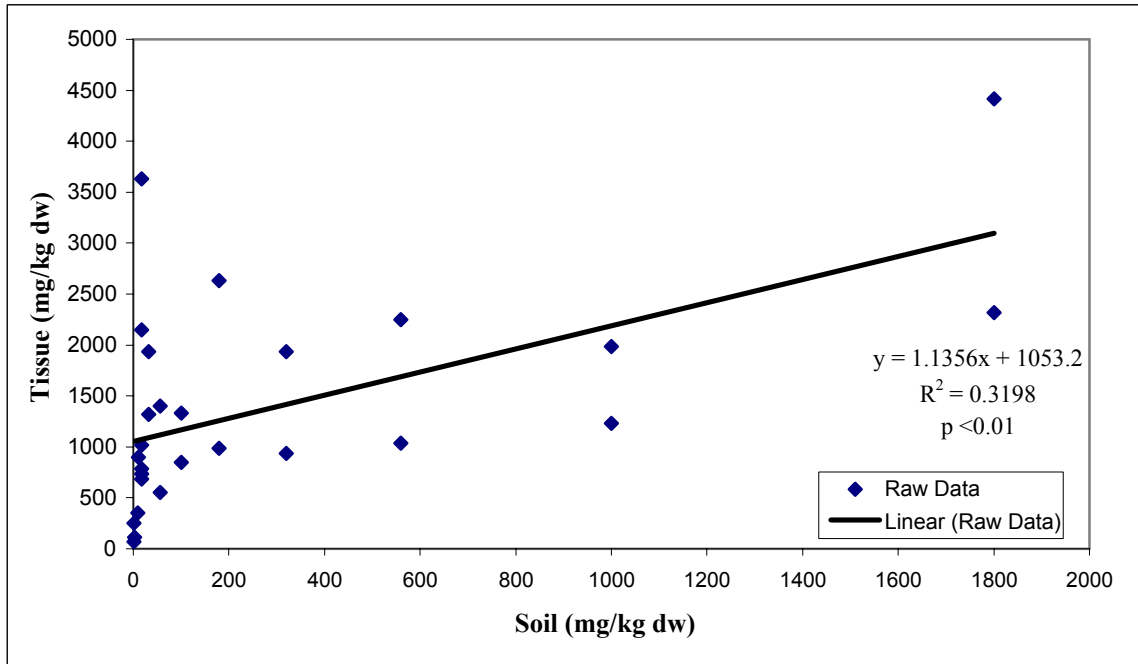
¹ Tissue type is either whole body or carcass. Raw data is provided in Appendix D.

Figure 9
Concentration of Dieldrin in Diet versus
Mammal or Bird Whole Body or Carcass Tissue



Raw data provided in Appendix E.

Figure 10
Uptake of Pentachlorophenol (PCP) from Soil by Soil Invertebrates



Raw Data Provided in Appendix F.



Eco-SSL Attachment 4-1
Tables

February 2005
Revised April 2007

This page intentionally left blank

Table 1. Food Intake Data for Surrogate Species

| Surrogate Species | Source | Raw Data Food Ingestion Rate (FIR) (g/g bw/day) | | | | | | % Moisture | | Food Intake Rate (g dw/g bw/d) | | Comments | High End Point Est (e) | |
|--------------------|------------------------------|--|----|-------|-------|----------|--------------|------------|-------------------|-----------------------------------|----------|----------|--|--------|
| | | Typical | N | SEM | Stdev | High end | Weight Basis | Value | Source | Mean | High end | | (g dw/g bw/d) | |
| Meadow Vole | Ognev (1950) | 0.30 - 0.35 | -- | -- | -- | 0.35 | wet wt | 85 | reported in study | 0.049 | 0.053 | b | low and high ends of a range (cited in Johnson & Johnson 1982) 14 hr/day 10 hr/day | 0.0875 |
| | Dark et al. (1983) | 0.095 | 9 | 0.002 | 0.006 | a | -- | dry wt | -- | 0.095 | 0.103 | c | | |
| | Dark et al. (1983) | 0.085 | 12 | 0.005 | 0.017 | a | -- | dry wt | -- | 0.085 | 0.107 | c | | |
| Short-tailed Shrew | Morrison et al. (1957) | 0.62 | 7 | -- | -- | -- | wet wt | 80 | assumed | 0.124 | 0.155 | d | fed beef liver; mean for adult M&F at 25°C fed beef liver; mean for adult M&F at 5°C fed newborn rats; mean for adult M&F at 25°C food type not described; mean mealworm diet; FIR calculated as IR/BW; each assumed normal, mean and stdev reported. Stdev FIR estimated by Monte Carlo assuming R=0.8 (professional judgement) | 0.209 |
| | Morrison et al. (1957) | 0.77 | 7 | -- | -- | -- | wet wt | 80 | assumed | 0.154 | 0.193 | d | | |
| | Morrison et al. (1957) | 0.96 | 7 | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.307 | 0.384 | d | | |
| | Richarson (1973) | 0.54 | 10 | -- | -- | -- | wet wt | 68 | assumed | 0.173 | 0.216 | d | | |
| | Barrett and Stuek (1976) | 0.49 | 4 | -- | 0.073 | -- | wet wt | 84 | WEFH, earthworm | 0.078 | 0.098 | c | | |
| Long-tailed Weasel | Quick (1951) | 0.40 | 3 | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.128 | 0.160 | d | calculated based on 4 mice/day @ 30g/mice and bw = 300 g calculated from caloric requirements and assumed diet captive animals | 0.130 |
| | Brown and Lasiewski (1972) | 0.08 | -- | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.026 | 0.032 | d | | |
| | Fagerstone (1987) | 0.17 - 0.33 | -- | -- | -- | 0.7 | wet wt | 68 | WEFH, mice | 0.080 | 0.224 | b | | |
| | Sanderson (1949) | 0.18 - 0.24 | 7 | -- | -- | 0.4 | wet wt | 74 | assumed | 0.05 | 0.104 | b | | |
| Mourning Dove | Hanson and Kossack (1957a) | 0.14 | -- | -- | -- | -- | wet wt | 9.3 | WEFH, seeds | 0.128 | 0.161 | d | based on 17 g/day and body weight = 120 g | 0.190 |
| | Taber (1928) | 0.16 | 22 | -- | -- | 0.241 | wet wt | 9.3 | WEFH, seeds | 0.146 | 0.219 | b | | |
| Red-Tailed Hawk | Craighead & Craighead (1956) | 0.112 | 1 | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.036 | 0.045 | d | mean for adult female hawk across 68 days (winter) mean for adult male hawk across 106 days (winter) mean for adult male hawk across 29 days (summer) fed at 0900 hrs for 94 days fed at 1100 hrs for 78 days adult mean, value could not be corroborated | 0.0353 |
| | Craighead & Craighead (1956) | 0.102 | 1 | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.033 | 0.041 | d | | |
| | Craighead & Craighead (1956) | 0.086 | 1 | -- | -- | -- | wet wt | 68 | WEFH, mice | 0.028 | 0.034 | d | | |
| | Duke et al. (1976) | 0.013 | 6 | -- | 0.007 | -- | dry wt | -- | -- | 0.013 | 0.021 | c | | |
| | Duke et al. (1976) | 0.021 | 6 | -- | 0.009 | -- | dry wt | -- | -- | 0.021 | 0.032 | c | | |
| | Duke et al. (1976) | 0.055 | -- | -- | -- | -- | wet wt | 68 | WEFH, mice | -- | -- | -- | | |
| American Woodcock | Sheldon (1967) | 1.0 | -- | -- | -- | -- | wet wt | 84 | WEFH, earthworm | 0.160 | 0.200 | d | mean for adult M&F (summer) mean for treated M&F in heptachlor dosing study (winter) | 0.214 |
| | Stickel et al. (1965) | 0.77 | 23 | -- | -- | 1.43 | wet wt | 84 | WEFH, earthworm | 0.123 | 0.229 | b | | |

SEM = Standard Error on Mean

Stdev = Standard Deviation

WEFH = Wildlife Exposure Factors Handbook (USEPA, 1993)

(a) Calculated as SEM * SQRT(N)

(b) Reported

(c) Calculated as Typical + 1.282 * Stdev (estimated to be the 90th percentile assuming a normal distribution)

(d) High end assumed (estimated as Typical * 1.25)

(e) High end point estimate based on arithmetic mean of alternate high end values

Table 2. Input Parameters for the Estimation of Soil Ingestion Rate

| Parameter | Variable | Assumed Distribution | vole | shrew | weasel ¹ | dove ² | hawk ¹ | woodcock | Source Notes |
|---|----------|----------------------|--------------------------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---|
| digestibility of food | a | Normal(mean,std) | mean=0.76 std=0.076 | mean ³ =0.82 std ³ =0.048 | mean=0.84 std=0.065 | mean=0.59 std=0.13 | mean=0.78 std=0.052 | mean=0.72 std=0.051 | Mean and stdev digestibility values taken from USEPA (1993) (Table 4-3) unless noted. |
| concentration of acid-insoluble ash in food | b | Uniform(min,max) | min=0 max=0.02 | min=0 max=0.02 | min=0 max=0.02 | min=0 max=0.02 | min=0 max=0.02 | min=0 max=0.02 | Assumed; based on Beyer et al. (1994) |
| concentration of acid-insoluble ash in soil | c | Uniform(min,max) | min=0.9 max=1.0 | min=0.9 max=1.0 | min=0.9 max=1.0 | min=0.9 max=1.0 | min=0.9 max=1.0 | min=0.9 max=1.0 | Assumed; based on Beyer et al. (1994) |
| concentration of acid-insoluble ash in scat | y | Normal(mean,std) | mean = 0.089 std = 0.032 | mean ⁴ = 0.104 std ⁵ = 0.052 | mean = 0.14 std = 0.069 | mean = 0.16 std = 0.087 | mean = 0.14 std = 0.069 | mean = 0.22 std = 0.146 | Mean and stdev are measured values from Beyer et al. (1994) unless noted. |

¹ Soil ingestion data assumed to be comparable to the red fox reported in Beyer et al. (1994).

² Soil ingestion data assumed to be comparable to the wild turkey reported in Beyer et al. (1994).

³ Provided by Randolph (1973).

⁴ Acid insoluble ash in GI tracts of shrews from unpublished data provided by C. Garten, Oak Ridge National Laboratory.

⁵ Standard deviation estimated using an assumed coefficient of variation (CV) of 50% (selected based on the average CV of 51% across all other receptors).

Table 3. Estimated Distribution of P_S Values

| Statistic | vole | shrew | weasel | dove | hawk | woodcock |
|------------------|-------------|--------------|---------------|-------------|-------------|-----------------|
| Mean | 1.3% | 1.1% | 1.6% | 6.8% | 2.6% | 7.5% |
| Stdev | 1.4% | 1.5% | 2.1% | 5.3% | 2.3% | 6.9% |
| 5th Percentile | -0.8% | -1.1% | -1.2% | -0.6% | -0.7% | -1.6% |
| 10th Percentile | -0.4% | -0.7% | -0.8% | 0.6% | -0.1% | -0.2% |
| 15th Percentile | -0.1% | -0.4% | -0.4% | 1.5% | 0.3% | 0.9% |
| 20th Percentile | 0.1% | -0.2% | -0.1% | 2.2% | 0.6% | 1.9% |
| 25th Percentile | 0.3% | 0.0% | 0.1% | 2.9% | 1.0% | 2.7% |
| 30th Percentile | 0.5% | 0.2% | 0.4% | 3.6% | 1.3% | 3.4% |
| 35th Percentile | 0.7% | 0.4% | 0.6% | 4.2% | 1.5% | 4.2% |
| 40th Percentile | 0.9% | 0.6% | 0.8% | 4.8% | 1.8% | 4.9% |
| 45th Percentile | 1.0% | 0.8% | 1.1% | 5.5% | 2.1% | 5.7% |
| 50th Percentile | 1.2% | 0.9% | 1.3% | 6.1% | 2.4% | 6.4% |
| 55th Percentile | 1.4% | 1.1% | 1.5% | 6.7% | 2.6% | 7.2% |
| 60th Percentile | 1.6% | 1.3% | 1.8% | 7.4% | 2.9% | 8.1% |
| 65th Percentile | 1.7% | 1.5% | 2.1% | 8.2% | 3.3% | 9.0% |
| 70th Percentile | 1.9% | 1.7% | 2.4% | 9.0% | 3.6% | 10.0% |
| 75th Percentile | 2.2% | 2.0% | 2.7% | 9.9% | 4.0% | 11.2% |
| 80th Percentile | 2.4% | 2.3% | 3.2% | 11.0% | 4.5% | 12.5% |
| 85th Percentile | 2.7% | 2.6% | 3.7% | 12.3% | 5.0% | 14.2% |
| 90th Percentile | 3.2% | 3.0% | 4.3% | 13.9% | 5.7% | 16.4% |
| 95th Percentile | 3.8% | 3.7% | 5.4% | 16.6% | 6.9% | 20.1% |

Results based on Monte Carlo simulation with 100,000 iterations.

Table 4a. Uptake Equations for Inorganics

| Analyte | Soil to Plants | | Soil to Earthworms | | Soil to Small Mammals | |
|-----------|---|--------|---------------------------------------|--------|---|--------|
| | Equation | Source | Equation | Source | Equation | Source |
| Antimony | $\ln(C_p) = 0.938 * \ln(C_s) - 3.233$ | a | $C_e = C_s$ | g | $C_m = 0.001 * 50 * C_d$ | f |
| Arsenic | $C_p = 0.03752 * C_s$ | b | $\ln(C_e) = 0.706 * \ln(C_s) - 1.421$ | e | $\ln(C_m) = 0.8188 * \ln(C_s) - 4.8471$ | d |
| Barium | $C_p = 0.156 * C_s$ | b | $C_e = 0.091 * C_s$ | c | $C_m = 0.00015 * 50 * C_d$ | f |
| Beryllium | $\ln(C_p) = 0.7345 * \ln(C_s) - 0.5361$ | h | $C_e = 0.045 * C_s$ | c | $C_m = 0.001 * 50 * C_d$ | f |
| Cadmium | $\ln(C_p) = 0.546 * \ln(C_s) - 0.475$ | b | $\ln(C_e) = 0.795 * \ln(C_s) + 2.114$ | e | $\ln(C_m) = 0.4723 * \ln(C_s) - 1.2571$ | d |
| Chromium | $C_p = 0.041 * C_s$ | b | $C_e = 0.306 * C_s$ | e | $\ln(C_m) = 0.7338 * \ln(C_s) - 1.4599$ | d |
| Cobalt | $C_p = 0.0075 * C_s$ | b | $C_e = 0.122 * C_s$ | c | $\ln(C_m) = 1.307 * \ln(C_s) - 4.4669$ | d |
| Copper | $\ln(C_p) = 0.394 * \ln(C_s) + 0.668$ | b | $C_e = 0.515 * C_s$ | e | $\ln(C_m) = 0.1444 * \ln(C_s) + 2.042$ | d |
| Lead | $\ln(C_p) = 0.561 * \ln(C_s) - 1.328$ | b | $\ln(C_e) = 0.807 * \ln(C_s) - 0.218$ | e | $\ln(C_m) = 0.4422 * \ln(C_s) + 0.0761$ | d |
| Manganese | $C_p = 0.079 * C_s$ | b | $\ln(C_e) = 0.682 * \ln(C_s) - 0.809$ | e | $C_m = 0.0205 * C_s$ | d |
| Nickel | $\ln(C_p) = 0.748 * \ln(C_s) - 2.223$ | b | Not available | i | $\ln(C_m) = 0.4658 * \ln(C_s) - 0.2462$ | d |
| Selenium | $\ln(C_p) = 1.104 * \ln(C_s) - 0.677$ | b | $\ln(C_e) = 0.733 * \ln(C_s) - 0.075$ | e | $\ln(C_m) = 0.3764 * \ln(C_s) - 0.4158$ | d |
| Silver | $C_p = 0.014 * C_s$ | b | $C_e = 2.045 * C_s$ | c | $C_m = 0.004 * C_s$ | d |
| Vanadium | $C_p = 0.00485 * C_s$ | b | $C_e = 0.042 * C_s$ | c | $C_m = 0.0123 * C_s$ | d |
| Zinc | $\ln(C_p) = 0.554 * \ln(C_s) + 1.575$ | b | $\ln(C_e) = 0.328 * \ln(C_s) + 4.449$ | e | $\ln(C_m) = 0.0706 * \ln(C_s) + 4.3632$ | d |

Source:

- a. Regression derived from measured data [Appendix A]
- b. Bechtel-Jacobs 1998
- c. Sample et al. 1998b
- d. Sample et al. 1998a
- e. Sample et al. 1999
- f. Baes et al. 1984
- g. Assumed
- h. Regression derived from measured data [Appendix A].
- i. A reliable uptake equation could not be identified (see text)

Abbreviations:

- C_s = Concentration in soil (mg/kg)
 - C_p = Concentration in plant tissue (mg/kg dry weight)
 - C_e = Concentration in earthworm (mg/kg dry weight)
 - C_m = Concentration in small mammal tissue (mg/kg dry weight)
 - C_d = Concentration in diet (mg/kg dry weight)
- where small mammal diet is assumed to be 100% earthworms

Table 4b. Uptake Equations for Non-Ionic Organics

| Chemical | Soil to Plants | | Soil to Earthworms | | Soil to Small Mammals | |
|---|---|--------|---|--------|---|--------|
| | Equation | Source | Equation | Source | Equation | Source |
| Non-PAHs | | | | | | |
| Dieldrin | $C_p = 0.41 * C_s$ | a | $C_e = 14.7 * C_s$ | h | $C_m = 1.2 * C_d$ | h |
| DDT, DDD and DDE Combined | $\ln(C_p) = 0.7524 * \ln(C_s) - 2.5119$ | b | $C_e = 11.2 * C_s$ | h | $C_m = 4.83 * C_d$ | h |
| DDT | <i>Not Available</i> | | $\ln(C_e) = 0.8689 * \ln(C_s) + 2.1247$ | b | $\ln(C_m) = 0.7254 * \ln(C_d) + 1.1788$ | b |
| DDD | <i>Not Available</i> | | $\ln(C_e) = 0.6975 * \ln(C_s) + 1.1613$ | b | <i>Not Available</i> | |
| DDE | <i>Not Available</i> | | $\ln(C_e) = 0.8804 * \ln(C_s) + 2.4771$ | b | $\ln(C_m) = 0.641 * \ln(C_d) + 3.6401$ | b |
| TNT | $C_p = 4.23 * C_s$ | c | <i>Not Available</i> | | $C_m = 0$ | f |
| RDX | $C_p = 0.43 * C_s$ | c | <i>Not Available</i> | | $C_m = 0$ | f |
| Low Molecular Weight (LMW) PAHs | | | | | | |
| Total LMW PAHs | $\ln(C_p) = 0.4544 * \ln(C_s) - 1.3205$ | d | $C_e = 3.04 * C_s$ | i | $C_m = 0$ | f |
| Acenaphthene | $\ln(C_p) = -0.8556 * \ln(C_s) - 5.562$ | d | $C_e = 1.47 * C_s$ | e | $C_m = 0$ | f |
| Acenaphthylene | $\ln(C_p) = 0.791 * \ln(C_s) - 1.144$ | g | $C_e = 22.9 * C_s$ | e | $C_m = 0$ | f |
| Anthracene | $\ln(C_p) = 0.7784 * \ln(C_s) - 0.9887$ | d | $C_e = 2.42 * C_s$ | e | $C_m = 0$ | f |
| Fluoranthene | $C_p = 0.50 * C_s$ | c | $C_e = 3.04 * C_s$ | e | $C_m = 0$ | f |
| Fluorene | $\ln(C_p) = -0.8556 * \ln(C_s) - 5.562$ | d | $C_e = 9.57 * C_s$ | e | $C_m = 0$ | f |
| Naphthalene | $C_p = 12.2 * C_s$ | c | $C_e = 4.40 * C_s$ | e | $C_m = 0$ | f |
| Phenanthrene | $\ln(C_p) = 0.6203 * \ln(C_s) - 0.1665$ | d | $C_e = 1.72 * C_s$ | e | $C_m = 0$ | f |
| High Molecular Weight (HMW) PAHs | | | | | | |
| Total HMW PAHs | $\ln(C_p) = 0.9469 * \ln(C_s) - 1.7026$ | d | $C_e = 2.6 * C_s$ | i | $C_m = 0$ | f |
| Benzo(a)anthracene | $\ln(C_p) = 0.5944 * \ln(C_s) - 2.7078$ | d | $C_e = 1.59 * C_s$ | e | $C_m = 0$ | f |
| Benzo(a)pyrene | $\ln(C_p) = 0.9750 * \ln(C_s) - 2.0615$ | d | $C_e = 1.33 * C_s$ | e | $C_m = 0$ | f |
| Benzo(b)fluoranthene | $C_p = 0.310 * C_s$ | c | $C_e = 2.60 * C_s$ | e | $C_m = 0$ | f |
| Benzo(e)pyrene | $C_p = 0.19 * C_s$ | c | $C_e = 2.76 * C_s$ | e | $C_m = 0$ | f |
| Benzo(ghi)perylene | $\ln(C_p) = 1.1829 * \ln(C_s) - 0.9313$ | d | $C_e = 2.94 * C_s$ | e | $C_m = 0$ | f |
| Benzo(k)fluoranthene | $\ln(C_p) = 0.8595 * \ln(C_s) - 2.1579$ | d | $C_e = 2.60 * C_s$ | e | $C_m = 0$ | f |
| Chrysene | $\ln(C_p) = 0.5944 * \ln(C_s) - 2.7078$ | d | $C_e = 2.29 * C_s$ | e | $C_m = 0$ | f |
| Coronene | $C_p = 0.68 * C_s$ | c | $C_e = 3.72 * C_s$ | e | $C_m = 0$ | f |
| Dibenz(ah)anthracene | $C_p = 0.13 * C_s$ | c | $C_e = 2.31 * C_s$ | e | $C_m = 0$ | f |
| Indeno(123 cd)pyrene | $C_p = 0.11 * C_s$ | c | $C_e = 2.86 * C_s$ | e | $C_m = 0$ | f |
| Pyrene | $C_p = 0.72 * C_s$ | c | $C_e = 1.75 * C_s$ | e | $C_m = 0$ | f |

Source:

- a. Regression derived from measured data [Appendix E].
- b. Regression derived from measured data [Appendix D].
- c. Median BAF calculated from measured data [Appendix C].
- d. Regression derived from measured data [Appendix C or Figure 4].
- e. Modeled from K_{ow} based on Jager (1998) [Table 5].
- f. Assumed to be negligible
- g. Modeled using the rinsed PAH-specific equation [Figure 3]
- h. Regression derived from measured data was significant but backcalculation of Eco-SSLs using the regression(s) resulted in a soil concentration lower than those used to derive the regression(s). Median BAF then used. The regressions are provided in Figures 6, 7, 8 and 9.
- i. Median of values estimated for either HMW or LMW PAHs in Table 5.

Abbreviations:

- C_s = Concentration in soil (mg/kg)
- C_p = Concentration in plant tissue (mg/kg dry weight)
- C_e = Concentration in earthworm (mg/kg dry weight)
- C_m = Concentration in small mammal or bird tissue (mg/kg dry weight)
- C_d = Concentration in diet (mg/kg dw) where diet is assumed to be 100% earthworms.

Table 4c. Uptake Equations for Pentachlorophenol (PCP)

| Chemical | Soil to Plants | | Soil to Earthworms | | Soil to Small Mammals | |
|-------------------|--------------------|--------|---------------------|--------|-------------------------------|--------|
| | Equation | Source | Equation | Source | Equation | Source |
| Pentachlorophenol | $C_p = 5.93 * C_s$ | a | $C_e = 14.63 * C_s$ | b | $C_m = 0.00452 * C_d + 0.198$ | c |

Source:

- a. Median BAF calculated from measured data in Appendix F.
- b. Regression derived from measured data was significant but backcalculation of Eco-SSLs using the regression resulted in a soil concentration lower than those used to derive the regression. Median BAF then used. The regressions is provided in Figure 10.
- c. Based on uptake from diet into chicken (Stedman et al. 1980).

Abbreviations:

- C_s = Concentration in soil (mg/kg)
- C_p = Concentration in plant tissue (mg/kg dry weight)
- C_e = Concentration in earthworm (mg/kg dry weight)
- C_m = Concentration in small mammal tissue (mg/kg dry weight)
- C_d = Concentration in diet (mg/kg dry weight)
where small mammal diet is assumed to be 100% earthworms

Table 5. Estimation of Soil to Earthworm Bioaccumulation Factors for Non-Ionic Organic Contaminants.

| Chemical | K_{ow} : octanol to water partitioning coefficient | | | K_{ww} : worm to soil water partitioning coefficient | | | K_{oc} : water to soil organic carbon partitioning coefficient | | | | | K_d : soil to water partitioning coefficient | Soil to Earthworm BAF ⁵ |
|---|--|----------|----------|--|-------------------------|--------------------------------------|--|-----------|--------------|-----------------------|---------------|--|------------------------------------|
| | log K_{ow} | K_{ow} | Source | log K_{ww} ¹ | K_{ww} (L/kg worm ww) | K_{ww} ² (L/kg worm dw) | slope | intercept | log K_{oc} | K_{oc} ³ | Source | K_d ⁴ (L/kg soil dw) | |
| Low Molecular Weight (LMW) Polynuclear Aromatic Hydrocarbons (PAHs) | | | | | | | | | | | | | |
| Benzo(a)anthracene | 5.7 | 5.01E+05 | EPA 1996 | 2.96 | 9.10E+02 | 5.69E+03 | | | 5.55 | 3.58E+05 | EPA 1996 | 3.58E+03 | 1.59 |
| Benzo(a)pyrene | 6.11 | 1.29E+06 | EPA 1996 | 3.32 | 2.07E+03 | 1.29E+04 | | | 5.99 | 9.69E+05 | EPA 1996 | 9.69E+03 | 1.33 |
| Benzo(b)fluoranthene | 6.2 | 1.58E+06 | EPA 1996 | 3.39 | 2.48E+03 | 1.55E+04 | 0.762 | 1.051 | 5.78 | 5.96E+05 | estimated (a) | 5.96E+03 | 2.60 |
| Benzo(e)pyrene | 6.44 | 2.75E+06 | SRC, PP | 3.60 | 4.01E+03 | 2.50E+04 | 0.762 | 1.051 | 5.96 | 9.08E+05 | estimated (a) | 9.08E+03 | 2.76 |
| Benzo(ghi)perylene | 6.7 | 5.01E+06 | EPA 1995 | 3.83 | 6.75E+03 | 4.22E+04 | 0.762 | 1.051 | 6.16 | 1.43E+06 | estimated (a) | 1.43E+04 | 2.94 |
| Benzo(k)fluoranthene | 6.2 | 1.58E+06 | EPA 1996 | 3.39 | 2.48E+03 | 1.55E+04 | 0.762 | 1.051 | 5.78 | 5.96E+05 | estimated (a) | 5.96E+03 | 2.60 |
| Chrysene | 5.7 | 5.01E+05 | EPA 1996 | 2.96 | 9.10E+02 | 5.69E+03 | 0.762 | 1.051 | 5.39 | 2.48E+05 | estimated (a) | 2.48E+03 | 2.29 |
| Coronene | 7.64 | 4.37E+07 | SRC, PP | 4.65 | 4.43E+04 | 2.77E+05 | 0.762 | 1.051 | 6.87 | 7.46E+06 | estimated (a) | 7.46E+04 | 3.72 |
| Dibenzo(ah)anthracene | 6.69 | 4.90E+06 | EPA 1996 | 3.82 | 6.61E+03 | 4.13E+04 | | | 6.25 | 1.79E+06 | EPA 1996 | 1.79E+04 | 2.31 |
| Indeno(123 cd)pyrene | 6.584 | 3.84E+06 | SRC, PP | 3.73 | 5.35E+03 | 3.34E+04 | 0.762 | 1.051 | 6.07 | 1.17E+06 | estimated (a) | 1.17E+04 | 2.86 |
| Pyrene | 4.88 | 7.59E+04 | SRC, PP | 2.25 | 1.76E+02 | 1.10E+03 | | | 4.80 | 6.27E+04 | SRC, CF | 6.27E+02 | 1.75 |
| High Molecular Weight (HMW) Polynuclear Aromatic Hydrocarbons (PAHs) | | | | | | | | | | | | | |
| Acenaphthene | 3.92 | 8.32E+03 | EPA 1996 | 1.41 | 2.57E+01 | 1.61E+02 | 0.762 | 1.051 | 4.04 | 1.09E+04 | estimated (a) | 1.09E+02 | 1.47 |
| Acenaphthylene | 4.07 | 1.17E+04 | SRC, PP | 1.54 | 3.47E+01 | 2.17E+02 | | | 2.98 | 9.47E+02 | SRC, CF | 9.47E+00 | 22.9 |
| Anthracene | 4.55 | 3.55E+04 | EPA 1996 | 1.96 | 9.09E+01 | 5.68E+02 | | | 4.37 | 2.35E+04 | EPA 1996 | 2.35E+02 | 2.42 |
| Fluoranthene | 4.95 | 8.91E+04 | SRC, PP | 2.31 | 2.03E+02 | 1.27E+03 | | | 4.62 | 4.17E+04 | SRC, CF | 4.17E+02 | 3.04 |
| Fluorene | 4.18 | 1.51E+04 | SRC, PP | 1.64 | 4.33E+01 | 2.71E+02 | | | 3.45 | 2.83E+03 | SRC, CF | 2.83E+01 | 9.57 |
| Naphthalene | 3.36 | 2.29E+03 | EPA 1996 | 0.92 | 8.38E+00 | 5.24E+01 | | | 3.08 | 1.19E+03 | EPA 1996 | 1.19E+01 | 4.40 |
| Phenanthrene | 4.55 | 3.55E+04 | EPA 1995 | 1.96 | 9.09E+01 | 5.68E+02 | 0.762 | 1.051 | 4.52 | 3.30E+04 | estimated (a) | 3.30E+02 | 1.72 |

¹ $\log K_{ww} = 0.87 * \log K_{ow} - 2.0$ [model from Jager, 1998]

² Converted from wet weight to dry weight assuming 16% solids (Jager, 1998)

³ Measured K_{oc} values from SRC Chem Fate Database or EPA, 1996 (n > 2).

If no measured K_{oc} values available, values modeled based on chemical class-specific models from Gerstl (1990).

where: $\log K_{oc} = \text{slope} * \log K_{ow} + \text{intercept}$

(a) slope and intercept for PAHs

⁴ $K_d = f_{oc} * K_{oc}$ (assumes an f_{oc} of 1% [0.01])

⁵ $BAF = K_{ww} \text{ (L/kg worm dw)} / K_d \text{ (L/kg soil dw)}$

Source Citations:

EPA (1995) = Internal report on summary of measured, calculated, and recommended Log Kow values. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. 38 pp.

EPA (1996) = Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128

SRC, PP = Syracuse Research Corp. Physical Properties Database. <http://esc.syrres.com/interkow/PhysProp.htm>

SRC, CF = Syracuse Research Corp. Chem Fate Database. <http://www.syrres.com/esc/chemfate.htm>

This page intentionally left blank



Eco-SSL Attachment 4-1
Appendix A
Bioaccumulation Data for Antimony and Beryllium in Plants

February 2005
April 2007

This page intentionally left blank

Appendix A-1. Summary of Bioaccumulation Data for Uptake of Antimony from Soil into Plant Foliage

| Soil Conc, (mg/kg dw) | ln(Soil) | Soil pH | Species | Tissue type | Plant Conc. (mg/kg dw) | ln(Tissue) | Reference |
|-----------------------|----------|---------|--------------------------------|-------------|------------------------|------------|--------------------|
| 4.4 | 1.5 | 6.6 | <i>Ambrosia artemisiifolia</i> | stem/leaf | 0.04 | -3.2 | PTI 1995 |
| 4.4 | 1.5 | 6.6 | <i>Bidens polylepsis</i> | stem/leaf | 0.05 | -3.0 | PTI 1995 |
| 27.74 | 3.3 | . | <i>Achillea ageratum</i> | leaves | 6.09 | 1.8 | Baroni et al. 2000 |
| 202.8 | 5.3 | . | <i>Achillea ageratum</i> | leaves | 8.75 | 2.2 | Baroni et al. 2000 |
| 15112.94 | 9.6 | . | <i>Achillea ageratum</i> | leaves | 121.35 | 4.8 | Baroni et al. 2000 |
| 4317.21 | 8.4 | . | <i>Achillea ageratum</i> | leaves | 74.27 | 4.3 | Baroni et al. 2000 |
| 9197.5 | 9.1 | . | <i>Achillea ageratum</i> | leaves | 1367.29 | 7.2 | Baroni et al. 2000 |
| 7364.27 | 8.9 | . | <i>Achillea ageratum</i> | leaves | 329.51 | 5.8 | Baroni et al. 2000 |
| 202.8 | 5.3 | . | <i>Plantago lanceolata</i> | leaves | 28.45 | 3.3 | Baroni et al. 2000 |
| 15112.94 | 9.6 | . | <i>Plantago lanceolata</i> | leaves | 53.64 | 4.0 | Baroni et al. 2000 |
| 4317.21 | 8.4 | . | <i>Plantago lanceolata</i> | leaves | 33.58 | 3.5 | Baroni et al. 2000 |
| 9197.5 | 9.1 | . | <i>Plantago lanceolata</i> | leaves | 569.34 | 6.3 | Baroni et al. 2000 |
| 7364.27 | 8.9 | . | <i>Plantago lanceolata</i> | leaves | 274.63 | 5.6 | Baroni et al. 2000 |
| 15112.94 | 9.6 | . | <i>Silene vulgaris</i> | leaves | 51.77 | 3.9 | Baroni et al. 2000 |
| 4317.21 | 8.4 | . | <i>Silene vulgaris</i> | leaves | 19.45 | 3.0 | Baroni et al. 2000 |
| 9197.5 | 9.1 | . | <i>Silene vulgaris</i> | leaves | 853.75 | 6.7 | Baroni et al. 2000 |
| 7364.27 | 8.9 | . | <i>Silene vulgaris</i> | leaves | 349.62 | 5.9 | Baroni et al. 2000 |

$$\ln(\text{tissue}) = \text{slope} * \ln(\text{soil}) + \text{intercept}$$

| | |
|----------------|----------|
| slope | 0.938 |
| intercept | -3.233 |
| R ² | 0.795 |
| p value | 1.57E-06 |

Appendix A-2 Bioaccumulation Data for Uptake of Beryllium from Soil into Plant Foliage

| Species Information | | Exposure | | Plant Tissue Information | | | | | | | | Soil Information | | | | | | BAF | | Reference | |
|--------------------------------------|-----------------------------|----------|----------------|-----------------------------|--------------------------------------|--|--------------------------------------|-------------------------------------|-------------------------------|-------------------------------------|---------|---------------------------|------------------------------------|------------------------------------|------------------------------------|-------------------------------------|--------------------------|--------------------------------|-----|-----------|--|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Duration | Tissue Type | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet weight or Dry Weight ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Rinsed? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight? | % Moisture Soil ³ | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | | BAF (Tissue mg/kg dw /Soil mg/kg dw) |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 1.25 | mg/kg | dw | NR | 1 | 1.25 | 0.22 | NR | 25 | mg/kg | NR | NR | 1 | 25 | 3.219 | C | 0.050 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 3.75 | mg/kg | dw | NR | 1 | 3.75 | 1.32 | NR | 50 | mg/kg | NR | NR | 1 | 50 | 3.912 | C | 0.075 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 12.5 | mg/kg | dw | NR | 1 | 12.5 | 2.53 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 0.125 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 30 | mg/kg | dw | NR | 1 | 30 | 3.40 | NR | 150 | mg/kg | NR | NR | 1 | 150 | 5.011 | C | 0.200 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 15.75 | mg/kg | dw | NR | 1 | 15.75 | 2.76 | NR | 25 | mg/kg | NR | NR | 1 | 25 | 3.219 | C | 0.630 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 25 | mg/kg | dw | NR | 1 | 25 | 3.22 | NR | 50 | mg/kg | NR | NR | 1 | 50 | 3.912 | C | 0.500 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 53.5 | mg/kg | dw | NR | 1 | 53.5 | 3.98 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 0.535 | Sajwan et al., 1996 |
| Soybean (<i>Glycine max</i>) | L | 60 d | Foliage | 54.5 | mg/kg | dw | NR | 1 | 54.5 | 4.00 | NR | 150 | mg/kg | NR | NR | 1 | 150 | 5.011 | C | 0.363 | Sajwan et al., 1996 |
| Collard (<i>Brassica oleracea</i>) | L | 98 d | Foliage | 5.5 | mg/kg | dw | NR | 1 | 5.5 | 1.70 | NR | 25 | mg/kg | NR | NR | 1 | 25 | 3.219 | C | 0.220 | Kaplan et al., 1990 |
| Collard (<i>Brassica oleracea</i>) | L | 98 d | Foliage | 10.1 | mg/kg | dw | NR | 1 | 10.1 | 2.31 | NR | 50 | mg/kg | NR | NR | 1 | 50 | 3.912 | C | 0.202 | Kaplan et al., 1990 |
| Collard (<i>Brassica oleracea</i>) | L | 98 d | Foliage | 31.9 | mg/kg | dw | NR | 1 | 31.9 | 3.46 | NR | 150 | mg/kg | NR | NR | 1 | 150 | 5.011 | C | 0.213 | Kaplan et al., 1990 |
| Collard (<i>Brassica oleracea</i>) | L | 98 d | Foliage | 62.5 | mg/kg | dw | NR | 1 | 62.5 | 4.14 | NR | 200 | mg/kg | NR | NR | 1 | 200 | 5.298 | C | 0.313 | Kaplan et al., 1990 |
| Grass | F | NR | Foliage | 0.32 | mg/kg | dw | NR | 1 | 0.32 | -1.14 | NR | 0.28 | mg/kg | NR | NR | 1 | 0.28 | -1.273 | C | 1.143 | Meehan and Smythe, 1967 |
| Grass | F | NR | Foliage | 0.26 | mg/kg | dw | NR | 1 | 0.26 | -1.35 | NR | 0.16 | mg/kg | NR | NR | 1 | 0.16 | -1.833 | C | 1.625 | Meehan and Smythe, 1967 |
| Oats (<i>Avena sativa</i>) | L | NR | Foliage | 1 | mg/kg | dw | NR | 1 | 1 | 0.00 | NR | 30 | mg/kg | NR | NR | 1 | 30 | 3.401 | C | 0.033 | Bohn and Seekamp, 1979 |
| Oats (<i>Avena sativa</i>) | L | NR | Foliage | 20 | mg/kg | dw | NR | 1 | 20 | 3.00 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 0.200 | Bohn and Seekamp, 1979 |
| Oats (<i>Avena sativa</i>) | L | NR | Foliage | 10 | mg/kg | dw | NR | 1 | 10 | 2.30 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 0.100 | Bohn and Seekamp, 1979 |
| Oats (<i>Avena sativa</i>) | L | NR | Foliage | 4 | mg/kg | dw | NR | 1 | 4 | 1.39 | NR | 30 | mg/kg | NR | NR | 1 | 30 | 3.401 | C | 0.133 | Bohn and Seekamp, 1979 |

¹ If not reported, assumed to be wet weight (ww).

² If not reported, assumed to be 15% dry matter.

³ If not reported, assumed to be dry weight (dw).

C = BAF calculated

d = day

dw = dry weight

NR = Not Reported

R = Reported

R/C = BAF reported and either tissue concentration or soil concentration calculated

ww = wet weight

$\ln(\text{tissue}) = \text{slope} * \ln(\text{soil}) + \text{intercept}$

slope 0.7345

intercept -0.536

R² 0.7344

p value <0.0001

Appendix A Antimony and Beryllium References

- Baroni F., A. Boscagli, G. Protano, and F. Riccobono. 2000. Antimony accumulation in *Achillea ageratum*, *Plantago lanceolata*, and *Silene vulgaris* growing in an old Sb-mining area. *Environ. Poll.* 109: 347-352.
- Bohn, H. L. and Seekamp, G. 1979. Beryllium effects on potatoes and otas in acid soil. *Water and Soil Pollution* 11: 319.
- Kaplan, D. I., K. S. Sajwan, D. C. Adriano, and S. Gettier. 1990. Phytoavailability and toxicity of beryllium and vanadium. *Water, Air and Soil Pollution.* 53: 203-212.
- Meehan, W. R. and L. E. Smythe. 1967. Occurrence of beryllium as a trace element in environmental materials. *Environ. Science and Technology.* 1(10): 839-844.
- PTI Environmental Services (PTI). 1995. National Zinc Site Remedial Investigation Feasibility Study. Volume IV. Ecological Risk Assessment -- Operable Unit 2. Prepared for City of Bartlesville, Oklahoma, Cyprus Amax Minerals Company, Salomon Inc.
- Sajwan, K. S., W. H. Ornes, and T. V. Youngblood. 1996. Beryllium phytotoxicity to soybeans. *Water, Air and Soil Pollution.* 86: 117-124.

This Page Intentionally Left Blank



Eco-SSL Attachment 4-1
Appendix B
Bioaccumulation Data for Non-Ionic Organic Contaminants in
Plants

February 2005
Revised April 2007

This page intentionally left blank

Appendix B
Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|--------------------------|------------------|---------------|----------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|--------------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Weber and Mrozek 1979 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | NS | Fescue | 52 | day | field | potted plants in growth chambers, tr | Table 3 | 20 | ppm | Not Stated dry assumed | none | 20 | able 3, 0 Carbc | 0.034 | ppm | wet weight | 1 | 6.67 | 0.23 | 0.011 | -1.95 |
| Weber and Mrozek 1979 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | NS | Soybean | 16 | day | field | potted plants in growth chambers, tr | Table 3 | 20 | ppm | Not Stated dry assumed | none | 20 | able 3, 0 Carbc | 0.0032 | ppm | wet weight | 1 | 6.67 | 0.02133 | 0.0011 | -2.97 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Figure 1 | 0.26 | mg/kg | dry weight | none | 0.26 | Figure 1 | 0.38 | mg/kg | dry weight | 1 | 1 | 0.38 | 1.5 | 0.16 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Figure 1 | 0.066 | mg/kg | dry weight | none | 0.0660 | Figure 1 | 0.39 | mg/kg | dry weight | 1 | 1 | 0.39 | 5.9 | 0.77 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Figure 1 | 0.37 | mg/kg | dry weight | none | 0.37 | Figure 1 | 0.58 | mg/kg | dry weight | 1 | 1 | 0.58 | 1.6 | 0.20 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Figure 1 | 1.2 | mg/kg | dry weight | none | 1.2 | Figure 1 | 0.95 | mg/kg | dry weight | 1 | 1 | 0.95 | 0.79 | -0.10 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Table 1 | 0.22 | mg/kg | dry weight | none | 0.22 | Figure 1 | 1.1 | mg/kg | dry weight | 1 | 1 | 1.1 | 5.0 | 0.70 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Corn | 1 | season | field | | Table 1 | 0.24 | mg/kg | dry weight | none | 0.24 | Figure 1 | 2.2 | mg/kg | dry weight | 1 | 1 | 2.2 | 9.2 | 0.96 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Weeds | 1 | season | field | | Figure 1 | 0.05 | mg/kg | dry weight | none | 0.0500 | Figure 1 | 0.1 | mg/kg | dry weight | 1 | 1 | 0.10 | 2.0 | 0.30 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Weeds | 1 | season | field | | Figure 1 | 0.31 | mg/kg | dry weight | none | 0.31 | Figure 1 | 0.27 | mg/kg | dry weight | 1 | 1 | 0.27 | 0.87 | -0.06 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Weeds | 1 | season | field | | Figure 1 | 0.27 | mg/kg | dry weight | none | 0.27 | Figure 1 | 0.54 | mg/kg | dry weight | 1 | 1 | 0.54 | 2.0 | 0.30 |
| Greichus and Dohman 1980 | Aroclors | Aroclor 1260 | 11096825 | 6.8 | ATSDR1989 | NS | Weeds | 1 | season | field | | Figure 1 | 0.22 | mg/kg | dry weight | none | 0.22 | Figure 1 | 0.9 | mg/kg | dry weight | 1 | 1 | 0.90 | 4.1 | 0.61 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Collards | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.04 | mg/kg | dry weight | 1 | 1 | 0.040 | 0.57 | -0.24 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Collards | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.09 | mg/kg | dry weight | 1 | 1 | 0.090 | 0.75 | -0.12 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Grass | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.11 | mg/kg | dry weight | 1 | 1 | 0.11 | 1.6 | 0.20 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Grass | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.17 | mg/kg | dry weight | 1 | 1 | 0.17 | 1.4 | 0.15 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.02 | mg/kg | dry weight | 1 | 1 | 0.020 | 0.29 | -0.54 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.03 | mg/kg | dry weight | 1 | 1 | 0.030 | 0.43 | -0.37 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.03 | mg/kg | dry weight | 1 | 1 | 0.030 | 0.43 | -0.37 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.1 | mg/kg | dry weight | 1 | 1 | 0.10 | 0.83 | -0.08 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.12 | mg/kg | dry weight | 1 | 1 | 0.12 | 1.0 | 0.00 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Pintobean | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.16 | mg/kg | dry weight | 1 | 1 | 0.16 | 1.3 | 0.12 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Radish | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.09 | mg/kg | dry weight | 1 | 1 | 0.090 | 0.75 | -0.12 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Radish | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.16 | mg/kg | dry weight | 1 | 1 | 0.16 | 1.3 | 0.12 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Weeds | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.06 | mg/kg | dry weight | 1 | 1 | 0.060 | 0.86 | -0.07 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Wheat | 1 | season | Field | July 1976, 10 applications | Table VI | 0.12 | mg/kg | dry weight | none | 0.12 | Table V | 0.01 | mg/kg | dry weight | 1 | 1 | 0.010 | 0.083 | -1.08 |
| Bull and Ivie, 1978 | Benzophenylureas | Diffubenzuron | 35367385 | 3.89 | USFS 1989 | NS | Wheat | 1 | season | Field | July 1976, 6 applications | Table VI | 0.07 | mg/kg | dry weight | none | 0.0700 | Table V | 0.01 | mg/kg | dry weight | 1 | 1 | 0.010 | 0.14 | -0.85 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 5, 3.4 kg application | Table IV | 0.03 | mg/kg | Not Stated dry assumed | none | 0.0300 | Table III | 0.13 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.87 | 29 | 1.46 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 1, 3.4 kg application | Table IV | 0.04 | mg/kg | Not Stated dry assumed | none | 0.0400 | Table III | 0.14 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.93 | 23 | 1.37 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 1, 3.4 kg application | Table IV | 0.04 | mg/kg | Not Stated dry assumed | none | 0.0400 | Table III | 0.16 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.1 | 27 | 1.43 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 5, 3.4 kg application | Table IV | 0.03 | mg/kg | Not Stated dry assumed | none | 0.0300 | Table III | 0.24 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.6 | 53 | 1.73 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 3, 15 kg application | Table IV | 0.05 | mg/kg | Not Stated dry assumed | none | 0.0500 | Table III | 0.26 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.7 | 35 | 1.54 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 2, 15 kg application | Table IV | 0.03 | mg/kg | Not Stated dry assumed | none | 0.0300 | Table III | 0.34 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 2.3 | 76 | 1.88 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 3, 15 kg application | Table IV | 0.05 | mg/kg | Not Stated dry assumed | none | 0.0500 | Table III | 0.43 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 2.9 | 57 | 1.76 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 4, 15 kg application | Table IV | 0.02 | mg/kg | Not Stated dry assumed | none | 0.0200 | Table III | 0.61 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 4.1 | 203 | 2.31 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 4, 15 kg application | Table IV | 0.02 | mg/kg | Not Stated dry assumed | none | 0.0200 | Table III | 0.76 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 5.1 | 253 | 2.40 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 1, 15 kg application | Table IV | 0.04 | mg/kg | Not Stated dry assumed | none | 0.0400 | Table III | 0.89 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 5.9 | 148 | 2.17 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 1, 15 kg application | Table IV | 0.04 | mg/kg | Not Stated dry assumed | none | 0.0400 | Table III | 0.89 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 5.9 | 148 | 2.17 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 5, 15 kg application | Table IV | 0.02 | mg/kg | Not Stated dry assumed | none | 0.0200 | Table III | 1.37 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 9.1 | 457 | 2.67 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 2, 15 kg application | Table IV | 0.03 | mg/kg | Not Stated dry assumed | none | 0.0300 | Table III | 1.47 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 9.8 | 327 | 2.51 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 5, 15 kg application | Table IV | 0.02 | mg/kg | Not Stated dry assumed | none | 0.0200 | Table III | 8.37 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 56 | 2790 | 3.45 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 1, 3.4 kg application | Table IV | 0.04 | mg/kg | Not Stated dry assumed | none | 0.0400 | Table III | 0.02 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.13 | 3.3 | 0.52 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 5, 3.4 kg application | Table IV | 0.03 | mg/kg | Not Stated dry assumed | none | 0.0300 | Table III | 0.06 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.40 | 13 | 1.12 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 4, 15 kg application | Table IV | 0.02 | mg/kg | Not Stated dry assumed | none | 0.0200 | Table III | 0.23 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.5 | 77 | 1.88 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 3, 15 kg application | Table IV | 0.05 | mg/kg | Not Stated dry assumed | none | 0.0500 | Table III | 0.37 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 2.5 | 49 | 1.69 |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 1, 15 kg application | Table IV | | | | | | | | | | | | | | |

Appendix B Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|---------------------------|------------------------|---------------------|--------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|---------------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|-------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Dorough and Pass, 1972 | Cyclodienes | gamma-Chlordane | 57749 | 6.32 | EPA 1995 | NS | Corn | 102 | d | Field | May 1970, 2 lb chlordane/acre | Table 1 | 0.082 | mg/kg | dry weight | none | 0.0820 | Table 2 | 0.013 | mg/kg | dry weight | 1 | 1 | 0.013 | 0.16 | -0.80 |
| Dorough and Pass, 1972 | Cyclodienes | gamma-Chlordane | 57749 | 6.32 | EPA 1995 | NS | Corn | 102 | d | Field | May 1970, 2 lb HCS 3260/acre | Table 1 | 0.148 | mg/kg | dry weight | none | 0.15 | Table 2 | 0.015 | mg/kg | dry weight | 1 | 1 | 0.015 | 0.10 | -0.99 |
| Viswanathan et al., 1978 | Nitro/Chloro-aromatics | 3,4-Dichloroaniline | 95761 | 2.69 | SRC | NS | Barley | 1 | season | Field | 1.43 kg/ha | Table 2 | 0.83 | ug/g | dry weight | none | 0.83 | Table 2 | 0.45 | ug/g ww | wet weight | 1 | 6.67 | 3.0 | 3.6 | 0.56 |
| Viswanathan et al., 1978 | Nitro/Chloro-aromatics | 3,4-Dichloroaniline | 95761 | 2.69 | SRC | NS | Potato | 1 | season | Field | 1.43 kg/ha | Table 4 | 0.66 | ug/g | dry weight | none | 0.66 | Table 2 | 0.67 | ug/g ww | wet weight | 1 | 6.67 | 4.5 | 6.8 | 0.83 |
| Viswanathan et al., 1978 | Nitro/Chloro-aromatics | 3,4-Dichloroaniline | 95761 | 2.69 | SRC | NS | Weeds | 1 | season | Field | 1.43 kg/ha | Table 4 | 0.66 | ug/g | dry weight | none | 0.66 | Table 2 | 0.38 | ug/g ww | wet weight | 1 | 6.67 | 2.533 | 3.838 | 0.58 |
| Viswanathan et al., 1978 | Nitro/Chloro-aromatics | 3,4-Dichloroaniline | 95761 | 2.69 | SRC | NS | Weeds | 1 | season | Field | 1.43 kg/ha | Table 2 | 0.83 | ug/g | dry weight | none | 0.83 | Table 2 | 2.43 | ug/g ww | wet weight | 1 | 6.67 | 16.20 | 19.52 | 1.29 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Dicloran | 99309 | 2.96 | SRC | No | Lettuce | 85 | d | Lab | Exp 6 - 8 Apr 74 harvest | Table I | 2 | mg/kg | Not Stated dry assumed | none | 2.0 | Table II | 0.086 | mg/kg ww | wet weight | 1 | 6.67 | 0.6 | 0.3 | -0.54 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Dicloran | 99309 | 2.96 | SRC | No | Lettuce | 71 | d | Lab | Exp 6 - 25 Mar 74 harvest | Table I | 2.25 | mg/kg | Not Stated dry assumed | none | 2.3 | Table II | 0.13 | mg/kg ww | wet weight | 1 | 6.67 | 0.9 | 0.4 | -0.41 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Dicloran | 99309 | 2.96 | SRC | No | Lettuce | 85 | d | Lab | Exp 7 - 8 Apr 74 harvest | Table I | 1.82 | mg/kg | Not Stated dry assumed | none | 1.8 | Table II | 0.15 | mg/kg ww | wet weight | 1 | 6.67 | 1.0 | 0.5 | -0.26 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Dicloran | 99309 | 2.96 | SRC | No | Lettuce | 71 | d | Lab | Exp 7 - 25 Mar 74 harvest | Table I | 1.72 | mg/kg | Not Stated dry assumed | none | 1.7 | Table II | 0.3 | mg/kg ww | wet weight | 1 | 6.67 | 2.0 | 1.2 | 0.07 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 6 - 8 Apr 74 harvest | Table I | 0.073 | mg/kg | Not Stated dry assumed | none | 0.0730 | Table II | 0.009 | mg/kg ww | wet weight | 1 | 6.67 | 0.06 | 0.8 | -0.09 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 1 - 25 Mar 74 harvest | Table I | 0.007 | mg/kg | Not Stated dry assumed | none | 0.0070 | Table II | 0.011 | mg/kg ww | wet weight | 1 | 6.67 | 0.07 | 10 | 1.02 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 3 - 25 Mar 74 harvest | Table I | 0.015 | mg/kg | Not Stated dry assumed | none | 0.0150 | Table II | 0.014 | mg/kg ww | wet weight | 1 | 6.67 | 0.09 | 6 | 0.79 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 2 - 25 Mar 74 harvest | Table I | 0.019 | mg/kg | Not Stated dry assumed | none | 0.0190 | Table II | 0.015 | mg/kg ww | wet weight | 1 | 6.67 | 0.10 | 5 | 0.72 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 7 - 8 Apr 74 harvest | Table I | 0.068 | mg/kg | Not Stated dry assumed | none | 0.0680 | Table II | 0.017 | mg/kg ww | wet weight | 1 | 6.67 | 0.11 | 1.7 | 0.22 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 6 - 25 Mar 74 harvest | Table I | 0.073 | mg/kg | Not Stated dry assumed | none | 0.0730 | Table II | 0.026 | mg/kg ww | wet weight | 1 | 6.67 | 0.17 | 2.4 | 0.38 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 7 - 25 Mar 74 harvest | Table I | 0.075 | mg/kg | Not Stated dry assumed | none | 0.0750 | Table II | 0.032 | mg/kg ww | wet weight | 1 | 6.67 | 0.21 | 3 | 0.45 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 4 - 8 Apr 74 harvest | Table I | 0.17 | mg/kg | Not Stated dry assumed | none | 0.17 | Table II | 0.032 | mg/kg ww | wet weight | 1 | 6.67 | 0.21 | 1.3 | 0.10 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 5 - 8 Apr 74 harvest | Table I | 0.14 | mg/kg | Not Stated dry assumed | none | 0.14 | Table II | 0.045 | mg/kg ww | wet weight | 1 | 6.67 | 0.3 | 2.1 | 0.33 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 4 - 25 Mar 74 harvest | Table I | 0.19 | mg/kg | Not Stated dry assumed | none | 0.19 | Table II | 0.11 | mg/kg ww | wet weight | 1 | 6.67 | 0.7 | 4 | 0.59 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 5 - 25 Mar 74 harvest | Table I | 0.17 | mg/kg | Not Stated dry assumed | none | 0.17 | Table II | 0.12 | mg/kg ww | wet weight | 1 | 6.67 | 0.8 | 5 | 0.67 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 19 | month | Lab | Aerially applied, 4 treatment types c | Table 1 | 0.189 | mg/kg | dry weight | none | 0.19 | Table 1 | 0.0792 | mg/kg | dry weight | 1 | 1 | 0.079 | 0.42 | -0.38 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 365 | d | Lab | Aerially applied, 4 treatment types c | Table 1 | 0.2654 | mg/kg | dry weight | none | 0.27 | Table 1 | 0.1401 | mg/kg | dry weight | 1 | 1 | 0.14 | 0.53 | -0.28 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 302 | d | Lab | Aerially applied, 4 treatment types c | Table 1 | 0.3198 | mg/kg | dry weight | none | 0.32 | Table 1 | 0.3185 | mg/kg | dry weight | 1 | 1 | 0.32 | 1.00 | 0.00 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 156 | d | Lab | Aerially applied, 4 treatment types c | Table 1 | 0.5135 | mg/kg | dry weight | none | 0.51 | Table 1 | 0.4798 | mg/kg | dry weight | 1 | 1 | 0.48 | 0.93 | -0.03 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 198 | d | Lab | Aerially applied, 4 treatment types c | Table 1 | 0.4404 | mg/kg | dry weight | none | 0.44 | Table 1 | 0.6616 | mg/kg | dry weight | 1 | 1 | 0.66 | 1.5 | 0.18 |
| Beall, 1976 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | NS | Zoysiagrass | 93 | d | Lab | Aerially applied, 4 treatment types c | Table 1 | 1.2507 | mg/kg | dry weight | none | 1.3 | Table 1 | 0.8761 | mg/kg | dry weight | 1 | 1 | 0.88 | 0.70 | -0.15 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 1 - 8 Apr 74 harvest | Table I | 0.11 | mg/kg | Not Stated dry assumed | none | 0.11 | Table II | 0.11 | mg/kg ww | wet weight | 1 | 6.67 | 0.7 | 7 | 0.82 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 3 - 8 Apr 74 harvest | Table I | 0.32 | mg/kg | Not Stated dry assumed | none | 0.32 | Table II | 0.16 | mg/kg ww | wet weight | 1 | 6.67 | 1.1 | 3 | 0.52 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 2 - 8 Apr 74 harvest | Table I | 0.44 | mg/kg | Not Stated dry assumed | none | 0.44 | Table II | 0.19 | mg/kg ww | wet weight | 1 | 6.67 | 1.3 | 3 | 0.46 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 6 - 8 Apr 74 harvest | Table I | 2.23 | mg/kg | Not Stated dry assumed | none | 2.2 | Table II | 0.36 | mg/kg ww | wet weight | 1 | 6.67 | 2.4 | 1.1 | 0.03 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 1 - 25 Mar 74 harvest | Table I | 0.13 | mg/kg | Not Stated dry assumed | none | 0.13 | Table II | 0.37 | mg/kg ww | wet weight | 1 | 6.67 | 2.5 | 19 | 1.28 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 2 - 25 Mar 74 harvest | Table I | 0.44 | mg/kg | Not Stated dry assumed | none | 0.44 | Table II | 0.49 | mg/kg ww | wet weight | 1 | 6.67 | 3 | 7 | 0.87 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 3 - 25 Mar 74 harvest | Table I | 0.49 | mg/kg | Not Stated dry assumed | none | 0.49 | Table II | 0.59 | mg/kg ww | wet weight | 1 | 6.67 | 4 | 8 | 0.90 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 7 - 8 Apr 74 harvest | Table I | 2.35 | mg/kg | Not Stated dry assumed | none | 2.4 | Table II | 0.73 | mg/kg ww | wet weight | 1 | 6.67 | 5 | 2.1 | 0.32 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 4 - 8 Apr 74 harvest | Table I | 6.18 | mg/kg | Not Stated dry assumed | none | 6.2 | Table II | 0.89 | mg/kg ww | wet weight | 1 | 6.67 | 6 | 1.0 | -0.02 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 6 - 25 Mar 74 harvest | Table I | 2.96 | mg/kg | Not Stated dry assumed | none | 3.0 | Table II | 0.92 | mg/kg ww | wet weight | 1 | 6.67 | 6 | 2.1 | 0.32 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 7 - 25 Mar 74 harvest | Table I | 2.45 | mg/kg | Not Stated dry assumed | none | 2.5 | Table II | 1.28 | mg/kg ww | wet weight | 1 | 6.67 | 9 | 3 | 0.54 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 5 - 8 Apr 74 harvest | Table I | 4.9 | mg/kg | Not Stated dry assumed | none | 4.9 | Table II | 1.56 | mg/kg ww | wet weight | 1 | 6.67 | 10 | 2.1 | 0.33 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 4 - 25 Mar 74 harvest | Table I | 6.03 | mg/kg | Not Stated dry assumed | none | 6.0 | Table II | 2.67 | mg/kg ww | wet weight | 1 | 6.67 | 18 | 3 | 0.47 |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | PCNB | 82688 | 4.64 | EPA 1995 | No | Lettuce | 71 | d | Lab | Exp 5 - 25 Mar 74 harvest | Table I | 6.28 | mg/kg | Not Stated dry assumed | none | 6.3 | Table II | 4.19 | mg/kg ww | wet weight | 1 | 6.67 | 28 | 4 | 0.65 |
| Wild et al. 1991, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 7 | ug/kg | Not Stated dry assumed | 0.001 | 0.0070 | Table 2 | 2 | ug/kg | dry weight | 0.001 | 1 | 0.0020 | 0.29 | -0.54 |
| Wild et al. 1991, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 wi | Table 2 | 16.2 | ug/kg | Not Stated dry assumed | 0.001 | 0.0162 | Table 2 | 1 | ug/kg | dry weight | 0.001 | 1 | 0.0010 | 0.62 | -1.21 |
| Wild et al. 1991, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 7 | ug/kg | Not Stated dry assumed | 0.001 | 0.0070 | Table 2 | 3 | ug/kg | dry weight | 0.001 | 1 | 0.0030 | 0.43 | -0.37 |
| Wild et al. 1991, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, | | | | | | | | | | | | | | | |

Appendix B Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|------------------------|----------------|---------------------------------|----------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|---------------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Wild et al. 1991, 1992 | PAHs | Dibenz(ah)anthracene | 53703 | 6.69 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 11 | ug/kg | Not Stated dry assumed | 0.001 | 0.0110 | Table 2 | 2 | ug/kg | dry weight | 0.001 | 1 | 0.0020 | 0.18 | -0.74 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 144 | ug/kg | Not Stated dry assumed | 0.001 | 0.14 | Table 2 | 44 | ug/kg | dry weight | 0.001 | 1 | 0.044 | 0.31 | -0.51 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 331.8 | ug/kg | Not Stated dry assumed | 0.001 | 0.33 | Table 2 | 66 | ug/kg | dry weight | 0.001 | 1 | 0.066 | 0.20 | -0.70 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 331.8 | ug/kg | Not Stated dry assumed | 0.001 | 0.33 | Table 2 | 38 | ug/kg | dry weight | 0.001 | 1 | 0.038 | 0.11 | -0.94 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 144 | ug/kg | Not Stated dry assumed | 0.001 | 0.14 | Table 2 | 41 | ug/kg | dry weight | 0.001 | 1 | 0.041 | 0.28 | -0.55 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 39 | ug/kg | Not Stated dry assumed | 0.001 | 0.0390 | Table 2 | 15 | ug/kg | dry weight | 0.001 | 1 | 0.015 | 0.38 | -0.41 |
| Wild et al. 1991, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, treated in 1968 w | Table 3 | 205.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.21 | Table 2 | 51 | ug/kg | dry weight | 0.001 | 1 | 0.051 | 0.25 | -0.61 |
| Wild and Jones 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 27.9 | ug/kg | dry weight | 0.001 | 0.0279 | Table 5 | 24 | ug/kg | dry weight | 0.001 | 1 | 0.024 | 0.86 | -0.07 |
| Wild and Jones 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 9.15 | ug/kg | dry weight | 0.001 | 0.0092 | Table 5 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 2.7 | 0.44 |
| Wild and Jones 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 93.15 | ug/kg | dry weight | 0.001 | 0.0932 | Table 5 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 0.27 | -0.57 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 7 | ug/kg | Not Stated dry assumed | 0.001 | 0.0070 | Table 2 | 39 | ug/kg | dry weight | 0.001 | 1 | 0.039 | 5.6 | 0.75 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 41 | ug/kg | dry weight | 0.001 | 1 | 0.041 | 10 | 1.01 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 6.3 | 0.80 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 7 | ug/kg | Not Stated dry assumed | 0.001 | 0.0070 | Table 2 | 26 | ug/kg | dry weight | 0.001 | 1 | 0.026 | 3.7 | 0.57 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 4 | ug/kg | dry weight | 0.001 | 1 | 0.0040 | 1.0 | 0.00 |
| Wild et al. 1991, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 5.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0054 | Table 2 | 28 | ug/kg | dry weight | 0.001 | 1 | 0.028 | 5.2 | 0.71 |
| Wild and Jones 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 15.996 | ug/kg | dry weight | 0.001 | 0.0160 | Table 5 | 14 | ug/kg | dry weight | 0.001 | 1 | 0.014 | 0.88 | -0.06 |
| Wild and Jones 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 5.246 | ug/kg | dry weight | 0.001 | 0.0052 | Table 5 | 22 | ug/kg | dry weight | 0.001 | 1 | 0.022 | 4.2 | 0.62 |
| Wild and Jones 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 53.406 | ug/kg | dry weight | 0.001 | 0.0534 | Table 5 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 0.47 | -0.33 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 76 | ug/kg | Not Stated dry assumed | 0.001 | 0.0760 | Table 2 | 87 | ug/kg | dry weight | 0.001 | 1 | 0.087 | 1.1 | 0.06 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 186.8 | ug/kg | Not Stated dry assumed | 0.001 | 0.19 | Table 2 | 88 | ug/kg | dry weight | 0.001 | 1 | 0.088 | 0.47 | -0.33 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 186.8 | ug/kg | Not Stated dry assumed | 0.001 | 0.19 | Table 2 | 69 | ug/kg | dry weight | 0.001 | 1 | 0.069 | 0.37 | -0.43 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 76 | ug/kg | Not Stated dry assumed | 0.001 | 0.0760 | Table 2 | 85 | ug/kg | dry weight | 0.001 | 1 | 0.085 | 1.1 | 0.05 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, treated in 1968 w | Table 3 | 105.6 | ug/kg | Not Stated dry assumed | 0.001 | 0.11 | Table 2 | 72 | ug/kg | dry weight | 0.001 | 1 | 0.072 | 0.68 | -0.17 |
| Wild et al. 1991, 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 58 | ug/kg | Not Stated dry assumed | 0.001 | 0.0580 | Table 2 | 143 | ug/kg | dry weight | 0.001 | 1 | 0.14 | 2.5 | 0.39 |
| Wild and Jones 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 186.3 | ug/kg | dry weight | 0.001 | 0.19 | Table 5 | 129 | ug/kg | dry weight | 0.001 | 1 | 0.13 | 0.69 | -0.16 |
| Wild and Jones 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 55.8 | ug/kg | dry weight | 0.001 | 0.0558 | Table 5 | 133 | ug/kg | dry weight | 0.001 | 1 | 0.13 | 2.4 | 0.38 |
| Wild and Jones 1992 | PAHs | Phenanthrene | 85018 | 4.55 | EPA 1995 | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 18.3 | ug/kg | dry weight | 0.001 | 0.0183 | Table 5 | 145 | ug/kg | dry weight | 0.001 | 1 | 0.15 | 7.9 | 0.90 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 93 | ug/kg | Not Stated dry assumed | 0.001 | 0.0930 | Table 2 | 11 | ug/kg | dry weight | 0.001 | 1 | 0.011 | 0.12 | -0.93 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 221.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.22 | Table 2 | 31 | ug/kg | dry weight | 0.001 | 1 | 0.031 | 0.14 | -0.85 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 221.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.22 | Table 2 | 23 | ug/kg | dry weight | 0.001 | 1 | 0.023 | 0.10 | -0.98 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 93 | ug/kg | Not Stated dry assumed | 0.001 | 0.0930 | Table 2 | 42 | ug/kg | dry weight | 0.001 | 1 | 0.042 | 0.45 | -0.35 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 31 | ug/kg | Not Stated dry assumed | 0.001 | 0.0310 | Table 2 | 14 | ug/kg | dry weight | 0.001 | 1 | 0.014 | 0.45 | -0.35 |
| Wild et al. 1991, 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | No | Tim_grass | 1 | season | field | 1976, Luddington, treated in 1968 w | Table 3 | 154.6 | ug/kg | Not Stated dry assumed | 0.001 | 0.15 | Table 2 | 23 | ug/kg | dry weight | 0.001 | 1 | 0.023 | 0.15 | -0.83 |
| Wild and Jones 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 124.2 | ug/kg | dry weight | 0.001 | 0.12 | Table 5 | 24 | ug/kg | dry weight | 0.001 | 1 | 0.024 | 0.19 | -0.71 |
| Wild and Jones 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 37.2 | ug/kg | dry weight | 0.001 | 0.0372 | Table 5 | 26 | ug/kg | dry weight | 0.001 | 1 | 0.026 | 0.70 | -0.16 |
| Wild and Jones 1992 | PAHs | Pyrene | 129000 | 5.11 | EPA 1995 | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 12.2 | ug/kg | dry weight | 0.001 | 0.0122 | Table 5 | 36 | ug/kg | dry weight | 0.001 | 1 | 0.036 | 3.0 | 0.47 |
| Moza et al. 1979 | PCBs | 2,2',4,4',6-Pentachlorobiphenyl | 39485831 | 6.98 | SRC | NS | Carrot | 4 | month | Lab | Outdoor plywood boxes | Procedure - and | 0.25125 | mg/kg | Not Stated dry assumed | none | 0.25 | Table VI | 0.426 | ppm | wet weight | 1 | 6.67 | 2.8 | 11 | 1.05 |
| Moza et al. 1979 | PCBs | 2,2',4,4',6-Pentachlorobiphenyl | 39485831 | 6.98 | SRC | NS | SugarBeet | 4 | month | Lab | Outdoor plywood boxes | Procedure - and T | 0.481 | mg/kg | Not Stated dry assumed | none | 0.48 | Table VI | 0.025 | ppm | wet weight | 1 | 6.67 | 0.1667 | 0.3465 | -0.46 |
| Shane and Bush 1989 | PCBs | 2,2'-Dichlorobiphenyl | 13029088 | 4.97 | SRC | NS | Soybean | 1-2.5 | month | field | Control plot of alluvial mud | Table 3 | 0.84 | ng/g | Not Stated dry assumed | 0.001 | 0.00040 | Table I | 0.84 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0056 | 14 | 1.15 |
| Moza et al. 1976 | PCBs | 2,2'-Dichlorobiphenyl | 13029088 | 4.97 | SRC | NS | Carrot | 6 | month | Lab | 1973, Outdoor plywood boxes | Text - Procedure | 1 | ppm | dry weight | none | 1.0 | Table II | 0.108 | ppm | wet weight | 1 | 6.67 | 0.72 | 0.72 | -0.14 |
| Shane and Bush 1989 | PCBs | 2,2'-Dichlorobiphenyl | 13029088 | 4.97 | SRC | NS | Corn | 1-2.5 | month | field | Control plot of alluvial mud | Table 3 | 0.4 | ng/g | Not Stated dry assumed | 0.001 | 0.00040 | Table I | 0.84 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0056 | 14 | 1.15 |
| Shane and Bush 1989 | PCBs | 2,3,6,4'-Tetrachlorobiphenyl | 52663588 | 6.34 | SRC | NS | Soybean | 1-2.5 | month | field | Control plot of alluvial mud | Table 3 | 0.3 | ng/g | Not Stated dry assumed | 0.001 | 0.00030 | Table I | 0.36 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0024 | 8.0 | 0.90 |
| Shane and Bush 1989 | PCBs | 2,3,6,4'-Tetrachlorobiphenyl | 52663588 | 6.34 | SRC | NS | Soybean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.3 | ng/g | Not Stated dry assumed | 0.001 | 0.0043 | Table I | 0.45 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0030 | 7.0 | -0.16 |
| Shane and Bush 1989 | PCBs | 2,4,4'-Trichlorobiphenyl | 7012375 | 5.62 | SRC | NS | Corn | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 5.8 | ng/g | Not Stated dry assumed | 0.001 | 0.0058 | Table I | 0.6 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0040 | 0.69 | -0.16 |
| Shane and Bush 1989 | PCBs | 2,4,4'-Trichlorobiphenyl | 7012375 | 5.62 | SRC | NS | Corn | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 5.8 | ng/g | Not Stated dry assumed | 0.001 | 0.0058 | Table I | 0.65 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0043 | 0.75 | -0.13 |
| Shane and Bush 1989 | PCBs | 2,4,4'-Trichlorobiphenyl | 7012375 | 5.62 | SRC | NS | Pintobean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 5.8 | ng/g | Not Stated dry assumed | 0.001 | 0.0058 | Table I | 0.45 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0030 | 0.52 | -0.29 |
| Shane and Bush 1989 | PCBs | 2,4,4'-Trichlorobiphenyl | 7012375 | 5.62 | SRC | NS | Strngbean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 5.8 | ng/g | Not Stated dry assumed | 0.001 | 0.0058 | Table I | 0.48 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0032 | 0.55 | -0.26 |
| Moza et al. 1979 | PCBs | 2,4',5-Trichlorobiphenyl | 16606023 | 5.69 | SRC | NS | Carrot | 4 | month | Lab | Outdoor plywood boxes | Procedure - and | 0.2875625 | mg/kg | Not Stated dry assumed | none | 0.29 | Table IV | 1.149 | ppm | wet weight | 1 | 6.67 | 7.7 | 27 | 1.43 |
| Moza | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix B Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|------------------------|----------------|-----------------|----------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|---|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Bi et al 2002 | PCBs | PCB 49 | 41464408 | 6.22 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 47.5 | ng/g | dry weight | 0.001 | 0.0475 | Table 4 | 6.6 | ng/g | dry weight | 0.001 | 1 | 0.0066 | 0.14 | -0.86 |
| Shane and Bush 1989 | PCBs | PCB 49 | 41464408 | 6.22 | SRC | NS | Soybean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 6.2 | ng/g | Not Stated dry assumed | 0.001 | 0.0062 | Table 1 | 0.45 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0030 | 0.48 | -0.32 |
| Shane and Bush 1989 | PCBs | PCB 49 | 41464408 | 6.22 | SRC | NS | Stringbean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 6.2 | ng/g | Not Stated dry assumed | 0.001 | 0.0062 | Table 1 | 0.48 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0032 | 0.52 | -0.29 |
| Shane and Bush 1989 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Corn | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.9 | ng/g | Not Stated dry assumed | 0.001 | 0.0049 | Table 1 | 0.36 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0024 | 0.49 | -0.31 |
| Shane and Bush 1989 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Corn | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.9 | ng/g | Not Stated dry assumed | 0.001 | 0.0049 | Table 1 | 0.65 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0043 | 0.88 | -0.05 |
| Shane and Bush 1989 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Pintobean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.9 | ng/g | Not Stated dry assumed | 0.001 | 0.0049 | Table 1 | 0.6 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0040 | 0.82 | -0.09 |
| Bi et al 2002 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 13.7 | ng/g | dry weight | 0.001 | 0.0137 | Table 4 | 0.77 | ng/g | dry weight | 0.001 | 1 | 0.00077 | 0.056 | -1.25 |
| Bi et al 2002 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 7.3 | ng/g | dry weight | 0.001 | 0.0730 | Table 4 | 11.6 | ng/g | dry weight | 0.001 | 1 | 0.012 | 0.16 | -0.80 |
| Shane and Bush 1989 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Soybean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.9 | ng/g | Not Stated dry assumed | 0.001 | 0.0049 | Table 1 | 0.6 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0040 | 0.82 | -0.09 |
| Shane and Bush 1989 | PCBs | PCB 52 | 35693993 | 6.09 | SRC | NS | Stringbean | 1-2.5 | month | field | Experimental plot of alluvial mud ne: | Table 3 | 4.9 | ng/g | Not Stated dry assumed | 0.001 | 0.0049 | Table 1 | 0.48 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0032 | 0.65 | -0.19 |
| Bi et al 2002 | PCBs | PCB 66 | 32598100 | 6.31 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 17.4 | ng/g | dry weight | 0.001 | 0.0174 | Table 4 | 1.72 | ng/g | dry weight | 0.001 | 1 | 0.0017 | 0.099 | -1.01 |
| Bi et al 2002 | PCBs | PCB 66 | 32598100 | 6.31 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 72.5 | ng/g | dry weight | 0.001 | 0.0725 | Table 4 | 19.7 | ng/g | dry weight | 0.001 | 1 | 0.020 | 0.27 | -0.57 |
| Bi et al 2002 | PCBs | PCB 70 | 32598111 | 6.23 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 10.2 | ng/g | dry weight | 0.001 | 0.0102 | Table 4 | 0.82 | ng/g | dry weight | 0.001 | 1 | 0.00082 | 0.080 | -1.09 |
| Bi et al 2002 | PCBs | PCB 70 | 32598111 | 6.23 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 5.9 | ng/g | dry weight | 0.001 | 0.0563 | Table 4 | 12.1 | ng/g | dry weight | 0.001 | 1 | 0.012 | 0.21 | -0.67 |
| Bi et al 2002 | PCBs | PCB 74 | 32690930 | 6.67 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 11.3 | ng/g | dry weight | 0.001 | 0.0113 | Table 4 | 0.73 | ng/g | dry weight | 0.001 | 1 | 0.00073 | 0.065 | -1.19 |
| Bi et al 2002 | PCBs | PCB 74 | 32690930 | 6.67 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 46.5 | ng/g | dry weight | 0.001 | 0.0465 | Table 4 | 8.3 | ng/g | dry weight | 0.001 | 1 | 0.0083 | 0.18 | -0.75 |
| Shane and Bush 1989 | PCBs | PCB 8 | 34883437 | 5.09 | SRC | NS | Corn | 1-2.5 | month | field | Control plot of alluvial mud | Table 3 | 0.5 | ng/g | Not Stated dry assumed | 0.001 | 0.00050 | Table 1 | 1.26 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0084 | 17 | 1.23 |
| Bi et al 2002 | PCBs | PCB 8 | 34883437 | 5.09 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 0.625 | ng/g | dry weight | 0.001 | 0.00063 | Table 4 | 0.53 | ng/g | dry weight | 0.001 | 1 | 0.00053 | 0.85 | -0.07 |
| Bi et al 2002 | PCBs | PCB 8 | 34883437 | 5.09 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 0.85 | ng/g | dry weight | 0.001 | 0.00085 | Table 4 | 1 | ng/g | dry weight | 0.001 | 1 | 0.0010 | 1.2 | 0.07 |
| Shane and Bush 1989 | PCBs | PCB 8 | 34883437 | 5.09 | SRC | NS | Soybean | 1-2.5 | month | field | Control plot of alluvial mud | Table 3 | 0.5 | ng/g | Not Stated dry assumed | 0.001 | 0.00050 | Table 1 | 1.32 | ng/g | Not stated wet assumed | 0.001 | 6.67 | 0.0088 | 18 | 1.25 |
| Bi et al 2002 | PCBs | PCB 82 | 52663624 | 6.98 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 5.9 | ng/g | dry weight | 0.001 | 0.0059 | Table 4 | 0.69 | ng/g | dry weight | 0.001 | 1 | 0.00069 | 0.12 | -0.93 |
| Bi et al 2002 | PCBs | PCB 82 | 52663624 | 6.98 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 20.6 | ng/g | dry weight | 0.001 | 0.0206 | Table 4 | 1.51 | ng/g | dry weight | 0.001 | 1 | 0.0015 | 0.073 | -1.13 |
| Bi et al 2002 | PCBs | PCB 85 | 65510454 | 6.61 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 63.8 | ng/g | dry weight | 0.001 | 0.0638 | Table 4 | 1.6 | ng/g | dry weight | 0.001 | 1 | 0.0016 | 0.025 | -1.60 |
| Bi et al 2002 | PCBs | PCB 87 | 38380028 | 6.85 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 48.8 | ng/g | dry weight | 0.001 | 0.0488 | Table 4 | 5.37 | ng/g | dry weight | 0.001 | 1 | 0.0054 | 0.11 | -0.96 |
| Bi et al 2002 | PCBs | PCB 97 | 41464511 | 6.67 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 30.9 | ng/g | dry weight | 0.001 | 0.0309 | Table 4 | 1.35 | ng/g | dry weight | 0.001 | 1 | 0.0014 | 0.044 | -1.36 |
| Bi et al 2002 | PCBs | PCB 97 | 41464511 | 6.67 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 9.4 | ng/g | dry weight | 0.001 | 0.0094 | Table 4 | 2.1 | ng/g | dry weight | 0.001 | 1 | 0.0021 | 0.22 | -0.65 |
| Bi et al 2002 | PCBs | PCB 99 | 38380017 | 7.21 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 38.3 | ng/g | dry weight | 0.001 | 0.0383 | Table 4 | 1.7 | ng/g | dry weight | 0.001 | 1 | 0.0017 | 0.044 | -1.35 |
| Bi et al 2002 | PCBs | PCB 99 | 38380017 | 7.21 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 16.3 | ng/g | dry weight | 0.001 | 0.0163 | Table 4 | 3.3 | ng/g | dry weight | 0.001 | 1 | 0.0033 | 0.20 | -0.69 |
| Beynon et al. 1972 | Triazines | Cyanazine | 21725462 | 2.22 | SRC | NS | Corn | 139 | d | Field | Peat | Table 4 | 0.9 | mg/kg | wet weight | none | 0.90 | Table 6 | 0.02 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.13 | 0.15 | -0.83 |
| Beynon et al. 1972 | Triazines | Cyanazine | 21725462 | 2.22 | SRC | NS | Corn | 139 | d | Field | Clay Loam | Table 4 | 0.42 | mg/kg | wet weight | none | 0.42 | Table 6 | 0.03 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.20 | 0.48 | -0.32 |
| Beynon et al. 1972 | Triazines | Cyanazine | 21725462 | 2.22 | SRC | NS | Corn | 139 | d | Field | Sandy Loam | Table 4 | 0.41 | mg/kg | wet weight | none | 0.41 | Table 6 | 0.06 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.40 | 0.98 | -0.01 |
| Beynon et al. 1972 | Triazines | Cyanazine | 21725462 | 2.22 | SRC | NS | Corn | 139 | d | Field | Medium Loam | Table 4 | 0.62 | mg/kg | wet weight | none | 0.62 | Table 6 | 0.08 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.53 | 0.86 | -0.07 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1972 - Plot B (Four replicate field plum of peak residu | Table 3 | 321 | ppm | dry weight | none | 321 | - Sum of peak | 5.3 | ppm | wet weight | 1 | 6.67 | 35 | 0.11 | -0.96 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1972 - Plot A (Four replicate field plum of peak residu | Table 3 | 438 | ppm | dry weight | none | 438 | - Sum of peak | 5.61 | ppm | wet weight | 1 | 6.67 | 37 | 0.085 | -1.07 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1972 - Plot D (Four replicate field plum of peak residu | Table 3 | 322 | ppm | dry weight | none | 322 | - Sum of peak | 7.29 | ppm | wet weight | 1 | 6.67 | 49 | 0.15 | -0.82 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1972 - Plot C (Four replicate field plum of peak residu | Table 3 | 405 | ppm | dry weight | none | 405 | - Sum of peak | 8.23 | ppm | wet weight | 1 | 6.67 | 55 | 0.14 | -0.87 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1973 - Plot D (Four replicate field plum of peak residu | Table 3 | 366 | ppm | dry weight | none | 366 | - Sum of peak | 10.7 | ppm | wet weight | 1 | 6.67 | 71 | 0.19 | -0.71 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 3 | month | field | 1973 - Plot D (Four replicate field plum of peak residu | Table 3 | 366 | ppm | dry weight | none | 366 | - Sum of peak | 11.4 | ppm | wet weight | 1 | 6.67 | 76 | 0.21 | -0.68 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 3 | month | field | 1973 - Plot C (Four replicate field plum of peak residu | Table 3 | 425 | ppm | dry weight | none | 425 | - Sum of peak | 13.3 | ppm | wet weight | 1 | 6.67 | 89 | 0.21 | -0.68 |
| Iwata and Gunther 1976 | Aroclors | Aroclor 1254 | 11097691 | 6.5 | SRC | Yes | Carrot | 2 | month | field | 1973 - Plot C (Four replicate field plum of peak residu | Table 3 | 425 | ppm | dry weight | none | 425 | - Sum of peak | 16.7 | ppm | wet weight | 1 | 6.67 | 111 | 0.26 | -0.58 |
| Lichenstein, 1960 | Cyclodienes | Aldrin | 309002 | 6.5 | EPA 1995 | Yes | Lettuce | 60 | d | Field | 1959, 25 lb/acre | Table II | 3.1 | mg/kg | dry weight | none | 3.1 | Table II | 0.03 | mg/kg | wet weight | 1 | 6.67 | 0.20 | 0.22 | -1.19 |
| Lichenstein, 1960 | Cyclodienes | Aldrin | 309002 | 6.5 | EPA 1995 | Yes | Lettuce | 60 | d | Field | May 1958, 5 lb/acre | Table I | 1.21 | mg/kg | dry weight | none | 1.2 | Table I | 0.04 | mg/kg | wet weight | 1 | 6.67 | 0.3 | 0.06 | -1.66 |
| Lichenstein, 1960 | Cyclodienes | Aldrin | 309002 | 6.5 | EPA 1995 | Yes | Lettuce | 60 | d | Field | May 1958, 25 lb/acre | Table I | 9.77 | mg/kg | dry weight | none | 9.8 | Table I | 0.15 | mg/kg | wet weight | 1 | 6.67 | 1.0 | 0.10 | -0.99 |
| Tafari et al., 1977 | Cyclodienes | alpha-Chlordane | 5103719 | 6.1 | SRC | Yes | Alfalfa | 60 | d | Field | April 1975, 0 kg/ha, alpha-chlordane | Table III | 0.136 | mg/kg | Not Stated dry assumed | none | 0.14 | Table V | 1.333 | ug/kg | Not Stated wet assumed | 0.001 | 6.67 | 0.0089 | 0.065 | -1.18 |
| Tafari et al., 1977 | Cyclodienes | alpha-Chlordane | 5103719 | 6.1 | SRC | Yes | Alfalfa | 150 | d | Field | April 1975, 0 kg/ha, alpha-chlordane | Table III | 0.136 | mg/kg | Not Stated dry assumed | none | 0.14 | Table V | 1.667 | ug/kg | Not Stated wet assumed | 0.001 | 6.67 | 0.011 | 0.082 | -1.09 |
| Tafari et al., 1977 | Cyclodienes | alpha-Chlordane | 5103719 | 6.1 | SRC | Yes | Alfalfa | 150 | d | Field | April 1975, 3 kg/ha, | | | | | | | | | | | | | | | |

Appendix B Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|------------------------------|------------------------|--------------------|----------|--------------------|------------------------|---------|----------------|-------------------|----------------|-----------|---|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Soybean | 4 | wk | Lab | Treated with 3.4 ppm mirex in loamy soil | Table 1 | 3.4 | mg/kg | dry weight | none | 3.4 | Table 1 | 0.36 | mg/kg | dry weight | 1 | 1 | 0.36 | 0.11 | -0.98 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 0.31 ppm mirex in loamy soil | Table 1 | 0.31 | mg/kg | dry weight | none | 0.31 | Table 1 | 0.04 | mg/kg | dry weight | 1 | 1 | 0.040 | 0.13 | -0.89 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 0.3 ppm mirex in soil | Table 1 | 0.3 | mg/kg | dry weight | none | 0.30 | Table 1 | 0.09 | mg/kg | dry weight | 1 | 1 | 0.090 | 0.30 | -0.52 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 3.5 ppm mirex in soil | Table 1 | 3.5 | mg/kg | dry weight | none | 3.5 | Table 1 | 0.17 | mg/kg | dry weight | 1 | 1 | 0.17 | 0.049 | -1.31 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 0.8 ppm mirex in soil | Table 1 | 0.8 | mg/kg | dry weight | none | 0.80 | Table 1 | 0.18 | mg/kg | dry weight | 1 | 1 | 0.18 | 0.23 | -0.65 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 0.8 ppm mirex in loamy soil | Table 1 | 0.8 | mg/kg | dry weight | none | 0.80 | Table 1 | 0.19 | mg/kg | dry weight | 1 | 1 | 0.19 | 0.24 | -0.62 |
| De La Cruz and Rajanna, 1975 | Cyclodienes | Mirex | 2385855 | 6.89 | EPA 1995 | Yes | Wheat | 4 | wk | Lab | Treated with 3.4 ppm mirex in loamy soil | Table 1 | 3.4 | mg/kg | dry weight | none | 3.4 | Table 1 | 0.21 | mg/kg | dry weight | 1 | 1 | 0.21 | 0.062 | -1.21 |
| Voerman and Besemer, 1975 | DDTanalogs | DDE | 72559 | 6.76 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 0.44 | ug/g | dry weight | none | 0.44 | Table 1 | 0.06 | ug/g | dry weight | 1 | 1 | 0.060 | 0.14 | -0.87 |
| Voerman and Besemer, 1975 | DDTanalogs | DDE | 72559 | 6.76 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 1.2 | ug/g | dry weight | none | 1.2 | Table 1 | 0.09 | ug/g | dry weight | 1 | 1 | 0.090 | 0.075 | -1.12 |
| Voerman and Besemer, 1975 | DDTanalogs | DDE | 72559 | 6.76 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 4.5 | ug/g | dry weight | none | 4.5 | Table 1 | 2.79 | ug/g | dry weight | 1 | 1 | 2.79 | 0.62 | -0.21 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 50293 | 6.53 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 2.45 | ug/g | dry weight | none | 2.5 | Table 1 | 0.04 | ug/g | dry weight | 1 | 1 | 0.040 | 0.016 | -1.79 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 789026 | 5.75 | Verschueren2001 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 0.63 | ug/g | dry weight | none | 0.63 | Table 1 | 0.05 | ug/g | dry weight | 1 | 1 | 0.050 | 0.079 | -1.10 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 789026 | 5.75 | Verschueren2001 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 1.5 | ug/g | dry weight | none | 1.5 | Table 1 | 0.07 | ug/g | dry weight | 1 | 1 | 0.070 | 0.047 | -1.33 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 789026 | 5.75 | Verschueren2001 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 12.2 | ug/g | dry weight | none | 12 | Table 1 | 0.28 | ug/g | dry weight | 1 | 1 | 0.28 | 0.023 | -1.64 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 50293 | 6.53 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 5.8 | ug/g | dry weight | none | 5.8 | Table 1 | 0.32 | ug/g | dry weight | 1 | 1 | 0.32 | 0.055 | -1.26 |
| Voerman and Besemer, 1975 | DDTanalogs | DDT | 50293 | 6.53 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 42.5 | ug/g | dry weight | none | 43 | Table 1 | 1.2 | ug/g | dry weight | 1 | 1 | 1.2 | 0.028 | -1.55 |
| Eschel et al., 1978 | Nitro/Chloro-aromatics | Ethofumesate | 26225796 | 2.7 | SRC | Yes | SugarBeet | 20 | d | Lab | Laboratory test using plastic pots, soil | Text Sect 2.3 | 1 | mg/kg | Not Stated dry assumed | none | 1.0 | Table 1 | 11.96 | mg/kg ww | wet weight | 1 | 6.67 | 79.73 | 79.73 | 1.90 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Cabbage | 1 | season | Field | 1956 sandy loam 10 lbs added | Table I | 1.33 | mg/kg | Not Stated dry assumed | none | 1.3 | Table I | 0.37 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 2.5 | 1.9 | 0.27 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Cabbage | 1 | season | Field | 1956 muck 10 lbs added | Table I | 7.58 | mg/kg | Not Stated dry assumed | none | 7.6 | Table I | 0.09 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.60 | 0.079 | -1.10 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Cabbage | 1 | season | Field | 1956 muck 100 lbs added | Table I | 94.5 | mg/kg | Not Stated dry assumed | none | 95 | Table I | 0.15 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.0 | 0.111 | -1.98 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Cabbage | 1 | season | Field | 1956 Miami silt loam 100 lbs added | Table I | 17.1 | mg/kg | Not Stated dry assumed | none | 17 | Table I | 0.31 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 2.1 | 0.12 | -0.92 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Cabbage | 1 | season | Field | 1956 sandy loam 100 lbs added | Table I | 20.85 | mg/kg | Not Stated dry assumed | none | 21 | Table I | 2.37 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 16 | 0.76 | -0.12 |
| Voerman and Besemer, 1975 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table 1 | 0.32 | ug/g | dry weight | none | 0.32 | Table 1 | 0.1 | ug/g | dry weight | 1 | 1 | 0.10 | 0.31 | -0.51 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Pea | 1 | season | Field | 1956 muck 10 lbs added | Table I | 7.58 | mg/kg | Not Stated dry assumed | none | 7.6 | Table I | 0.11 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.73 | 0.097 | -1.01 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Pea | 1 | season | Field | 1956 muck 100 lbs added | Table I | 94.5 | mg/kg | Not Stated dry assumed | none | 95 | Table I | 0.79 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 5.3 | 0.056 | -1.25 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Pea | 1 | season | Field | 1956 sandy loam 10 lbs added | Table I | 1.33 | mg/kg | Not Stated dry assumed | none | 1.3 | Table I | 1.52 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 10 | 7.6 | 0.88 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Pea | 1 | season | Field | 1956 Miami silt loam 100 lbs added | Table I | 17.1 | mg/kg | Not Stated dry assumed | none | 17 | Table I | 4.92 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 33 | 1.9 | 0.28 |
| Lichenstein, 1959 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Pea | 1 | season | Field | 1956 sandy loam 100 lbs added | Table I | 20.85 | mg/kg | Not Stated dry assumed | none | 21 | Table I | 18.2 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 123 | 5.9 | 0.77 |
| Schneider et al 1995 | Nitro/Chloro-aromatics | TNT | 118967 | | SRC | Yes | blackclostr | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 13.8 | mg/kg | dry weight | none | 14 | Table B.1 | 4.4 | mg/kg | dry weight | 1 | 1 | 4.4 | 0.32 | -0.50 |
| Schneider et al 1995 | Nitro/Chloro-aromatics | TNT | 118967 | | SRC | Yes | mothbromegrass | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 11000 | mg/kg | dry weight | none | 11,000 | Table B.1 | 0.76 | mg/kg | dry weight | 1 | 1 | 0.76 | 0.00069 | -4.16 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 13 | ug/kg | Not Stated dry assumed | 0.001 | 0.0130 | Table 2 | 11 | ug/kg | dry weight | 0.001 | 1 | 0.011 | 0.85 | -0.07 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 15 | ug/kg | Not Stated dry assumed | 0.001 | 0.0150 | Table 2 | 12 | ug/kg | dry weight | 0.001 | 1 | 0.012 | 0.80 | -0.10 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sewz | Table III | 53 | ug/kg | Not Stated dry assumed | 0.001 | 0.0530 | Table 2 | 17 | ug/kg | dry weight | 0.001 | 1 | 0.017 | 0.32 | -0.49 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 16 | ug/kg | Not Stated dry assumed | 0.001 | 0.0160 | Table 2 | 24 | ug/kg | dry weight | 0.001 | 1 | 0.024 | 1.5 | 0.18 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sewz | Table III | 15 | ug/kg | Not Stated dry assumed | 0.001 | 0.0150 | Table 2 | 69 | ug/kg | dry weight | 0.001 | 1 | 0.069 | 4.6 | 0.66 |
| Kipoulou et al. 1999 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 0.6 | ug/kg | dry weight | 0.001 | 0.00060 | Table 1 | 0.6 | ug/kg | dry weight | 0.001 | 1 | 0.00060 | 1.0 | 0.00 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 53 | ug/kg | Not Stated dry assumed | 0.001 | 0.0530 | Table 2 | 1 | ug/kg | dry weight | 0.001 | 1 | 0.0010 | 0.019 | -1.72 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 16 | ug/kg | Not Stated dry assumed | 0.001 | 0.0160 | Table 2 | 11 | ug/kg | dry weight | 0.001 | 1 | 0.011 | 0.69 | -0.16 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 15 | ug/kg | Not Stated dry assumed | 0.001 | 0.0150 | Table 2 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 1.7 | 0.22 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 13 | ug/kg | Not Stated dry assumed | 0.001 | 0.0130 | Table 2 | 44 | ug/kg | dry weight | 0.001 | 1 | 0.044 | 3.4 | 0.53 |
| Kipoulou et al. 1999 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 0.6 | ug/kg | dry weight | 0.001 | 0.00060 | Table 1 | 1.2 | ug/kg | dry weight | 0.001 | 1 | 0.0012 | 2.0 | 0.30 |
| Kipoulou et al. 1999 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 0.6 | ug/kg | dry weight | 0.001 | 0.00060 | Table 1 | 0.47 | ug/kg | dry weight | 0.001 | 1 | 0.00047 | 0.78 | -0.11 |
| Kipoulou et al. 1999 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 0.6 | ug/kg | dry weight | 0.001 | 0.00060 | Table 1 | 1.4 | ug/kg | dry weight | 0.001 | 1 | 0.0014 | 2.3 | 0.37 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, sewz | Table III | 35 | ug/kg | Not Stated dry assumed | 0.001 | 0.0350 | Table 2 | 69 | ug/kg | dry weight | 0.001 | 1 | 0.069 | 2.0 | 0.29 |
| Edwards et al. 1982 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Soybean | 4 | d | Lab | Flooded soil | Table 2 | 14 | ug/kg | dry weight | 0.001 | 0.0140 | Table 2 | 14 | ug/kg | dry weight | 0.001 | 1 | 0.014 | 1.0 | 0.00 |
| Edwards et al. 1982 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Soybean | 4 | d | Lab | moist soil | Table 2 | 10 | ug/kg | dry weight | 0.001 | 0.0100 | Table 2 | 31 | ug/kg | dry weight | 0.001 | 1 | 0.031 | 3.1 | 0.49 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, cont | Table III | 3 | ug/kg | Not Stated dry assumed | 0.001 | 0.0030 | Table 2 | 9 | ug/kg | dry weight | 0.001 | 1 | 0.0090 | 3.0 | 0.48 |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, sewz | Table III | 24 | ug/kg | Not Stated dry assumed | 0.001 | 0.0240 | Table 2 | 36 | ug/kg | dry weight | 0.001 | 1 | 0.036 | 1.5 | 0.18 |
| Kipoulou et al. 1999 | PAHs | Benzo(a)anthracene | 56553 | 5.7 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 5.4 | ug/kg | dry weight | 0.001 | 0.0054 | Table 1 | 2.9 | ug/kg | dry weight | 0.001 | 1 | 0.0029 | 0.54 | -0.27 |
| Wild et al. 1990, 1992 | PAHs | Benzo(a)pyrene | 50628 | 6.11 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 35 | ug/kg | Not Stated dry assumed | 0.001 | 0.0350 | Table 2 | 19 | ug/kg | dry weight | 0.001 | 1 | 0.019 | 0.54 | -0.27 |
| Wild et al. 1990, 1992 | PAHs | Benzo(a)pyrene | 50628 | 6.11 | EPA 1995 | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sewz | Table III | 250 | ug/kg | Not Stated dry assumed | 0.001 | 0 | | | | | | | | | |

Appendix B
Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|------------------------|----------------|----------------------|--------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|-----------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|-------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sewz | Table III | 370 | ug/kg | Not Stated dry assumed | 0.001 | 0.37 | Table 2 | 33 | ug/kg | dry weight | 0.001 | 1 | 0.033 | 0.089 | -1.05 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, contr | Table III | 68 | ug/kg | Not Stated dry assumed | 0.001 | 0.0680 | Table 2 | 34 | ug/kg | dry weight | 0.001 | 1 | 0.034 | 0.50 | -0.30 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 670 | ug/kg | Not Stated dry assumed | 0.001 | 0.67 | Table 2 | 57 | ug/kg | dry weight | 0.001 | 1 | 0.057 | 0.085 | -1.07 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 71 | ug/kg | Not Stated dry assumed | 0.001 | 0.0710 | Table 2 | 58 | ug/kg | dry weight | 0.001 | 1 | 0.058 | 0.82 | -0.09 |
| Kipopoulou et al. 1999 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 1 | ug/kg | dry weight | 0.001 | 0.0010 | Table 1 | 0.08 | ug/kg | dry weight | 0.001 | 1 | 0.000080 | 0.080 | -1.10 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, contr | Table III | 68 | ug/kg | Not Stated dry assumed | 0.001 | 0.0680 | Table 2 | 16 | ug/kg | dry weight | 0.001 | 1 | 0.016 | 0.24 | -0.63 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 71 | ug/kg | Not Stated dry assumed | 0.001 | 0.0710 | Table 2 | 21 | ug/kg | dry weight | 0.001 | 1 | 0.021 | 0.30 | -0.53 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 670 | ug/kg | Not Stated dry assumed | 0.001 | 0.67 | Table 2 | 48 | ug/kg | dry weight | 0.001 | 1 | 0.048 | 0.072 | -1.14 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 370 | ug/kg | Not Stated dry assumed | 0.001 | 0.37 | Table 2 | 119 | ug/kg | dry weight | 0.001 | 1 | 0.12 | 0.32 | -0.49 |
| Kipopoulou et al. 1999 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 1 | ug/kg | dry weight | 0.001 | 0.0010 | Table 1 | 0.36 | ug/kg | dry weight | 0.001 | 1 | 0.00036 | 0.36 | -0.44 |
| Kipopoulou et al. 1999 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 1 | ug/kg | dry weight | 0.001 | 0.0010 | Table 1 | 0.17 | ug/kg | dry weight | 0.001 | 1 | 0.00017 | 0.17 | -0.77 |
| Kipopoulou et al. 1999 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 1 | ug/kg | dry weight | 0.001 | 0.0010 | Table 1 | 0.34 | ug/kg | dry weight | 0.001 | 1 | 0.00034 | 0.34 | -0.47 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, sewz | Table III | 410 | ug/kg | Not Stated dry assumed | 0.001 | 0.41 | Table 2 | 8 | ug/kg | dry weight | 0.001 | 1 | 0.0080 | 0.020 | -1.71 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, contr | Table III | 75 | ug/kg | Not Stated dry assumed | 0.001 | 0.0750 | Table 2 | 25 | ug/kg | dry weight | 0.001 | 1 | 0.025 | 0.33 | -0.48 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, contr | Table III | 77 | ug/kg | Not Stated dry assumed | 0.001 | 0.0770 | Table 2 | 45 | ug/kg | dry weight | 0.001 | 1 | 0.045 | 0.58 | -0.23 |
| Wild et al. 1990, 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, sewz | Table III | 470 | ug/kg | Not Stated dry assumed | 0.001 | 0.47 | Table 2 | 69 | ug/kg | dry weight | 0.001 | 1 | 0.069 | 0.15 | -0.83 |
| Kipopoulou et al. 1999 | PAHs | Chrysene | 218019 | 5.7 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 3.7 | ug/kg | dry weight | 0.001 | 0.0037 | Table 1 | 0.6 | ug/kg | dry weight | 0.001 | 1 | 0.00060 | 0.16 | -0.79 |
| Kipopoulou et al. 1999 | PAHs | Chrysene | 218019 | 5.7 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 3.7 | ug/kg | dry weight | 0.001 | 0.0037 | Table 1 | 3.9 | ug/kg | dry weight | 0.001 | 1 | 0.00039 | 1.1 | 0.02 |
| Kipopoulou et al. 1999 | PAHs | Chrysene | 218019 | 5.7 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 3.7 | ug/kg | dry weight | 0.001 | 0.0037 | Table 1 | 1.9 | ug/kg | dry weight | 0.001 | 1 | 0.0019 | 0.51 | -0.29 |
| Kipopoulou et al. 1999 | PAHs | Chrysene | 218019 | 5.7 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 3.7 | ug/kg | dry weight | 0.001 | 0.0037 | Table 1 | 3.9 | ug/kg | dry weight | 0.001 | 1 | 0.0039 | 1.1 | 0.02 |
| Kipopoulou et al. 1999 | PAHs | Dibenz(ah)anthracene | 53703 | 6.69 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 0.43 | ug/kg | dry weight | 0.001 | 0.00043 | Table 1 | 0.1 | ug/kg | dry weight | 0.001 | 1 | 0.00010 | 0.23 | -0.63 |
| Kipopoulou et al. 1999 | PAHs | Dibenz(ah)anthracene | 53703 | 6.69 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 0.43 | ug/kg | dry weight | 0.001 | 0.00043 | Table 1 | 0.06 | ug/kg | dry weight | 0.001 | 1 | 0.000060 | 0.14 | -0.86 |
| Kipopoulou et al. 1999 | PAHs | Dibenz(ah)anthracene | 53703 | 6.69 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 0.43 | ug/kg | dry weight | 0.001 | 0.00043 | Table 1 | 0.05 | ug/kg | dry weight | 0.001 | 1 | 0.000050 | 0.12 | -0.93 |
| Kipopoulou et al. 1999 | PAHs | Dibenz(ah)anthracene | 53703 | 6.69 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 0.43 | ug/kg | dry weight | 0.001 | 0.00043 | Table 1 | 0.03 | ug/kg | dry weight | 0.001 | 1 | 0.000030 | 0.070 | -1.16 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, contr | Table III | 140 | ug/kg | Not Stated dry assumed | 0.001 | 0.14 | Table 2 | 9 | ug/kg | dry weight | 0.001 | 1 | 0.0090 | 0.064 | -1.19 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 1030 | ug/kg | Not Stated dry assumed | 0.001 | 1.0 | Table 2 | 32 | ug/kg | dry weight | 0.001 | 1 | 0.032 | 0.031 | -1.51 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 220 | ug/kg | Not Stated dry assumed | 0.001 | 0.22 | Table 2 | 198 | ug/kg | dry weight | 0.001 | 1 | 0.20 | 0.90 | -0.05 |
| Kipopoulou et al. 1999 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 7.3 | ug/kg | dry weight | 0.001 | 0.0073 | Table 1 | 3 | ug/kg | dry weight | 0.001 | 1 | 0.0030 | 0.41 | -0.39 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 220 | ug/kg | Not Stated dry assumed | 0.001 | 0.22 | Table 2 | 109 | ug/kg | dry weight | 0.001 | 1 | 0.11 | 0.50 | -0.30 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 1030 | ug/kg | Not Stated dry assumed | 0.001 | 1.0 | Table 2 | 119 | ug/kg | dry weight | 0.001 | 1 | 0.12 | 0.12 | -0.94 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 410 | ug/kg | Not Stated dry assumed | 0.001 | 0.41 | Table 2 | 631 | ug/kg | dry weight | 0.001 | 1 | 0.63 | 1.5 | 0.19 |
| Kipopoulou et al. 1999 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 7.3 | ug/kg | dry weight | 0.001 | 0.0073 | Table 1 | 44 | ug/kg | dry weight | 0.001 | 1 | 0.044 | 6.0 | 0.78 |
| Kipopoulou et al. 1999 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 7.3 | ug/kg | dry weight | 0.001 | 0.0073 | Table 1 | 18 | ug/kg | dry weight | 0.001 | 1 | 0.018 | 2.5 | 0.39 |
| Kipopoulou et al. 1999 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 7.3 | ug/kg | dry weight | 0.001 | 0.0073 | Table 1 | 34 | ug/kg | dry weight | 0.001 | 1 | 0.034 | 4.7 | 0.67 |
| Wild et al. 1990, 1992 | PAHs | Fluoranthene | 206440 | 5.12 | EPA 1995 | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, contr | Table III | 130 | ug/kg | Not Stated dry assumed | 0.001 | 0.13 | Table 2 | 24 | ug/kg | dry weight | 0.001 | 1 | 0.024 | 0.18 | -0.73 |
| Kipopoulou et al. 1999 | PAHs | fluorene | 86737 | 4.21 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 101 | ug/kg | dry weight | 0.001 | 0.10 | Table 1 | 1.1 | ug/kg | dry weight | 0.001 | 1 | 0.0011 | 0.011 | -1.96 |
| Kipopoulou et al. 1999 | PAHs | fluorene | 86737 | 4.21 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 101 | ug/kg | dry weight | 0.001 | 0.10 | Table 1 | 5.7 | ug/kg | dry weight | 0.001 | 1 | 0.0057 | 0.056 | -1.25 |
| Kipopoulou et al. 1999 | PAHs | fluorene | 86737 | 4.21 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 101 | ug/kg | dry weight | 0.001 | 0.10 | Table 1 | 2.6 | ug/kg | dry weight | 0.001 | 1 | 0.0026 | 0.026 | -1.59 |
| Kipopoulou et al. 1999 | PAHs | fluorene | 86737 | 4.21 | EPA 1995 | Yes | Lettuce | 1 | season | field | na | Table 2 | 101 | ug/kg | dry weight | 0.001 | 0.10 | Table 1 | 5.8 | ug/kg | dry weight | 0.001 | 1 | 0.0058 | 0.057 | -1.24 |
| Kipopoulou et al. 1999 | PAHs | Indeno(123 cd)pyrene | 193395 | 6.65 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 2.1 | ug/kg | dry weight | 0.001 | 0.0021 | Table 1 | 0.15 | ug/kg | dry weight | 0.001 | 1 | 0.00015 | 0.071 | -1.15 |
| Kipopoulou et al. 1999 | PAHs | Indeno(123 cd)pyrene | 193395 | 6.65 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 2.1 | ug/kg | dry weight | 0.001 | 0.0021 | Table 1 | 0.31 | ug/kg | dry weight | 0.001 | 1 | 0.00031 | 0.15 | -0.83 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 52 | ug/kg | dry weight | 0.001 | 1 | 0.052 | 13 | 1.11 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, sewz | Table III | 31 | ug/kg | Not Stated dry assumed | 0.001 | 0.0310 | Table 2 | 58 | ug/kg | dry weight | 0.001 | 1 | 0.058 | 1.9 | 0.27 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 1 | ug/kg | Not Stated dry assumed | 0.001 | 0.0010 | Table 2 | 70 | ug/kg | dry weight | 0.001 | 1 | 0.070 | 70 | 1.85 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sewz | Table III | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 79 | ug/kg | dry weight | 0.001 | 1 | 0.079 | 20 | 1.30 |
| Kipopoulou et al. 1999 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Cabbage | 1 | season | field | na | Table 2 | 17 | ug/kg | dry weight | 0.001 | 0.0170 | Table 1 | 5 | ug/kg | dry weight | 0.001 | 1 | 0.00050 | 0.29 | -0.53 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, contr | Table III | 1 | ug/kg | Not Stated dry assumed | 0.001 | 0.0010 | Table 2 | 48 | ug/kg | dry weight | 0.001 | 1 | 0.048 | 48 | 1.68 |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sewz | Table III | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | 48 | ug/kg | dry weight | 0.001 | 1 | 0.048 | 12 | 1.08 |
| Kipopoulou et al. 1999 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | endive | 1 | season | field | na | Table 2 | 17 | ug/kg | dry weight | 0.001 | 0.0170 | Table 1 | 29 | ug/kg | dry weight | 0.001 | 1 | 0.029 | 1.7 | 0.23 |
| Kipopoulou et al. 1999 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | leek | 1 | season | field | na | Table 2 | 17 | ug/kg | dry weight | 0.001 | 0.0170 | Table 1 | 18 | ug/kg | dry weight | 0.001 | 1 | 0.018 | | |

Appendix B
Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF | |
|------------------------|----------------|---------------|--------|--------------------|------------------------|-----------|-----------------|-------------------|----------------|--------------------------------------|---------------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|--|
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | milkweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 46.1 | mg/kg | dry weight | none | 46 | Table B.1 | 88.6 | mg/kg | dry weight | 1 | 1 | 89 | 1.9 | 0.28 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | Pigweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 59.7 | mg/kg | dry weight | none | 60 | Table B.1 | 3.6 | mg/kg | dry weight | 1 | 1 | 3.6 | 0.060 | -1.22 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | Pigweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 3.8 | mg/kg | dry weight | none | 3.8 | Table B.1 | 10.7 | mg/kg | dry weight | 1 | 1 | 11 | 2.8 | 0.45 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | Ragweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 166 | mg/kg | dry weight | none | 166 | Table B.1 | 33.4 | mg/kg | dry weight | 1 | 1 | 33 | 0.20 | -0.70 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | Ragweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 702 | mg/kg | dry weight | none | 702 | Table B.1 | 73.9 | mg/kg | dry weight | 1 | 1 | 74 | 0.11 | -0.98 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | redcedar | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 16.8 | mg/kg | dry weight | none | 17 | Table B.1 | 42 | mg/kg | dry weight | 1 | 1 | 42 | 2.5 | 0.40 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | smartweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 3.2 | mg/kg | dry weight | none | 3.2 | Table B.1 | 5.03 | mg/kg | dry weight | 1 | 1 | 5.0 | 1.6 | 0.20 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | smartweed | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 2.5 | mg/kg | dry weight | none | 2.5 | Table B.1 | 51.2 | mg/kg | dry weight | 1 | 1 | 51 | 20 | 1.31 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | moothbromegrass | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 1800 | mg/kg | dry weight | none | 1,800 | Table B.1 | 41.5 | mg/kg | dry weight | 1 | 1 | 42 | 0.023 | -1.64 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | moothbromegrass | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 5010 | mg/kg | dry weight | none | 5,010 | Table B.1 | 72.1 | mg/kg | dry weight | 1 | 1 | 72 | 0.014 | -1.84 | |
| Schneider et al 1995 | Triazines | RDX | 121824 | 0.87 | SRC | Yes | sunflower | 999 | Resident | field | Field collected resident plants at an | Table B.1 | 46.1 | mg/kg | dry weight | none | 46 | Table B.1 | 8.61 | mg/kg | dry weight | 1 | 1 | 8.6 | 0.19 | -0.73 | |
| Trapp et al. 1990 | Cyclodienes | Dieldrin | 60571 | 5.37 | EPA 1995 | NS | Barley | 1 | w | Lab | | | 2.075 | mg/kg | dry weight | none | 2.08 | | 1.24 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 8.267 | 4.0 | 0.60 | |
| Saha et al., 1968 | Cyclodienes | Dieldrin | 60571 | 5.37 | EPA 1995 | NS | Legume | NR | NR | NR | | | 0.05 | mg/kg | Not Stated dry assumed | none | 0.0500 | | 0.0025 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 0.0167 | 0.3 | -0.48 | |
| Edwards 1970 | Cyclodienes | Dieldrin | 60571 | 5.37 | EPA 1995 | NS | Wheat | NR | NR | NR | | | 1.13 | mg/kg | Not Stated dry assumed | none | 1.13 | | 0.17 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 1.133 | 1.0 | 0.00 | |
| Edwards 1970 | Cyclodienes | Dieldrin | 60571 | 5.37 | EPA 1995 | NS | Wheat | NR | NR | NR | | | 18.39 | mg/kg | Not Stated dry assumed | none | 18.39 | | 1.07 | mg/kg | Not Stated wet assumed | 1 | 6.67 | 7.133 | 0.4 | -0.41 | |
| Data Excluded | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wild and Jones 1992 | PAHs | Ace/Fluorene | .. | .. | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 14.64 | ug/kg | dry weight | 0.001 | 0.0146 | Table 5 | 92 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild and Jones 1992 | PAHs | Ace/Fluorene | .. | .. | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 44.64 | ug/kg | dry weight | 0.001 | 0.0446 | Table 5 | 82 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild and Jones 1992 | PAHs | Ace/Fluorene | .. | .. | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 149.04 | ug/kg | dry weight | 0.001 | 0.15 | Table 5 | 79 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 40 | ug/kg | Not Stated dry assumed | 0.001 | 0.0400 | Table 2 | 183 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, sew | Table III | 53 | ug/kg | Not Stated dry assumed | 0.001 | 0.0530 | Table 2 | 250 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sew | Table III | 9 | ug/kg | Not Stated dry assumed | 0.001 | 0.0090 | Table 2 | 299 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 35 | ug/kg | Not Stated dry assumed | 0.001 | 0.0350 | Table 2 | 243 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, sew | Table III | 9 | ug/kg | Not Stated dry assumed | 0.001 | 0.0090 | Table 2 | 213 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 40 | ug/kg | Not Stated dry assumed | 0.001 | 0.0400 | Table 2 | 290 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, sew | Table III | 53 | ug/kg | Not Stated dry assumed | 0.001 | 0.0530 | Table 2 | 58 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 35 | ug/kg | Not Stated dry assumed | 0.001 | 0.0350 | Table 2 | 577 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sew | Table III | 9 | ug/kg | Not Stated dry assumed | 0.001 | 0.0090 | Table 2 | 323 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 23 | ug/kg | Not Stated dry assumed | 0.001 | 0.0230 | Table 2 | 30 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 wi | Table 2 | 18.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0184 | Table 2 | 37 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 23 | ug/kg | Not Stated dry assumed | 0.001 | 0.0230 | Table 2 | 47 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 wi | Table 2 | 18.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0184 | Table 2 | 54 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, sew | Table III | 42 | ug/kg | Not Stated dry assumed | 0.001 | 0.0420 | Table 2 | 428 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, cont | Table III | 5 | ug/kg | Not Stated dry assumed | 0.001 | 0.0050 | Table 2 | 135 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, cont | Table III | 1 | ug/kg | Not Stated dry assumed | 0.001 | 0.0010 | Table 2 | 160 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Ace/Fluorene | .. | .. | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, sew | Table III | 15 | ug/kg | Not Stated dry assumed | 0.001 | 0.0150 | Table 2 | 444 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 1 | ug/kg | Not Stated dry assumed | 0.001 | 0.0010 | Table 2 | 157 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1991, 1992 | PAHs | Ace/Fluorene | .. | .. | No | Tim_grass | 1 | season | field | 1976, Luddington, treated in 1968 w | Table 3 | 20.4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0204 | Table 2 | 90 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild and Jones 1992 | PAHs | Benz/Chrysene | .. | .. | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 10.37 | ug/kg | dry weight | 0.001 | 0.0104 | Table 5 | 8 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild and Jones 1992 | PAHs | Benz/Chrysene | .. | .. | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 31.62 | ug/kg | dry weight | 0.001 | 0.0316 | Table 5 | 4 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild and Jones 1992 | PAHs | Benz/Chrysene | .. | .. | NS | Carrot | 82 | d | Lab | 62.1 g sewage sludge/kg soil added | Table 3 | 105.57 | ug/kg | dry weight | 0.001 | 0.11 | Table 5 | 3 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 63 | ug/kg | Not Stated dry assumed | 0.001 | 0.0630 | Table 2 | 31 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Beet | 1 | season | field | 1963, Woburn Market Garden, sew | Table III | 790 | ug/kg | Not Stated dry assumed | 0.001 | 0.79 | Table 2 | ND | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Beet | 1 | season | field | 1983, Woburn Market Garden, sew | Table III | 450 | ug/kg | Not Stated dry assumed | 0.001 | 0.45 | Table 2 | 12 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 66 | ug/kg | Not Stated dry assumed | 0.001 | 0.0660 | Table 2 | 28 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Beet | 1 | season | field | 1984, Woburn Market Garden, sew | Table III | 450 | ug/kg | Not Stated dry assumed | 0.001 | 0.45 | Table 2 | 26 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, cont | Table III | 63 | ug/kg | Not Stated dry assumed | 0.001 | 0.0630 | Table 2 | 11 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Carrot | 1 | season | field | 1963, Woburn Market Garden, sew | Table III | 790 | ug/kg | Not Stated dry assumed | 0.001 | 0.79 | Table 2 | ND | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | Benz/Chrysene | .. | .. | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, cont | Table III | 66 | ug/kg | Not Stated dry assumed | 0.001 | 0.0660 | Table 2 | 5 | ug/kg | dry weight | .. | .. | .. | .. | .. | .. | |
| Wild et al. 1990, 1992 | PAHs | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix B
Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|---------------------------|------------------------|----------------------|----------|--------------------|------------------------|---------|-----------------|-------------------|----------------|-----------|--|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|------------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Wild et al. 1990, 1992 | PAHs | Total PAHs | .. | .. | .. | Yes | Carrot | 1 | season | field | 1984, Woburn Market Garden, sew | Table III | 2427 | ug/kg | Not Stated dry assumed | 0.001 | 2.4 | Table 2 | 2800 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | 1336363 | .. | .. | No | Clover | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 753 | ug/kg | Not Stated dry assumed | 0.001 | 0.75 | Table 2 | 351 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | .. | .. | .. | No | Clover | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 1957.8 | ug/kg | Not Stated dry assumed | 0.001 | 2.0 | Table 2 | 446 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | .. | .. | .. | No | Ryegrass | 1 | season | field | 1977, Lee Valley, treated in 1968 w | Table 2 | 1957.8 | ug/kg | Not Stated dry assumed | 0.001 | 2.0 | Table 2 | 341 | ug/kg | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Total PAHs | .. | .. | .. | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, sew | Table III | 3131 | ug/kg | Not Stated dry assumed | 0.001 | 3.1 | Table 2 | 1090 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | .. | .. | .. | No | Ryegrass | 1 | season | field | 1977, Lee Valley, control plot | Table 2 | 753 | ug/kg | Not Stated dry assumed | 0.001 | 0.75 | Table 2 | 395 | ug/kg | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Total PAHs | .. | .. | .. | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, cont | Table III | 735 | ug/kg | Not Stated dry assumed | 0.001 | 0.74 | Table 2 | 940 | ug/kg | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Total PAHs | .. | .. | .. | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, cont | Table III | 503 | ug/kg | Not Stated dry assumed | 0.001 | 0.50 | Table 2 | 608 | ug/kg | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Total PAHs | .. | .. | .. | Yes | SugarBeet | 1 | season | field | 1970, Woburn Market Garden, sew | Table III | 3117 | ug/kg | Not Stated dry assumed | 0.001 | 3.1 | Table 2 | 1177 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | .. | .. | .. | No | Tim_grass | 1 | season | field | 1976, Luddington, control plot | Table 3 | 349 | ug/kg | Not Stated dry assumed | 0.001 | 0.35 | Table 2 | 568 | ug/kg | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Total PAHs | .. | .. | .. | No | Tim_grass | 1 | season | field | 1976, Luddington, treated in 1968 w | Table 3 | 1430 | ug/kg | Not Stated dry assumed | 0.001 | 1.4 | Table 2 | 568 | ug/kg | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | Total PCBs | 1336363 | .. | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 1101.4 | ng/g | dry weight | 0.001 | 1.1 | Table 8 | 129 | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | Total PCBs | 1336363 | .. | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 4.89 | ng/g | dry weight | 0.001 | 0.0047 | Table 14 | 32.08 | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 180 | 35065293 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | ND | ng/g | dry weight | 0.001 | ND | Table 4 | 0.08 | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 87 | 38380028 | 6.85 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | ND | ng/g | dry weight | 0.001 | ND | Table 4 | 1.8 | ng/g | dry weight | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.02 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mustard | 55 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.03 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.04 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.05 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.05 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Radish | 55 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.05 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Radish | 55 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.07 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mustard | 55 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.08 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.09 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Mint | 114 | d | Field | 1980, rep 4, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.1 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 103 | d | Field | 1980, rep 4, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.14 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 4, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 0.24 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Potato (leaves) | 64 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 7.93 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Potato (leaves) | 64 | d | Field | 1980, rep 3, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 8.11 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Potato (leaves) | 64 | d | Field | 1980, rep 4, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | 8.74 | mg/kg | Not Stated wet assumed | | | | | |
| Maitten and Powell, 1982 | Carbamates | Aldicarb | 116063 | 1.13 | SRC | NS | Alfalfa | 114 | d | Field | 1980, rep 2, 3.4 kg application | Table IV | ND | mg/kg | Not Stated dry assumed | none | ND | Table III | ND | mg/kg | Not Stated wet assumed | | | | | |
| Voerman and Besemer, 1975 | Nitro/Chloro-aromatics | Lindane | 58899 | 3.73 | EPA 1995 | Yes | Grass | 6 | month | Field | Initial application in January 1969, V | Table I | ND | ug/g | dry weight | none | ND | Table 1 | ND | ug/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 19 | 38444734 | 5.48 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | ND | ng/g | dry weight | 0.001 | ND | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 22 | 38444858 | 5.42 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 0.45 | ng/g | dry weight | 0.001 | 0.00045 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 45 | 70362457 | 6.34 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 0.93 | ng/g | dry weight | 0.001 | 0.00093 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 137 | 35694065 | 7.44 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 1.4 | ng/g | dry weight | 0.001 | 0.0014 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 174 | 38411252 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 1.83 | ng/g | dry weight | 0.001 | 0.0018 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 177 | 52663704 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 2.29 | ng/g | dry weight | 0.001 | 0.0023 | Table 4 | ND | ng/g | dry weight | | | | | |
| Wild and Jones 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | NS | Carrot | 82 | d | Lab | 6.1 g sewage sludge/kg soil added | Table 3 | 2.928 | ug/kg | dry weight | 0.001 | 0.0029 | Table 5 | ND | ug/kg | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 178 | 52663679 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 3.22 | ng/g | dry weight | 0.001 | 0.0032 | Table 4 | ND | ng/g | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Anthracene | 120127 | 4.55 | EPA 1995 | Yes | Ryegrass | 1 | season | field | 1982, Woburn Market Garden, cont | Table III | 4 | ug/kg | Not Stated dry assumed | 0.001 | 0.0040 | Table 2 | ND | ug/kg | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 85 | 65510454 | 6.61 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 4.55 | ng/g | dry weight | 0.001 | 0.0046 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 170 | 35065306 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 4.67 | ng/g | dry weight | 0.001 | 0.0047 | Table 4 | ND | ng/g | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 185 | 52712057 | 7.93 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 4.84 | ng/g | dry weight | 0.001 | 0.0048 | Table 4 | ND | ng/g | dry weight | | | | | |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 1 - 8 Apr 74 harvest | Table I | 0.006 | mg/kg | Not Stated dry assumed | none | 0.0060 | Table II | ND | mg/kg ww | wet weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 175 | 40186707 | 8.27 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 7.46 | ng/g | dry weight | 0.001 | 0.0075 | Table 4 | ND | ng/g | dry weight | | | | | |
| Wild and Jones 1992 | PAHs | Benzo(k)fluoranthene | 207089 | 6.2 | EPA 1995 | NS | Carrot | 82 | d | Lab | 18.6 g sewage sludge/kg soil added | Table 3 | 8.928 | ug/kg | dry weight | 0.001 | 0.0089 | Table 5 | ND | ug/kg | dry weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 19 | 38444734 | 5.48 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 9.7 | ng/g | dry weight | 0.001 | 0.0097 | Table 4 | ND | ng/g | dry weight | | | | | |
| Dejonckheere et al., 1975 | Nitro/Chloro-aromatics | Hexachlorobenzene | 118741 | 5.89 | EPA 1995 | No | Lettuce | 85 | d | Lab | Exp 3 - 8 Apr 74 harvest | Table I | 0.01 | mg/kg | Not Stated dry assumed | none | 0.0100 | Table II | ND | mg/kg ww | wet weight | | | | | |
| Bi et al 2002 | PCBs/Aroclors | PCB 40 | 38444938 | 6.18 | SRC | NS | Rice | 1 | season | field | Field collected resident plants from : | Table 2 | 10 | ng/g | dry weight | 0.001 | 0.0100 | Table 4 | ND | ng/g | dry weight | | | | | |
| Wild et al. 1991, 1992 | PAHs | Dibenz(ah)anthracene | 5 | | | | | | | | | | | | | | | | | | | | | | | |

Appendix B
Bioaccumulation Data for Uptake of Non-Ionic Organic Chemicals from Soil into Plant Foliage

| Reference | Chemical Class | Chemical Name | CAS No | logK _{ow} | logK _{ow} Ref | Rinsed? | Plant Species | Exposure Duration | Exposure Units | Field/Lab | Exp / Test | Source of Soil Data | Reported organic conc in Soil | Reported Units for Soil | Wet or Dry Weight | Conversion Factor to mg/kg | Organic Conc in Soil (mg/kg dw) | Source of Vegetation Data | Reported organic conc in Vegetation | Reported Units for Vegetation | Wet or Dry Weight | Conversion Factor to mg/kg | Conversion factor to dw | Organic Conc in Plant (mg/kg dw) | BAF (Tissue/Soil) | logBAF |
|------------------------|----------------|---------------|--------|--------------------|------------------------|---------|---------------|-------------------|----------------|-----------|-----------------------------------|---------------------|-------------------------------|-------------------------|------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------------|-------------------------------|-------------------|----------------------------|-------------------------|----------------------------------|-------------------|--------|
| Lichenstein, 1960 | Cyclodienes | Heptachlor | 76448 | 6.26 | EPA 1995 | Yes | Lettuce | 60 | d | Field | 1959, 25 lb/acre | Table II | 4.22 | mg/kg | dry weight | none | 4.2 | Table II | ND | mg/kg | wet weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Beet | 1 | season | field | 1984, Woburn Market Gardern, cont | Table III | 0 | ug/kg | Not Stated dry assumed | 0.001 | 0 | Table 2 | 60 | ug/kg | dry weight | | | | | |
| Wild et al. 1990, 1992 | PAHs | Naphthalene | 91203 | 3.36 | EPA 1995 | Yes | Carrot | 1 | season | field | 1984, Woburn Market Gardern, cont | Table III | 0 | ug/kg | Not Stated dry assumed | 0.001 | 0 | Table 2 | 1 | ug/kg | dry weight | | | | | |

This Page Intentionally Left Blank

Appendix B References

- Beall, M.L. Jr. Persistence of aerially applied hexachlorobenzene on grass and soil. 1976. *Journal of Environmental Quality*. 5: 367-369.
- Beynon, K.I., G. Stoydin, and A.N. Wright. 1972. The breakdown of the triazine herbicide cyanazine in soils and maize. *Pesticide Science*. 3:293-305.
- Bi, X., S. Chu, Q. Meng, and X. Xu. 2002. Movement and retention of polychlorinated biphenyls in a paddy field of WenTai area in China. Agriculture. *Ecosystems and Environment*. 89: 241-252.
- Bull, D. L., and G. W. Ivie. 1978. Fate of diflubenzuran in cotton, soil, and rotational crops. *Journal of Agricultural and Food Chemistry*. 26(3): 515-520.
- Businelli, M., F. Tafuri, L. Scarponi, and C. Maucchini. 1975. Persistence of benafluralin in soils and its uptake by carrots. *Pesticide Science*. 6: 475-480.
- Dejonckheere, W., W. Steurbaut, and R.H. Kips. 1975. Residues of quintozone, hexachlorobenzene, dichloran and pentachloroaniline in soil and lettuce. *Bulletin of Environmental Contamination and Toxicology*. 13: 720-729.
- De La Cruz, A.A. and B. Rajanna. 1975. Mirex incorporation and in the environment: uptake and distribution in crop seedlings. *Bulletin of Environmental Contamination and Toxicology*. 14: 38-42.
- Dorough, H.W. and B.C. Pass. 1972. Residues in corn and soils treated with technical chlordane and high-purity chlordane (HCS 3260). *Journal of Economic Entomology*. 65: 976-979.
- Edwards, C.A. 1970. *Persistent Pesticides in the Environment*. CRC Press, Cleveland, OH.
- Edwards, N. T., R. M. Ross-Todd, E. G. Garver. 1982. Uptake and metabolism of ¹⁴C anthracene by soybean (*Glycine max*). *Environ. Exp. Bot.* 22(3): 349-357.
- Eshel, J., R.L. Zimdahl, and E.E. Schweizer. 1978. Uptake and translocation of ethofumesate in sugar-beet plants. *Pesticide Science*. 9:301-304.
- Greichus, Y.A. and B.A. Dohman. 1980. Polychlorinated biphenyl contamination of areas surrounding two transfer salvage companies, Colman, South Dakota-September 1977. *Pesticide Monitoring Journal*. 14:26-30.

- Iwata, Y., W.E. Westlake, J.H. Barkley, G.E. Carman, and F.A. Gunther. 1977. Aldicarb residues in oranges, citrus by-products, orange leaves, and soil after an aldicarb soil-application in an orange grove. *Journal of Agricultural and Food Chemistry*. 25: 933-937.
- Iwata, Y. and F.A. Gunther. 1976. Translocation of the polychlorinated biphenyl aroclor 1254 from soil into carrots under field conditions. *Archives of Environmental Contamination and Toxicology*. 4: 44-59.
- Kipopoulou, A.M., E. Manoli, and C. Samara. 1999. Bioconcentration of polyaromatic hydrocarbons in vegetables grown in an industrial area. *Environmental Pollution*. 106: 369-380.
- Lichenstein, E.P. 1960. Insecticidal residues in various crops grown in soils treated with abnormal rates of aldrin and heptachlor. *Journal of Agricultural and Food Chemistry*. 8:448-451.
- Lichenstein, E.P. 1959. Absorption of some chlorinated hydrocarbon insecticides from soils into various crops. *Journal of Agricultural and Food Chemistry*. 7: 430-433.
- Maitlen, J.C. and D. M. Powell. 1982. Persistence of aldicarb in soil relative to the carry-over of residues into crops. *Journal of Agricultural and Food Chemistry*. 30: 589-892.
- Moza, P. I. Weisgerber, and W. Klein. 1976. Fate of 2,2'-dichlorobiphenyl-14C in carrots, sugar beets, and soil under outdoor conditions. *Journal of Agricultural and Food Chemistry*. 24 (4). 1976 881-885.
- Moza P, Scheunert I, Klein W, Korte F. 1979. Studies with 2,4',5-trichlorobiphenyl-14C and 2,2',4,4',6-pentachlorobiphenyl-14C in carrots, sugar beets, and soil. *Journal of Agricultural and Food Chemistry*. 1979. 27(5):1120-4.
- Saha, J. G., C. H. Craig, and W. K. Janzen. 1968. Organochlorine insecticide residues in agricultural soil and legume crops in northeastern Saskatchewan. *Journal of Agricultural and Food Chemistry*. 16(4): 617-619.
- Schneider, J.F., S.D. Zellmer, N.A. Tomczyk, J.R. Rastorfer, D. Chen, and W.L. Banwart. 1995. *Uptake of Explosives from Contaminated Soil by Existing Vegetation at the Iowa Army Ammunition Plant. U.S. Army Environmental Center, Environmental Technology Division, Program Management Branch, Safety Office. Aberdeen Proving Ground, Maryland. Report No. SFIM-AEC-ET-CR-95013. February, 1995.*
- Shane, L.A. and B. Bush. 1989. Accumulation of polychlorobiphenyl congeners and p,p'-DDE at environmental concentrations by corn and beans. *Ecotoxicology and Environmental Safety*. 17:

38-46.

Tafari, F., M. Businelli, L. Scarponi, and C. Marucchini. 1977. Decline and movement of AG chlordane in soil and its residues in alfalfa. *Journal of Agricultural and Food Chemistry*. 25: 353-356.

Trapp, S., M. Matthies, I. Scheunert and E. M. Topp. 1990. Modeling the Bioconcentration of Organic Chemicals in Plants. *Environmental Science and Technology*. 24(8): 1246-1252.

Travis, C.C. and A.D. Arms. 1988. Bioconcentration of organics in beef, milk, and vegetation. *Environmental Science and Technology*. 22: 271-274.

Viswanathan, R., I. Scheunert, J. Kohli, W. Klein, and F. Korte. 1978. Long-term studies on the fate of 3,4-dichloroaniline-14C in a plant-soil-system under outdoor conditions. *Journal of Environmental Health and Safety*. B13: 243-259.

Voerman, S. and A.F.H. Besemer. 1975. Persistence of dieldrin, lindane, and DDT in a light sandy soil and their uptake by grass. *Bulletin of Environmental Contamination and Toxicology*. 13: 501-505.

Weber, J. B. and E. Mrozek Jr. 1979. Polychlorinated biphenyls: phytotoxicity, absorption and translocation by plants, and inactivation by activated carbon. *Bulletin of Environmental Toxicology and Chemistry*. 23:412-417.

Weisgerber, I., J. Kohli, R. Kaul, W. Klein, and F. Korte. 1974. Fate of aldrin-14C in maize, wheat, and soils under outdoor conditions. *Journal of Agricultural and Food Chemistry*. 22:609-646.

Wild, S.R. and K.C. Jones. 1992. Polynuclear aromatic hydrocarbon uptake by carrots grown in sludge-amended soil. *Journal of Environmental Quality*. 21:217-225.

Wild, S.R., M.L. Berrow, S.P. McGrath, and K.C. Jones. 1992. Polynuclear aromatic hydrocarbons in crops from long-term field experiments amended with sewage sludge. *Environmental Pollution*. 76:25-32.

Wild, S.R., M.L. Berrow, and K.C. Jones. 1991a. The persistence of polynuclear aromatic hydrocarbons (PAHs) in sewage sludge amended agricultural soils. *Environmental Pollution*. 72:141-157.

Wild, S.R., J.P. Obbard, C.I. Munn, M.L. Berrow, and K.C. Jones. 1991b. The long-term persistence of polynuclear aromatic hydrocarbons (PAHs) in an agricultural soil amended with metal-contaminated

sewage sludges. *The Science of the Total Environment*. 101-235-253.

Wild, S.R., K.S. Waterhouse, S.P. McGrath, and K.C. Jones. 1990. Organic contaminants in an agricultural soil with a known history of sewage sludge amendments: polynuclear aromatic hydrocarbons. *Environmental Science and Technology*. 24:1706-1711.



Eco-SSL Attachment 4-1

Appendix C

*Bioaccumulation Factors (BAFs) and Regression Equations for
the Uptake of Eco-SSL Non-Ionic Organic Contaminants into
Plant Foliage*

February 2005

Revised April 1007

This page intentionally left blank

Appendix C
Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | | | | | | | |
|---------------|---------------------|------------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|---------|------|---|--------|---------|--------|----|
| | | | | | | | | | | Slope | Intercept | R2 | p value | | | | | | |
| DDE | Rinsed | Grass | 0.44 | -0.8 | 0.060 | -2.81 | 0.14 | 0.136 | R | 0.7524 | -2.5119 | 0.5334 | < 0.05 | | | | | | |
| DDE | Rinsed | Grass | 1.2 | 0.2 | 0.090 | -2.41 | 0.075 | | | | | | | | | | | | |
| DDE | Rinsed | Grass | 4.5 | 1.5 | 2.8 | 1.03 | 0.62 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 2.5 | 0.9 | 0.040 | -3.22 | 0.016 | 0.037 | R | | | | | | | | | | |
| DDT | Rinsed | Grass | 0.63 | -0.5 | 0.050 | -3.00 | 0.079 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 1.5 | 0.4 | 0.070 | -2.66 | 0.047 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 12 | 2.5 | 0.28 | -1.27 | 0.023 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 5.8 | 1.8 | 0.32 | -1.14 | 0.055 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 43 | 3.7 | 1.2 | 0.18 | 0.028 | | | | | | | | | | | | |
| DDT | Rinsed | Grass | 43 | 3.7 | 1.2 | 0.18 | 0.028 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Alfalfa | 0.98 | 0.0 | 0.400 | -0.92 | 0.4 | 0.41 | R | 0.0728 | -0.8566 | 0.0042 | NC | | | | | | |
| Dieldrin | Rinsed | Alfalfa | 4.18 | 1.4 | 0.533 | -0.63 | 0.13 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Grass | 0.77 | -0.3 | 0.050 | -3.00 | 0.1 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Grass | 1.73 | 0.5 | 0.180 | -1.71 | 0.10 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Grass | 7.30 | 2.0 | 0.40 | -0.92 | 0.05 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Lettuce | 0.66 | -0.4 | 0.47 | -0.76 | 0.71 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Lettuce | 0.36 | -1.0 | 0.800 | -0.22 | 2.222 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Lettuce | 1.8 | 0.6 | 1.13 | 0.13 | 0.62 | | | | | | | | | | | | |
| Dieldrin | Rinsed | Lettuce | 1.3 | 0.3 | 1.73 | 0.55 | 1.323 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Corn | 0.60 | -0.5 | 0.067 | -2.71 | 0.11 | | | | | | | 0.39 | U | 1.0307 | -0.3073 | 0.5573 | NC |
| Dieldrin | Not Specified | Corn | 0.55 | -0.6 | 0.20 | -1.61 | 0.36 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Corn | 1.2 | 0.2 | 0.33 | -1.10 | 0.28 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Corn | 0.72 | -0.3 | 0.67 | -0.41 | 0.93 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Wheat | 0.42 | -0.9 | 4.6 | 1.53 | 11.0 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Barley | 2.08 | 0.7 | 8.3 | 2.11 | 4.0 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Legume | 0.05 | -3.0 | 0.0 | -4.09 | 0.3 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Wheat | 1.1 | 0.1 | 1.1 | 0.13 | 1.0 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Wheat | 18.4 | 2.9 | 7.1 | 1.96 | 0.4 | | | | | | | | | | | | |
| Dieldrin | Not Specified | Wheat | 18.4 | 2.9 | 7.1 | 1.96 | 0.4 | | | | | | | | | | | | |
| TNT | Rinsed | blacklocust | 1 | -0.7 | 4.4 | 1.48 | 8.46 | 4.23 | R | | | | | | | | | | |
| TNT | Rinsed | smoothbromegrass | 11,000 | 9.3 | 0.76 | -0.27 | 0.000069 | | | | | | | | | | | | |
| RDX | Rinsed | blacklocust | 1.6 | 0.5 | 17 | 2.84 | 11 | 0.430 | R | 0.1888 | 2.3829 | 0.1981 | NC | | | | | | |
| RDX | Rinsed | blacklocust | 114 | 4.7 | 39 | 3.65 | 0.34 | | | | | | | | | | | | |
| RDX | Rinsed | goldenrod | 46 | 3.8 | 5.6 | 1.73 | 0.12 | | | | | | | | | | | | |
| RDX | Rinsed | goldenrod | 9.0 | 2.2 | 24 | 3.16 | 2.6 | | | | | | | | | | | | |
| RDX | Rinsed | goldenrod | 57 | 4.0 | 35 | 3.56 | 0.61 | | | | | | | | | | | | |
| RDX | Rinsed | goldenrod | 1,100 | 7.0 | 38 | 3.63 | 0.034 | | | | | | | | | | | | |
| RDX | Rinsed | Grass | 19 | 3.0 | 10 | 2.31 | 0.52 | | | | | | | | | | | | |
| RDX | Rinsed | milkweed | 46 | 3.8 | 89 | 4.48 | 1.9 | | | | | | | | | | | | |
| RDX | Rinsed | Pigweed | 60 | 4.1 | 3.6 | 1.28 | 0.060 | | | | | | | | | | | | |
| RDX | Rinsed | Pigweed | 3.8 | 1.3 | 11 | 2.37 | 2.8 | | | | | | | | | | | | |
| RDX | Rinsed | Ragweed | 166 | 5.1 | 33 | 3.51 | 0.20 | | | | | | | | | | | | |
| RDX | Rinsed | Ragweed | 702 | 6.6 | 74 | 4.30 | 0.11 | | | | | | | | | | | | |
| RDX | Rinsed | redcedar | 17 | 2.8 | 42 | 3.74 | 2.5 | | | | | | | | | | | | |
| RDX | Rinsed | smartweed | 3.2 | 1.2 | 5.0 | 1.62 | 1.6 | | | | | | | | | | | | |
| RDX | Rinsed | smartweed | 2.5 | 0.9 | 51 | 3.94 | 20 | | | | | | | | | | | | |
| RDX | Rinsed | smoothbromegrass | 1,800 | 7.5 | 42 | 3.73 | 0.023 | | | | | | | | | | | | |
| RDX | Rinsed | smoothbromegrass | 5,010 | 8.5 | 72 | 4.28 | 0.014 | | | | | | | | | | | | |
| RDX | Rinsed | sunflower | 46 | 3.8 | 8.6 | 2.15 | 0.19 | | | | | | | | | | | | |

Appendix C
Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | |
|-----------------------|---------------------|---------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|---------|
| | | | | | | | | | | Slope | Intercept | R2 | p value |
| Acenaphthene/Fluorene | Unrinsed | Clover | 0.0230 | -3.8 | 0.030 | -3.51 | 1.3 | 2.0 | U | -0.1632 | -3.3635 | 0.1710 | NC |
| Acenaphthene/Fluorene | Unrinsed | Clover | 0.0184 | -4.0 | 0.037 | -3.30 | 2.0 | | | | | | |
| Acenaphthene/Fluorene | Unrinsed | Ryegrass | 0.0230 | -3.8 | 0.047 | -3.06 | 2.0 | | | | | | |
| Acenaphthene/Fluorene | Unrinsed | Ryegrass | 0.0184 | -4.0 | 0.054 | -2.92 | 2.9 | | | | | | |
| Acenaphthene/Fluorene | Unrinsed | Tim_grass | 0.0010 | -6.9 | 0.157 | -1.85 | 157 | | | | | | |
| Acenaphthene/Fluorene | Unrinsed | Tim_grass | 0.0204 | -3.9 | 0.090 | -2.41 | 4.4 | | | | | | |
| Acenaphthene/Fluorene | Not Specified | Carrot | 0.0146 | -4.2 | 0.092 | -2.39 | 6.3 | | | | | | |
| Acenaphthene/Fluorene | Not Specified | Carrot | 0.0446 | -3.1 | 0.082 | -2.50 | 1.8 | | | | | | |
| Acenaphthene/Fluorene | Not Specified | Carrot | 0.15 | -1.9 | 0.079 | -2.54 | 0.53 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Beet | 0.0400 | -3.2 | 0.183 | -1.70 | 4.6 | 7.3 | R | -0.8556 | -5.5620 | 0.2998 | < 0.001 |
| Acenaphthene/Fluorene | Rinsed | Beet | 0.0530 | -2.9 | 0.250 | -1.39 | 4.7 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Beet | 0.0090 | -4.7 | 0.299 | -1.21 | 33 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Beet | 0.0350 | -3.4 | 0.243 | -1.41 | 6.9 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Beet | 0.0090 | -4.7 | 0.213 | -1.55 | 24 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Carrot | 0.0400 | -3.2 | 0.290 | -1.24 | 7.3 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Carrot | 0.0530 | -2.9 | 0.058 | -2.85 | 1.1 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Carrot | 0.0350 | -3.4 | 0.577 | -0.55 | 16 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Carrot | 0.0090 | -4.7 | 0.323 | -1.13 | 36 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Ryegrass | 0.0420 | -3.2 | 0.428 | -0.85 | 10 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | Ryegrass | 0.0050 | -5.3 | 0.135 | -2.00 | 27 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | SugarBeet | 0.0010 | -6.9 | 0.160 | -1.83 | 160 | | | | | | |
| Acenaphthene/Fluorene | Rinsed | SugarBeet | 0.0150 | -4.2 | 0.444 | -0.81 | 30 | | | | | | |
| Fluorene | Rinsed | Cabbage | 0.10 | -2.3 | 0.0011 | -6.81 | 0.011 | | | | | | |
| Fluorene | Rinsed | endive | 0.10 | -2.3 | 0.0057 | -5.17 | 0.056 | | | | | | |
| Fluorene | Rinsed | leek | 0.10 | -2.3 | 0.0026 | -5.95 | 0.026 | | | | | | |
| Fluorene | Rinsed | Lettuce | 0.10 | -2.3 | 0.0058 | -5.15 | 0.057 | | | | | | |
| Anthracene | Unrinsed | Clover | 0.0070 | -5.0 | 0.0020 | -6.21 | 0.29 | 0.31 | U | -0.6027 | -9.1585 | 0.2776 | NC |
| Anthracene | Unrinsed | Ryegrass | 0.0162 | -4.1 | 0.0010 | -6.91 | 0.062 | | | | | | |
| Anthracene | Unrinsed | Ryegrass | 0.0070 | -5.0 | 0.0030 | -5.81 | 0.43 | | | | | | |
| Anthracene | Unrinsed | Tim_grass | 0.0128 | -4.4 | 0.0040 | -5.52 | 0.31 | | | | | | |
| Anthracene | Unrinsed | Tim_grass | 0.0010 | -6.9 | 0.023 | -3.77 | 23 | | | | | | |
| Anthracene | Not Specified | Carrot | 0.0020 | -6.2 | 0.0010 | -6.91 | 0.50 | | | | | | |
| Anthracene | Not Specified | Carrot | 0.0061 | -5.1 | 0.0010 | -6.91 | 0.16 | | | | | | |
| Anthracene | Rinsed | Beet | 0.0020 | -6.2 | 0.001 | -6.91 | 0.50 | 1.50 | R | 0.7784 | -0.9887 | 0.5188 | < 0.001 |
| Anthracene | Rinsed | Beet | 0.0150 | -4.2 | 0.012 | -4.42 | 0.80 | | | | | | |
| Anthracene | Rinsed | Beet | 0.0530 | -2.9 | 0.017 | -4.07 | 0.32 | | | | | | |
| Anthracene | Rinsed | Beet | 0.0160 | -4.1 | 0.024 | -3.73 | 1.5 | | | | | | |
| Anthracene | Rinsed | Beet | 0.0150 | -4.2 | 0.069 | -2.67 | 4.6 | | | | | | |
| Anthracene | Rinsed | Cabbage | 0.00060 | -7.4 | 0.00060 | -7.42 | 1.0 | | | | | | |
| Anthracene | Rinsed | Carrot | 0.0530 | -2.9 | 0.0010 | -6.91 | 0.019 | | | | | | |
| Anthracene | Rinsed | Carrot | 0.0160 | -4.1 | 0.011 | -4.51 | 0.69 | | | | | | |
| Anthracene | Rinsed | Carrot | 0.0150 | -4.2 | 0.025 | -3.69 | 1.7 | | | | | | |
| Anthracene | Rinsed | Carrot | 0.0130 | -4.3 | 0.044 | -3.12 | 3.4 | | | | | | |
| Anthracene | Rinsed | endive | 0.00060 | -7.4 | 0.0012 | -6.73 | 2.0 | | | | | | |
| Anthracene | Rinsed | leek | 0.00060 | -7.4 | 0.00047 | -7.66 | 0.78 | | | | | | |
| Anthracene | Rinsed | Lettuce | 0.00060 | -7.4 | 0.0014 | -6.57 | 2.3 | | | | | | |
| Anthracene | Rinsed | Ryegrass | 0.0350 | -3.4 | 0.069 | -2.67 | 2.0 | | | | | | |
| Anthracene | Rinsed | Soybean | 0.0140 | -4.3 | 0.014 | -4.27 | 1.0 | | | | | | |
| Anthracene | Rinsed | Soybean | 0.0100 | -4.6 | 0.031 | -3.47 | 3.1 | | | | | | |
| Anthracene | Rinsed | SugarBeet | 0.0030 | -5.8 | 0.0090 | -4.71 | 3.0 | | | | | | |
| Anthracene | Rinsed | SugarBeet | 0.0240 | -3.7 | 0.036 | -3.32 | 1.5 | | | | | | |

Appendix C

Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | |
|-----------------------------|---------------------|---------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|----------|
| | | | | | | | | | | Slope | Intercept | R2 | p value |
| Benzo(a)anthracene/Chrysene | Unrinsed | Clover | 0.0104 | -4.6 | 0.008 | -4.83 | 0.77 | 0.13 | U | 0.1101 | -4.4680 | 0.0500 | NC |
| Benzo(a)anthracene/Chrysene | Unrinsed | Clover | 0.25 | -1.4 | 0.013 | -4.34 | 0.052 | | | | | | |
| Benzo(a)anthracene/Chrysene | Unrinsed | Ryegrass | 0.25 | -1.4 | 0.007 | -4.96 | 0.028 | | | | | | |
| Benzo(a)anthracene/Chrysene | Unrinsed | Ryegrass | 0.0950 | -2.4 | 0.019 | -3.96 | 0.20 | | | | | | |
| Benzo(a)anthracene/Chrysene | Unrinsed | Tim_grass | 0.0840 | -2.5 | 0.015 | -4.20 | 0.18 | | | | | | |
| Benzo(a)anthracene/Chrysene | Unrinsed | Tim_grass | 0.17 | -1.8 | 0.012 | -4.42 | 0.072 | | | | | | |
| Benzo(a)anthracene/Chrysene | Not Specified | Carrot | 0.0104 | -4.6 | 0.008 | -4.83 | 0.77 | | | | | | |
| Benzo(a)anthracene/Chrysene | Not Specified | Carrot | 0.0316 | -3.5 | 0.004 | -5.52 | 0.13 | | | | | | |
| Benzo(a)anthracene/Chrysene | Not Specified | Carrot | 0.11 | -2.2 | 0.003 | -5.81 | 0.028 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Beet | 0.0104 | -4.6 | 0.008 | -4.83 | 0.77 | 0.32 | R | 0.5944 | -2.7078 | 0.7007 | < 0.0001 |
| Benzo(a)anthracene/Chrysene | Rinsed | Beet | 0.45 | -0.8 | 0.012 | -4.42 | 0.027 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Beet | 0.0660 | -2.7 | 0.028 | -3.58 | 0.42 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Beet | 0.45 | -0.8 | 0.026 | -3.65 | 0.058 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Carrot | 0.0630 | -2.8 | 0.011 | -4.51 | 0.17 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Carrot | 0.0660 | -2.7 | 0.005 | -5.30 | 0.076 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Carrot | 0.45 | -0.8 | 0.156 | -1.86 | 0.35 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | Ryegrass | 0.0640 | -2.7 | 0.019 | -3.96 | 0.30 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | SugarBeet | 0.0710 | -2.6 | 0.023 | -3.77 | 0.32 | | | | | | |
| Benzo(a)anthracene/Chrysene | Rinsed | SugarBeet | 0.60 | -0.5 | 0.047 | -3.06 | 0.078 | | | | | | |
| Chrysene | Rinsed | Cabbage | 0.0037 | -5.6 | 0.00060 | -7.42 | 0.16 | | | | | | |
| Chrysene | Rinsed | endive | 0.0037 | -5.6 | 0.0039 | -5.55 | 1.05 | | | | | | |
| Chrysene | Rinsed | leek | 0.0037 | -5.6 | 0.0019 | -6.27 | 0.51 | | | | | | |
| Chrysene | Rinsed | Lettuce | 0.0037 | -5.6 | 0.0039 | -5.55 | 1.05 | | | | | | |
| Benzo(a)anthracene | Rinsed | Lettuce | 0.0054 | -5.2 | 0.0029 | -5.84 | 0.54 | | | | | | |
| Benzo(a)pyrene | Unrinsed | Clover | 0.14 | -2.0 | 0.0080 | -4.83 | 0.057 | 0.16 | U | 0.3620 | -4.1052 | 0.1290 | NC |
| Benzo(a)pyrene | Unrinsed | Clover | 0.0580 | -2.8 | 0.0090 | -4.71 | 0.16 | | | | | | |
| Benzo(a)pyrene | Unrinsed | Ryegrass | 0.14 | -2.0 | 0.0090 | -4.71 | 0.065 | | | | | | |
| Benzo(a)pyrene | Unrinsed | Ryegrass | 0.0580 | -2.8 | 0.010 | -4.61 | 0.17 | | | | | | |
| Benzo(a)pyrene | Unrinsed | Tim_grass | 0.0888 | -2.4 | 0.014 | -4.27 | 0.16 | | | | | | |
| Benzo(a)pyrene | Unrinsed | Tim_grass | 0.0070 | -5.0 | 0.023 | -3.77 | 3.3 | | | | | | |
| Benzo(a)pyrene | Not Specified | Carrot | 0.0050 | -5.3 | 0.0010 | -6.91 | 0.20 | | | | | | |
| Benzo(a)pyrene | Not Specified | Carrot | 0.0153 | -4.2 | 0.0010 | -6.91 | 0.066 | | | | | | |
| Benzo(a)pyrene | Not Specified | Carrot | 0.0509 | -3.0 | 0.0010 | -6.91 | 0.020 | | | | | | |
| Benzo(a)pyrene | Rinsed | Beet | 0.0350 | -3.4 | 0.019 | -3.96 | 0.54 | 0.10 | R | 0.9750 | -2.0615 | 0.7954 | < 0.0001 |
| Benzo(a)pyrene | Rinsed | Beet | 0.25 | -1.4 | 0.023 | -3.77 | 0.092 | | | | | | |
| Benzo(a)pyrene | Rinsed | Beet | 0.25 | -1.4 | 0.025 | -3.69 | 0.10 | | | | | | |
| Benzo(a)pyrene | Rinsed | Beet | 0.0300 | -3.5 | 0.028 | -3.58 | 0.93 | | | | | | |
| Benzo(a)pyrene | Rinsed | Beet | 0.41 | -0.9 | 0.042 | -3.17 | 0.10 | | | | | | |
| Benzo(a)pyrene | Rinsed | Cabbage | 0.0024 | -6.0 | 0.00010 | -9.21 | 0.042 | | | | | | |
| Benzo(a)pyrene | Rinsed | Carrot | 0.0300 | -3.5 | 0.012 | -4.42 | 0.40 | | | | | | |
| Benzo(a)pyrene | Rinsed | Carrot | 0.41 | -0.9 | 0.016 | -4.14 | 0.039 | | | | | | |
| Benzo(a)pyrene | Rinsed | Carrot | 0.25 | -1.4 | 0.021 | -3.86 | 0.084 | | | | | | |
| Benzo(a)pyrene | Rinsed | endive | 0.0024 | -6.0 | 0.00024 | -8.33 | 0.10 | | | | | | |
| Benzo(a)pyrene | Rinsed | leek | 0.0024 | -6.0 | 0.00015 | -8.80 | 0.063 | | | | | | |
| Benzo(a)pyrene | Rinsed | Lettuce | 0.0024 | -6.0 | 0.00028 | -8.18 | 0.12 | | | | | | |
| Benzo(a)pyrene | Rinsed | Ryegrass | 0.26 | -1.3 | 0.017 | -4.07 | 0.065 | | | | | | |
| Benzo(a)pyrene | Rinsed | SugarBeet | 0.0450 | -3.1 | 0.037 | -3.30 | 0.82 | | | | | | |
| Benzo(a)pyrene | Rinsed | SugarBeet | 0.34 | -1.1 | 0.039 | -3.24 | 0.11 | | | | | | |
| Benzo(b)fluoranthene | Not Specified | Carrot | 0.0060 | -5.1 | 0.0010 | -6.91 | 0.17 | 0.091 | U | NC | NC | NC | NC |
| Benzo(b)fluoranthene | Not Specified | Carrot | 0.0615 | -2.8 | 0.0010 | -6.91 | 0.016 | | | | | | |
| Benzo(b)fluoranthene | Rinsed | Cabbage | 0.0025 | -6.0 | 0.00020 | -8.52 | 0.080 | 0.310 | R | NC | NC | NC | NC |
| Benzo(b)fluoranthene | Rinsed | endive | 0.0025 | -6.0 | 0.0012 | -6.73 | 0.48 | | | | | | |
| Benzo(b)fluoranthene | Rinsed | leek | 0.0025 | -6.0 | 0.00045 | -7.71 | 0.18 | | | | | | |
| Benzo(b)fluoranthene | Rinsed | Lettuce | 0.0025 | -6.0 | 0.0011 | -6.81 | 0.44 | | | | | | |
| Benzo(e)pyrene | Rinsed | Cabbage | 0.0059 | -5.1 | 0.00060 | -7.42 | 0.10 | 0.19 | R | NC | NC | NC | NC |
| Benzo(e)pyrene | Rinsed | endive | 0.0059 | -5.1 | 0.0013 | -6.65 | 0.22 | | | | | | |
| Benzo(e)pyrene | Rinsed | leek | 0.0059 | -5.1 | 0.00094 | -6.97 | 0.16 | | | | | | |
| Benzo(e)pyrene | Rinsed | Lettuce | 0.0059 | -5.1 | 0.0016 | -6.44 | 0.27 | | | | | | |
| Benzo(ghi)perylene | Unrinsed | Clover | 0.0750 | -2.6 | 0.056 | -2.88 | 0.75 | 0.361 | U | 0.4530 | -2.1637 | 0.4492 | NC |
| Benzo(ghi)perylene | Unrinsed | Clover | 0.32 | -1.1 | 0.12 | -2.15 | 0.36 | | | | | | |
| Benzo(ghi)perylene | Unrinsed | Ryegrass | 0.0750 | -2.6 | 0.049 | -3.02 | 0.65 | | | | | | |
| Benzo(ghi)perylene | Unrinsed | Ryegrass | 0.32 | -1.1 | 0.060 | -2.81 | 0.19 | | | | | | |
| Benzo(ghi)perylene | Unrinsed | Tim_grass | 0.0760 | -2.6 | 0.056 | -2.88 | 0.74 | | | | | | |
| Benzo(ghi)perylene | Unrinsed | Tim_grass | 0.30 | -1.2 | 0.056 | -2.88 | 0.19 | | | | | | |
| Benzo(ghi)perylene | Not Specified | Carrot | 0.0465 | -3.1 | 0.012 | -4.42 | 0.26 | | | | | | |
| Benzo(ghi)perylene | Not Specified | Carrot | 0.0153 | -4.2 | 0.020 | -3.91 | 1.3 | | | | | | |
| Benzo(ghi)perylene | Not Specified | Carrot | 0.16 | -1.9 | 0.024 | -3.73 | 0.15 | | | | | | |

Appendix C

Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | |
|----------------------|---------------------|---------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|----------|
| | | | | | | | | | | Slope | Intercept | R2 | p value |
| | | | | | | | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Beet | 0.11 | -2.2 | 0.023 | -3.77 | 0.21 | 0.21 | R | 1.1829 | -0.9313 | 0.8693 | < 0.0001 |
| Benzo(ghi)perylene | Rinsed | Beet | 0.53 | -0.6 | 0.056 | -2.88 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Beet | 0.0900 | -2.4 | 0.14 | -1.97 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Beet | 0.90 | -0.1 | 0.16 | -1.83 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Beet | 0.53 | -0.6 | 0.16 | -1.82 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Cabbage | 0.0036 | -5.6 | 0.00032 | -8.05 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Carrot | 0.11 | -2.2 | 0.081 | -2.51 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Carrot | 0.0900 | -2.4 | 0.11 | -2.22 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Carrot | 0.53 | -0.6 | 0.11 | -2.20 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Carrot | 0.90 | -0.1 | 0.38 | -0.97 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | endive | 0.0036 | -5.6 | 0.00027 | -8.22 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | leek | 0.0036 | -5.6 | 0.00047 | -7.66 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Lettuce | 0.0036 | -5.6 | 0.00019 | -8.57 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Ryegrass | 0.55 | -0.6 | 0.093 | -2.38 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | Ryegrass | 0.17 | -1.8 | 0.14 | -1.99 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | SugarBeet | 0.0980 | -2.3 | 0.076 | -2.58 | | | | | | | |
| Benzo(ghi)perylene | Rinsed | SugarBeet | 0.55 | -0.6 | 0.080 | -2.53 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Clover | 0.0810 | -2.5 | 0.0040 | -5.52 | 0.076 | 0.076 | U | 0.1668 | -4.6482 | 0.0280 | NC |
| Benzo(k)fluoranthene | Unrinsed | Clover | 0.0330 | -3.4 | 0.0060 | -5.12 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Clover | 0.23 | -1.5 | 0.014 | -4.27 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Clover | 0.0930 | -2.4 | 0.018 | -4.02 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Ryegrass | 0.0810 | -2.5 | 0.0010 | -6.91 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Ryegrass | 0.0330 | -3.4 | 0.0030 | -5.81 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Ryegrass | 0.0930 | -2.4 | 0.013 | -4.34 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Ryegrass | 0.23 | -1.5 | 0.013 | -4.34 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Tim_grass | 0.0570 | -2.9 | 0.0010 | -6.91 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Tim_grass | 0.0080 | -4.8 | 0.0080 | -4.83 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Tim_grass | 0.18 | -1.7 | 0.0080 | -4.83 | | | | | | | |
| Benzo(k)fluoranthene | Unrinsed | Tim_grass | 0.0230 | -3.8 | 0.013 | -4.34 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Beet | 0.37 | -1.0 | 0.0090 | -4.71 | 0.235 | 0.235 | R | 0.8595 | -2.1579 | 0.8146 | < 0.0001 |
| Benzo(k)fluoranthene | Rinsed | Beet | 0.37 | -1.0 | 0.033 | -3.41 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Beet | 0.0680 | -2.7 | 0.034 | -3.38 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Beet | 0.67 | -0.4 | 0.057 | -2.86 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Beet | 0.0710 | -2.6 | 0.058 | -2.85 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Cabbage | 0.0010 | -6.9 | 0.000080 | -9.43 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Carrot | 0.0680 | -2.7 | 0.016 | -4.14 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Carrot | 0.0710 | -2.6 | 0.021 | -3.86 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Carrot | 0.67 | -0.4 | 0.048 | -3.04 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Carrot | 0.37 | -1.0 | 0.12 | -2.13 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | endive | 0.0010 | -6.9 | 0.00036 | -7.93 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | leek | 0.0010 | -6.9 | 0.00017 | -8.68 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Lettuce | 0.0010 | -6.9 | 0.00034 | -7.99 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Ryegrass | 0.41 | -0.9 | 0.0080 | -4.83 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | Ryegrass | 0.0750 | -2.6 | 0.025 | -3.69 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | SugarBeet | 0.0770 | -2.6 | 0.045 | -3.10 | | | | | | | |
| Benzo(k)fluoranthene | Rinsed | SugarBeet | 0.47 | -0.8 | 0.069 | -2.67 | | | | | | | |
| Coronene | Unrinsed | Clover | 0.0410 | -3.2 | 0.028 | -3.58 | 0.68 | 0.68 | U | 0.3171 | -2.3620 | 0.2161 | NC |
| Coronene | Unrinsed | Clover | 0.13 | -2.0 | 0.028 | -3.58 | | | | | | | |
| Coronene | Unrinsed | Ryegrass | 0.13 | -2.0 | 0.040 | -3.22 | | | | | | | |
| Coronene | Unrinsed | Ryegrass | 0.0410 | -3.2 | 0.058 | -2.85 | | | | | | | |
| Coronene | Unrinsed | Tim_grass | 0.0170 | -4.1 | 0.093 | -2.38 | | | | | | | |
| Coronene | Unrinsed | Tim_grass | 0.14 | -2.0 | 0.097 | -2.33 | | | | | | | |
| Coronene | Not Specified | Carrot | 0.0119 | -4.4 | 0.0070 | -4.96 | | | | | | | |
| Coronene | Not Specified | Carrot | 0.0039 | -5.5 | 0.018 | -4.02 | | | | | | | |
| Coronene | Not Specified | Carrot | 0.0397 | -3.2 | 0.023 | -3.77 | | | | | | | |

Appendix C

Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | |
|----------------------|---------------------|---------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|---------|
| | | | | | | | | | | Slope | Intercept | R2 | p value |
| | | | | | | | | | | | | | |
| Dibenz(ah)anthracene | Unrinsed | Clover | 0.0160 | -4.1 | 0.0010 | -6.91 | 0.063 | 0.12 | U | NC | NC | NC | NC |
| Dibenz(ah)anthracene | Unrinsed | Clover | 0.0110 | -4.5 | 0.0020 | -6.21 | 0.18 | | | | | | |
| Dibenz(ah)anthracene | Rinsed | Cabbage | 0.00043 | -7.8 | 0.00010 | -9.21 | 0.23 | 0.13 | R | NC | NC | NC | NC |
| Dibenz(ah)anthracene | Rinsed | endive | 0.00043 | -7.8 | 0.00060 | -9.72 | 0.14 | | | | | | |
| Dibenz(ah)anthracene | Rinsed | leek | 0.00043 | -7.8 | 0.000050 | -9.90 | 0.12 | | | | | | |
| Dibenz(ah)anthracene | Rinsed | Lettuce | 0.00043 | -7.8 | 0.000030 | -10.41 | 0.070 | | | | | | |
| Fluoranthene | Unrinsed | Clover | 0.14 | -1.9 | 0.044 | -3.12 | 0.31 | 0.28 | U | 0.2825 | -2.7221 | 0.5567 | NC |
| Fluoranthene | Unrinsed | Clover | 0.33 | -1.1 | 0.066 | -2.72 | 0.20 | | | | | | |
| Fluoranthene | Unrinsed | Ryegrass | 0.33 | -1.1 | 0.038 | -3.27 | 0.11 | | | | | | |
| Fluoranthene | Unrinsed | Ryegrass | 0.14 | -1.9 | 0.041 | -3.19 | 0.28 | | | | | | |
| Fluoranthene | Unrinsed | Tim_grass | 0.0390 | -3.2 | 0.015 | -4.20 | 0.38 | | | | | | |
| Fluoranthene | Unrinsed | Tim_grass | 0.21 | -1.6 | 0.051 | -2.98 | 0.25 | | | | | | |
| Fluoranthene | Not Specified | Carrot | 0.0279 | -3.6 | 0.024 | -3.73 | 0.86 | | | | | | |
| Fluoranthene | Not Specified | Carrot | 0.0092 | -4.7 | 0.025 | -3.69 | 2.7 | | | | | | |
| Fluoranthene | Not Specified | Carrot | 0.0932 | -2.4 | 0.025 | -3.69 | 0.27 | | | | | | |
| Fluoranthene | Rinsed | Beet | 0.14 | -2.0 | 0.0090 | -4.71 | 0.064 | 0.50 | R | 0.4008 | -2.1454 | 0.2981 | > 0.05 |
| Fluoranthene | Rinsed | Beet | 1.0 | 0.0 | 0.032 | -3.44 | 0.031 | | | | | | |
| Fluoranthene | Rinsed | Beet | 0.22 | -1.5 | 0.20 | -1.62 | 0.90 | | | | | | |
| Fluoranthene | Rinsed | Cabbage | 0.0073 | -4.9 | 0.0030 | -5.81 | 0.41 | | | | | | |
| Fluoranthene | Rinsed | Carrot | 0.22 | -1.5 | 0.11 | -2.22 | 0.50 | | | | | | |
| Fluoranthene | Rinsed | Carrot | 1.0 | 0.0 | 0.12 | -2.13 | 0.12 | | | | | | |
| Fluoranthene | Rinsed | Carrot | 0.41 | -0.9 | 0.63 | -0.46 | 1.5 | | | | | | |
| Fluoranthene | Rinsed | endive | 0.0073 | -4.9 | 0.044 | -3.12 | 6.0 | | | | | | |
| Fluoranthene | Rinsed | leek | 0.0073 | -4.9 | 0.018 | -4.02 | 2.5 | | | | | | |
| Fluoranthene | Rinsed | Lettuce | 0.0073 | -4.9 | 0.034 | -3.38 | 4.7 | | | | | | |
| Fluoranthene | Rinsed | Ryegrass | 0.13 | -2.0 | 0.024 | -3.73 | 0.18 | | | | | | |
| Indeno(123 cd)pyrene | Rinsed | Cabbage | 0.0021 | -6.2 | 0.00015 | -8.80 | 0.071 | 0.11 | R | NC | NC | NC | NC |
| Indeno(123 cd)pyrene | Rinsed | endive | 0.0021 | -6.2 | 0.00031 | -8.08 | 0.15 | | | | | | |
| Naphthalene | Unrinsed | Clover | 0.0070 | -5.0 | 0.039 | -3.24 | 5.6 | 5.4 | U | 0.0646 | -3.5336 | 0.0062 | NC |
| Naphthalene | Unrinsed | Clover | 0.0040 | -5.5 | 0.041 | -3.19 | 10 | | | | | | |
| Naphthalene | Unrinsed | Ryegrass | 0.0040 | -5.5 | 0.025 | -3.69 | 6.3 | | | | | | |
| Naphthalene | Unrinsed | Ryegrass | 0.0070 | -5.0 | 0.026 | -3.65 | 3.7 | | | | | | |
| Naphthalene | Unrinsed | Tim_grass | 0.0040 | -5.5 | 0.0040 | -5.52 | 1.0 | | | | | | |
| Naphthalene | Unrinsed | Tim_grass | 0.0054 | -5.2 | 0.028 | -3.58 | 5.2 | | | | | | |
| Naphthalene | Not Specified | Carrot | 0.0160 | -4.1 | 0.014 | -4.27 | 0.88 | | | | | | |
| Naphthalene | Not Specified | Carrot | 0.0052 | -5.3 | 0.022 | -3.82 | 4.2 | | | | | | |
| Naphthalene | Not Specified | Carrot | 0.0534 | -2.9 | 0.025 | -3.69 | 0.47 | | | | | | |
| Naphthalene | Rinsed | Beet | 0.0040 | -5.5 | 0.052 | -2.96 | 13 | 12.2 | R | -0.0987 | -3.4794 | 0.0145 | > 0.05 |
| Naphthalene | Rinsed | Beet | 0.0310 | -3.5 | 0.058 | -2.85 | 1.9 | | | | | | |
| Naphthalene | Rinsed | Beet | 0.0010 | -6.9 | 0.070 | -2.66 | 70 | | | | | | |
| Naphthalene | Rinsed | Beet | 0.0040 | -5.5 | 0.079 | -2.54 | 20 | | | | | | |
| Naphthalene | Rinsed | Cabbage | 0.0170 | -4.1 | 0.0050 | -5.30 | 0.29 | | | | | | |
| Naphthalene | Rinsed | Carrot | 0.0010 | -6.9 | 0.048 | -3.04 | 48 | | | | | | |
| Naphthalene | Rinsed | Carrot | 0.0040 | -5.5 | 0.048 | -3.04 | 12 | | | | | | |
| Naphthalene | Rinsed | endive | 0.0170 | -4.1 | 0.029 | -3.54 | 1.7 | | | | | | |
| Naphthalene | Rinsed | leek | 0.0170 | -4.1 | 0.018 | -4.02 | 1.1 | | | | | | |
| Naphthalene | Rinsed | Lettuce | 0.0170 | -4.1 | 0.042 | -3.17 | 2.5 | | | | | | |
| Naphthalene | Rinsed | Ryegrass | 0.0030 | -5.8 | 0.13 | -2.05 | 43 | | | | | | |
| Naphthalene | Rinsed | Ryegrass | 0.0340 | -3.4 | 0.31 | -1.18 | 9.1 | | | | | | |
| Naphthalene | Rinsed | SugarBeet | 0.0030 | -5.8 | 0.037 | -3.30 | 12 | | | | | | |
| Naphthalene | Rinsed | SugarBeet | 0.0080 | -4.8 | 0.11 | -2.18 | 14 | | | | | | |
| Phenanthrene | Unrinsed | Clover | 0.0760 | -2.6 | 0.087 | -2.44 | 1.1 | 1.1 | U | -0.2295 | -2.8525 | 0.3384 | NC |
| Phenanthrene | Unrinsed | Clover | 0.19 | -1.7 | 0.088 | -2.43 | 0.47 | | | | | | |
| Phenanthrene | Unrinsed | Ryegrass | 0.19 | -1.7 | 0.069 | -2.67 | 0.37 | | | | | | |
| Phenanthrene | Unrinsed | Ryegrass | 0.0760 | -2.6 | 0.085 | -2.47 | 1.1 | | | | | | |
| Phenanthrene | Unrinsed | Tim_grass | 0.11 | -2.2 | 0.072 | -2.63 | 0.68 | | | | | | |
| Phenanthrene | Unrinsed | Tim_grass | 0.0580 | -2.8 | 0.14 | -1.94 | 2.5 | | | | | | |
| Phenanthrene | Not Specified | Carrot | 0.19 | -1.7 | 0.13 | -2.05 | 0.69 | | | | | | |
| Phenanthrene | Not Specified | Carrot | 0.0558 | -2.9 | 0.13 | -2.02 | 2.4 | | | | | | |
| Phenanthrene | Not Specified | Carrot | 0.0183 | -4.0 | 0.15 | -1.93 | 7.9 | | | | | | |

Appendix C
Bioaccumulation Factors (BAF) and Regression Equations Soil to Plant Foliage for Non-Ionic Organic Chemicals

| Chemical Name | Rinsed/ Unrinsed | Plant Species | Soil Conc (mg/kg dw) | ln(C _{soil}) mg/kg dw) | Plant Conc ¹ (mg/kg dw) | ln(C _{plant}) mg/kg dw) | BAF (Plant/Soil) | Median BAF (Plant/Soil) | | Regression statistics ln(C _{plant}) versus ln (C _{soil}) | | | |
|---------------|---------------------|---------------|-------------------------|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|----------------------------|---|---|-----------|--------|---------|
| | | | | | | | | | | Slope | Intercept | R2 | p value |
| Phenanthrene | Rinsed | Beet | 0.0890 | -2.4 | 0.19 | -1.69 | 2.1 | 2.1 | R | 0.6203 | -0.1665 | 0.4642 | < 0.01 |
| Phenanthrene | Rinsed | Beet | 0.15 | -1.9 | 0.37 | -0.99 | 2.5 | | | | | | |
| Phenanthrene | Rinsed | Beet | 0.0890 | -2.4 | 0.58 | -0.55 | 6.5 | | | | | | |
| Phenanthrene | Rinsed | Beet | 0.34 | -1.1 | 0.70 | -0.36 | 2.1 | | | | | | |
| Phenanthrene | Rinsed | Beet | 0.98 | 0.0 | 1.1 | 0.07 | 1.1 | | | | | | |
| Phenanthrene | Rinsed | Cabbage | 0.0086 | -4.8 | 0.018 | -4.02 | 2.1 | | | | | | |
| Phenanthrene | Rinsed | Carrot | 0.15 | -1.9 | 0.049 | -3.02 | 0.33 | | | | | | |
| Phenanthrene | Rinsed | Carrot | 0.34 | -1.1 | 0.93 | -0.07 | 2.7 | | | | | | |
| Phenanthrene | Rinsed | Carrot | 0.0890 | -2.4 | 0.98 | -0.02 | 11 | | | | | | |
| Phenanthrene | Rinsed | Carrot | 0.98 | 0.0 | 1.5 | 0.40 | 1.5 | | | | | | |
| Phenanthrene | Rinsed | endive | 0.0086 | -4.8 | 0.043 | -3.15 | 5.0 | | | | | | |
| Phenanthrene | Rinsed | leek | 0.0086 | -4.8 | 0.033 | -3.41 | 3.8 | | | | | | |
| Phenanthrene | Rinsed | Lettuce | 0.0086 | -4.8 | 0.058 | -2.85 | 6.7 | | | | | | |
| Phenanthrene | Rinsed | Ryegrass | 0.38 | -1.0 | 0.024 | -3.73 | 0.063 | | | | | | |
| Phenanthrene | Rinsed | Ryegrass | 0.16 | -1.8 | 0.19 | -1.66 | 1.2 | | | | | | |
| Phenanthrene | Rinsed | SugarBeet | 0.0300 | -3.5 | 0.19 | -1.66 | 6.4 | | | | | | |
| Phenanthrene | Rinsed | SugarBeet | 0.17 | -1.8 | 0.31 | -1.17 | 1.8 | | | | | | |
| Pyrene | Unrinsed | Clover | 0.0930 | -2.4 | 0.011 | -4.51 | 0.12 | 0.19 | U | -0.0204 | -3.7931 | 0.0022 | NC |
| Pyrene | Unrinsed | Clover | 0.22 | -1.5 | 0.031 | -3.47 | 0.14 | | | | | | |
| Pyrene | Unrinsed | Ryegrass | 0.22 | -1.5 | 0.023 | -3.77 | 0.10 | | | | | | |
| Pyrene | Unrinsed | Ryegrass | 0.0930 | -2.4 | 0.042 | -3.17 | 0.45 | | | | | | |
| Pyrene | Unrinsed | Tim_grass | 0.0310 | -3.5 | 0.014 | -4.27 | 0.45 | | | | | | |
| Pyrene | Unrinsed | Tim_grass | 0.15 | -1.9 | 0.023 | -3.77 | 0.15 | | | | | | |
| Pyrene | Not Specified | Carrot | 0.12 | -2.1 | 0.024 | -3.73 | 0.19 | | | | | | |
| Pyrene | Not Specified | Carrot | 0.0372 | -3.3 | 0.026 | -3.65 | 0.70 | | | | | | |
| Pyrene | Not Specified | Carrot | 0.0122 | -4.4 | 0.036 | -3.32 | 3.0 | | | | | | |
| Pyrene | Rinsed | Beet | 0.11 | -2.2 | 0.078 | -2.55 | 0.71 | 0.72 | R | 0.4756 | -2.2170 | 0.2565 | > 0.05 |
| Pyrene | Rinsed | Beet | 0.10 | -2.3 | 0.18 | -1.73 | 1.8 | | | | | | |
| Pyrene | Rinsed | Cabbage | 0.0054 | -5.2 | 0.0039 | -5.55 | 0.72 | | | | | | |
| Pyrene | Rinsed | Carrot | 0.10 | -2.3 | 0.033 | -3.41 | 0.33 | | | | | | |
| Pyrene | Rinsed | Carrot | 0.61 | -0.5 | 0.035 | -3.35 | 0.057 | | | | | | |
| Pyrene | Rinsed | Carrot | 0.30 | -1.2 | 0.35 | -1.06 | 1.2 | | | | | | |
| Pyrene | Rinsed | endive | 0.0054 | -5.2 | 0.013 | -4.34 | 2.4 | | | | | | |
| Pyrene | Rinsed | leek | 0.0054 | -5.2 | 0.010 | -4.61 | 1.9 | | | | | | |
| Pyrene | Rinsed | Lettuce | 0.0054 | -5.2 | 0.020 | -3.91 | 3.7 | | | | | | |
| Pyrene | Rinsed | Ryegrass | 0.0850 | -2.5 | 0.036 | -3.32 | 0.42 | | | | | | |
| Pyrene | Rinsed | SugarBeet | 0.0790 | -2.5 | 0.0010 | -6.91 | 0.013 | | | | | | |
| Total PAHs | Unrinsed | Clover | 0.75 | -0.3 | 0.351 | -1.05 | 0.47 | 0.43 | U | -0.1062 | -0.8303 | 0.1006 | |
| Total PAHs | Unrinsed | Clover | 2.0 | 0.7 | 0.446 | -0.81 | 0.23 | | | | | | |
| Total PAHs | Unrinsed | Ryegrass | 2.0 | 0.7 | 0.341 | -1.08 | 0.17 | | | | | | |
| Total PAHs | Unrinsed | Ryegrass | 0.75 | -0.3 | 0.395 | -0.93 | 0.52 | | | | | | |
| Total PAHs | Unrinsed | Tim_grass | 0.35 | -1.1 | 0.568 | -0.57 | 1.6 | | | | | | |
| Total PAHs | Unrinsed | Tim_grass | 1.4 | 0.4 | 0.568 | -0.57 | 0.40 | | | | | | |
| Total PAHs | Rinsed | Beet | 0.97 | 0.0 | 1.675 | 0.52 | 1.7 | 1.2 | R | 0.3015 | 0.0830 | 0.3103 | < 0.05 |
| Total PAHs | Rinsed | Beet | 5.5 | 1.7 | 1.719 | 0.54 | 0.31 | | | | | | |
| Total PAHs | Rinsed | Beet | 2.4 | 0.9 | 1.382 | 0.32 | 0.57 | | | | | | |
| Total PAHs | Rinsed | Beet | 0.73 | -0.3 | 0.888 | -0.12 | 1.2 | | | | | | |
| Total PAHs | Rinsed | Beet | 2.4 | 0.9 | 0.760 | -0.27 | 0.31 | | | | | | |
| Total PAHs | Rinsed | Carrot | 0.97 | 0.0 | 1.641 | 0.50 | 1.7 | | | | | | |
| Total PAHs | Rinsed | Carrot | 5.5 | 1.7 | 2.415 | 0.88 | 0.44 | | | | | | |
| Total PAHs | Rinsed | Carrot | 0.73 | -0.3 | 1.004 | 0.00 | 1.4 | | | | | | |
| Total PAHs | Rinsed | Carrot | 2.4 | 0.9 | 2.800 | 1.03 | 1.2 | | | | | | |
| Total PAHs | Rinsed | Ryegrass | 3.1 | 1.1 | 1.090 | 0.09 | 0.35 | | | | | | |
| Total PAHs | Rinsed | Ryegrass | 0.74 | -0.3 | 0.940 | -0.06 | 1.3 | | | | | | |
| Total PAHs | Rinsed | SugarBeet | 0.50 | -0.7 | 0.608 | -0.50 | 1.2 | | | | | | |
| Total PAHs | Rinsed | SugarBeet | 3.1 | 1.1 | 1.177 | 0.16 | 0.38 | | | | | | |

Entire Non-Ionic Organic Raw Data Set is provided in Appendix B.

Shading indicates selected value.

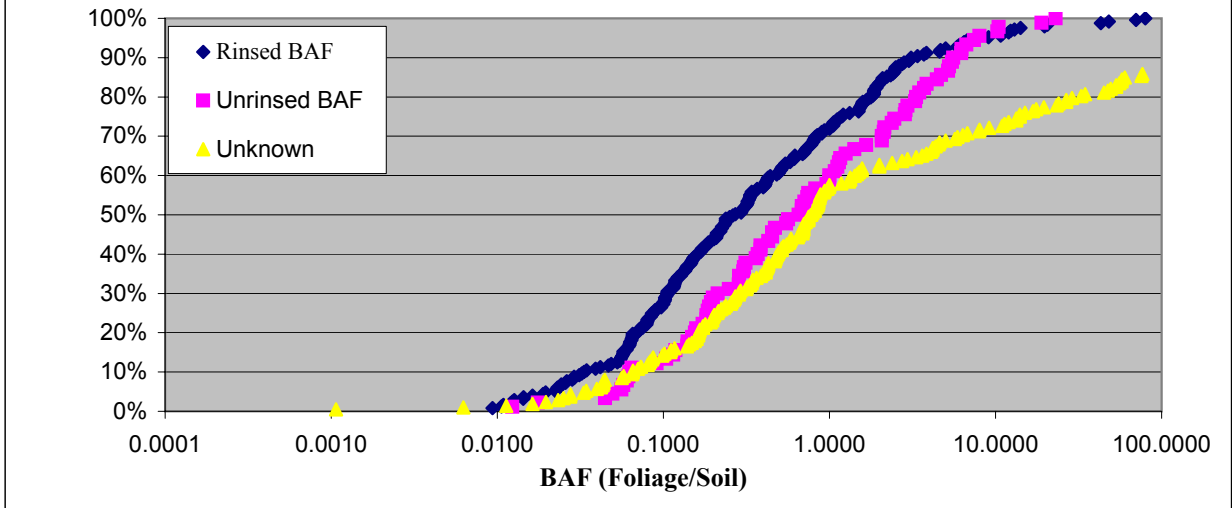
NC = Not Calculated. A regression analysis was performed only if n > 5. A p value was calculated only for rinsed data sets if R² > 0.2.

R = Rinsed; U = Unrinsed

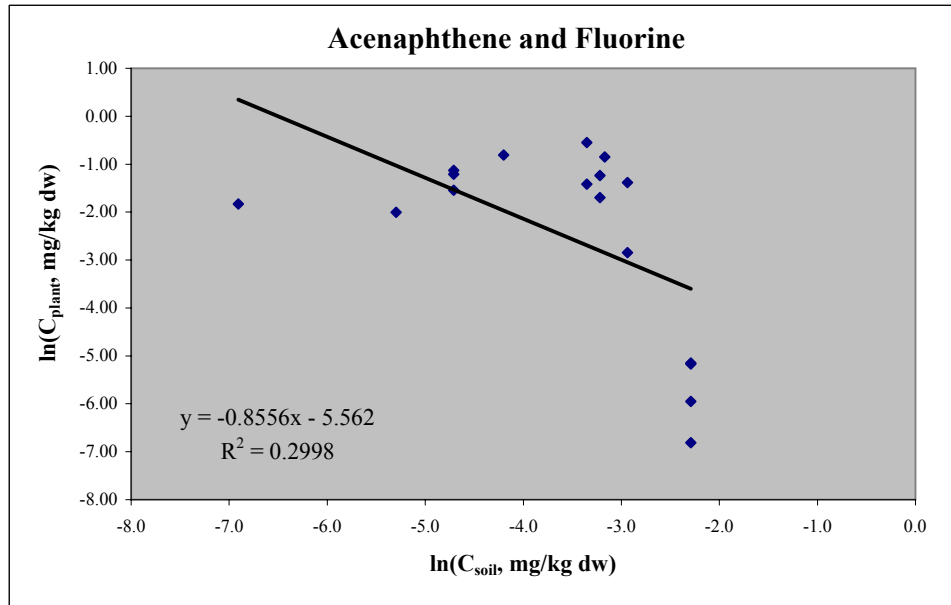
Where rinsed status was unknown, the data was grouped with the unrinsed data. This was based on the distribution of data as plotted in Figure C-1.

Values were selected, if available, from rinsed data sets.

Figure C-1
Cumulative Frequency Distribution of BAF Values



This Page Intentionally Left Blank



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -3.2 | -1.70 |
| -2.9 | -1.39 |
| -4.7 | -1.21 |
| -3.4 | -1.41 |
| -4.7 | -1.55 |
| -3.2 | -1.24 |
| -2.9 | -2.85 |
| -3.4 | -0.55 |
| -4.7 | -1.13 |
| -3.2 | -0.85 |
| -5.3 | -2.00 |
| -6.9 | -1.83 |
| -4.2 | -0.81 |
| -2.3 | -6.81 |
| -2.3 | -5.17 |
| -2.29 | -5.95 |
| -2.293 | -5.15 |

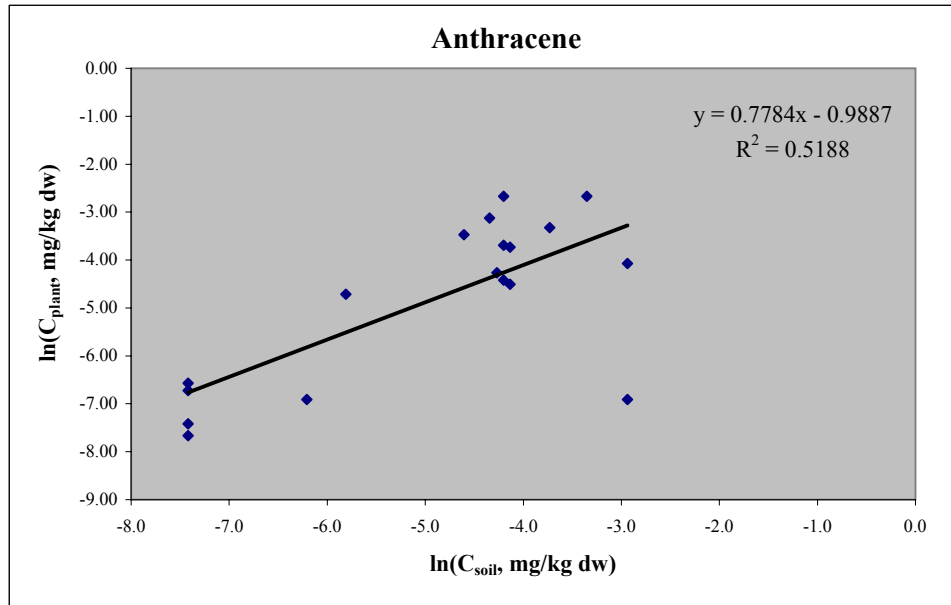
SUMMARY OUTPUT

| <i>Regression Statistics</i> | |
|------------------------------|-------------|
| Multiple R | 0.547516532 |
| R Square | 0.299774353 |
| Adjusted R Square | 0.253092643 |
| Standard Error | 1.727224424 |
| Observations | 17 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-------------|-----------|----------|-----------------------|
| Regression | 1 | 19.15778345 | 19.15778 | 6.421666 | 0.02290831 |
| Residual | 15 | 44.74956315 | 2.983304 | | |
| Total | 16 | 63.9073466 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept | -5.562017641 | 1.298732294 | -4.28265 | 0.000654 | -8.33019999 | -2.79384 | -8.3302 | -2.7938353 |
| X Variable 1 | -0.855612699 | 0.337639589 | -2.5341 | 0.022908 | -1.57527444 | -0.13595 | -1.5752744 | -0.13595095 |



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -6.2 | -6.91 |
| -4.2 | -4.42 |
| -2.9 | -4.07 |
| -4.1 | -3.73 |
| -4.2 | -2.67 |
| -7.4 | -7.42 |
| -2.9 | -6.91 |
| -4.1 | -4.51 |
| -4.2 | -3.69 |
| -4.3 | -3.12 |
| -7.4 | -6.73 |
| -7.4 | -7.66 |
| -7.4 | -6.57 |
| -3.4 | -2.67 |
| -4.27 | -4.27 |
| -4.605 | -3.47 |
| -5.809 | -4.71 |

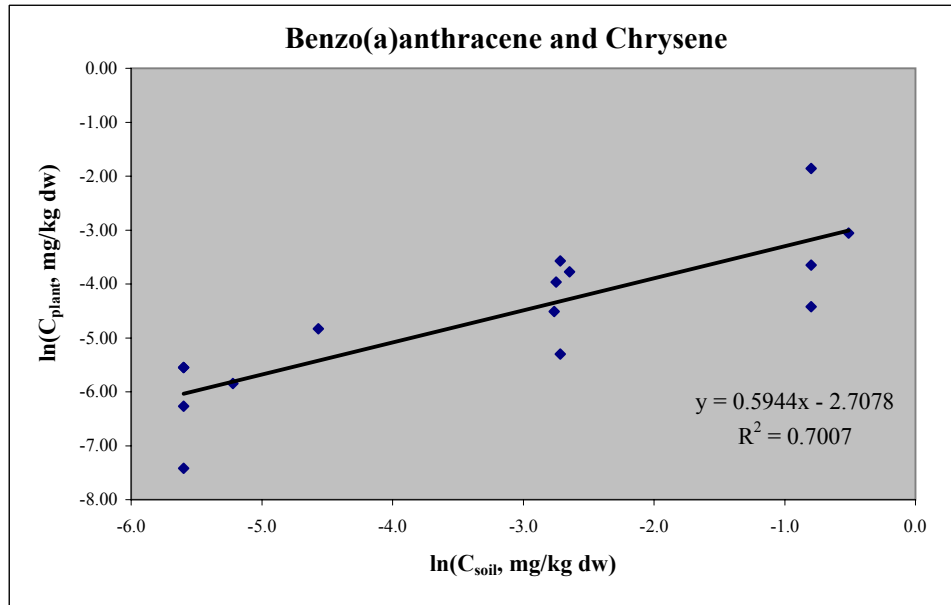
SUMMARY OUTPUT

| Regression Statistics | |
|-----------------------|-------------|
| Multiple R | 0.720289655 |
| R Square | 0.518817188 |
| Adjusted R Square | 0.488743262 |
| Standard Error | 1.22604928 |
| Observations | 18 |

ANOVA

| | df | SS | MS | F | Significance F |
|------------|----|-------------|----------|---------|----------------|
| Regression | 1 | 25.93224315 | 25.93224 | 17.2514 | 0.00074786 |
| Residual | 16 | 24.0511494 | 1.503197 | | |
| Total | 17 | 49.98339255 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|--------------|--------------|----------------|----------|----------|-------------|-----------|-------------|-------------|
| Intercept | -0.988716072 | 0.968007462 | -1.02139 | 0.322265 | -3.04080021 | 1.063368 | -3.0408002 | 1.06336806 |
| X Variable 1 | 0.778394279 | 0.187407738 | 4.15348 | 0.000748 | 0.38110762 | 1.175681 | 0.3811076 | 1.17568093 |



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -4.6 | -4.83 |
| -0.8 | -4.42 |
| -2.7 | -3.58 |
| -0.8 | -3.65 |
| -2.8 | -4.51 |
| -2.7 | -5.30 |
| -0.8 | -1.86 |
| -2.7 | -3.96 |
| -2.6 | -3.77 |
| -0.5 | -3.06 |
| -5.6 | -7.42 |
| -5.6 | -5.55 |
| -5.6 | -6.27 |
| -5.6 | -5.55 |
| -5.2 | -5.84 |

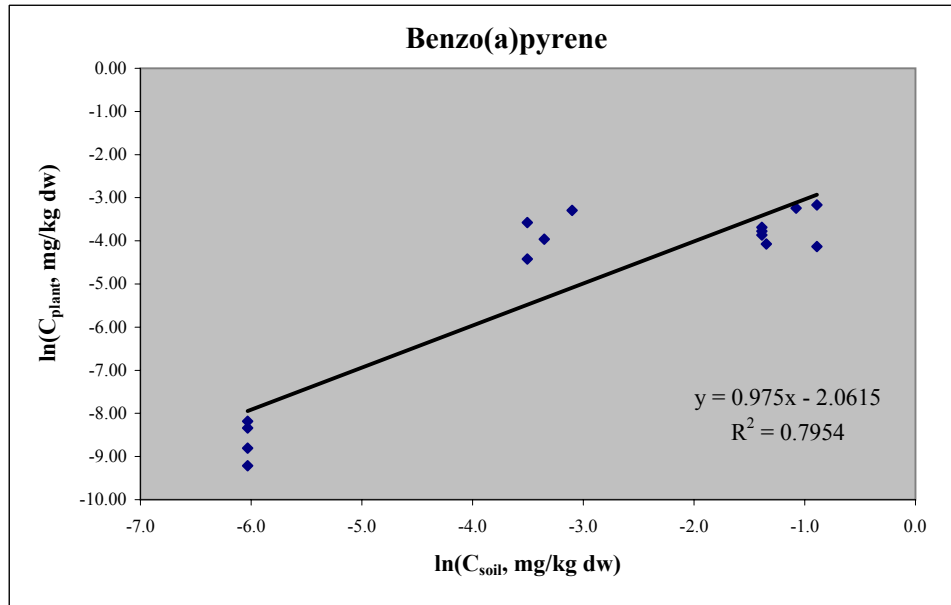
SUMMARY OUTPUT

| Regression Statistics | |
|-----------------------|-------------|
| Multiple R | 0.729492059 |
| R Square | 0.532158664 |
| Adjusted R Square | 0.510893149 |
| Standard Error | 0.806873825 |
| Observations | 24 |

ANOVA

| | df | SS | MS | F | Significance F |
|------------|----|-------------|----------|----------|----------------|
| Regression | 1 | 16.29207805 | 16.29208 | 25.02449 | 5.2373E-05 |
| Residual | 22 | 14.32299814 | 0.651045 | | |
| Total | 23 | 30.61507619 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|--------------|--------------|----------------|----------|----------|------------|-----------|-------------|-------------|
| Intercept | -3.204568852 | 0.338645676 | -9.4629 | 3.26E-09 | -3.906877 | -2.50226 | -3.906877 | -2.50226071 |
| X Variable 1 | 0.487240432 | 0.097400392 | 5.002448 | 5.24E-05 | 0.28524438 | 0.689236 | 0.2852444 | 0.68923648 |



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -3.4 | -3.96 |
| -1.4 | -3.77 |
| -1.4 | -3.69 |
| -3.5 | -3.58 |
| -0.9 | -3.17 |
| -6.0 | -9.21 |
| -3.5 | -4.42 |
| -0.9 | -4.14 |
| -1.4 | -3.86 |
| -6.0 | -8.33 |
| -6.0 | -8.80 |
| -6.0 | -8.18 |
| -1.3 | -4.07 |
| -3.1 | -3.30 |
| -1.1 | -3.24 |

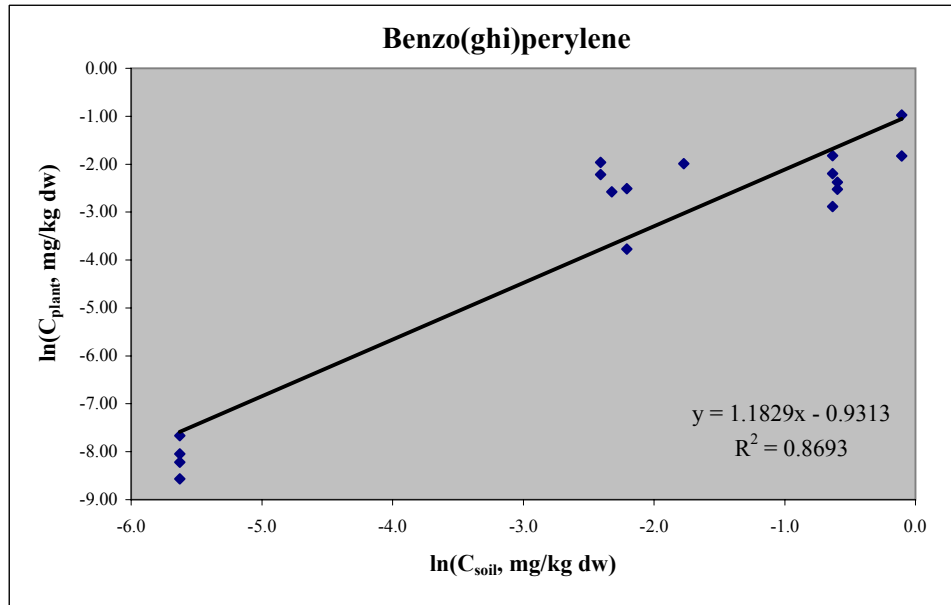
SUMMARY OUTPUT

| <i>Regression Statistics</i> | |
|------------------------------|-------------|
| Multiple R | 0.891839745 |
| R Square | 0.79537813 |
| Adjusted R Square | 0.779637986 |
| Standard Error | 1.066763516 |
| Observations | 15 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-------------|-----------|----------|-----------------------|
| Regression | 1 | 57.50442387 | 57.50442 | 50.53182 | 7.9494E-06 |
| Residual | 13 | 14.7937972 | 1.137984 | | |
| Total | 14 | 72.29822107 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept | -2.061528487 | 0.502501933 | -4.10253 | 0.001247 | -3.14711791 | -0.97594 | -3.1471179 | -0.97593906 |
| X Variable 1 | 0.97500356 | 0.137158816 | 7.108574 | 7.95E-06 | 0.67868995 | 1.271317 | 0.67869 | 1.27131717 |



| $\ln(C_{\text{soil}}, \text{mg/kg dw})$ | $\ln(C_{\text{plant}}, \text{mg/kg dw})$ |
|---|--|
| -2.2 | -3.77 |
| -0.6 | -2.88 |
| -2.4 | -1.97 |
| -0.1 | -1.83 |
| -0.6 | -1.82 |
| -5.6 | -8.05 |
| -2.2 | -2.51 |
| -2.4 | -2.22 |
| -0.6 | -2.20 |
| -0.1 | -0.97 |
| -5.6 | -8.22 |
| -5.6 | -7.66 |
| -5.6 | -8.57 |
| -0.6 | -2.38 |
| -1.77 | -1.99 |
| -2.323 | -2.58 |
| -0.598 | -2.53 |

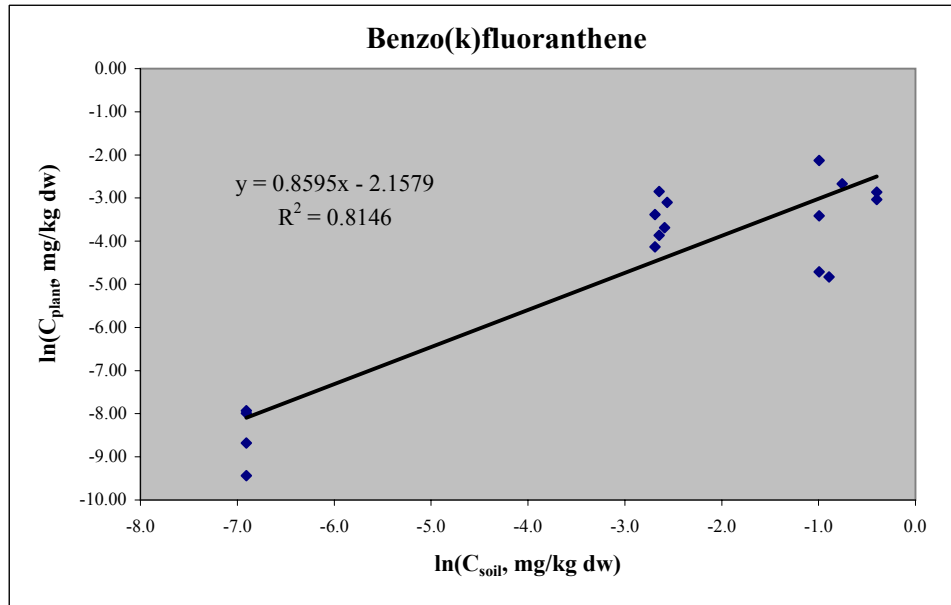
SUMMARY OUTPUT

| Regression Statistics | |
|-----------------------|-------------|
| Multiple R | 0.93234326 |
| R Square | 0.869263954 |
| Adjusted R Square | 0.860548218 |
| Standard Error | 0.979163541 |
| Observations | 17 |

ANOVA

| | df | SS | MS | F | Significance F |
|------------|----|-------------|----------|--------|----------------|
| Regression | 1 | 95.62205092 | 95.62205 | 99.735 | 5.0849E-08 |
| Residual | 15 | 14.38141861 | 0.958761 | | |
| Total | 16 | 110.0034695 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|--------------|--------------|----------------|----------|----------|-------------|-----------|-------------|-------------|
| Intercept | -0.931299783 | 0.361637942 | -2.57523 | 0.021114 | -1.70211281 | -0.16049 | -1.7021128 | -0.16048676 |
| X Variable 1 | 1.182915248 | 0.118448574 | 9.986741 | 5.08E-08 | 0.93044809 | 1.435382 | 0.9304481 | 1.43538241 |



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -1.0 | -4.71 |
| -1.0 | -3.41 |
| -2.7 | -3.38 |
| -0.4 | -2.86 |
| -2.6 | -2.85 |
| -6.9 | -9.43 |
| -2.7 | -4.14 |
| -2.6 | -3.86 |
| -0.4 | -3.04 |
| -1.0 | -2.13 |
| -6.9 | -7.93 |
| -6.9 | -8.68 |
| -6.9 | -7.99 |
| -0.9 | -4.83 |
| -2.59 | -3.69 |
| -2.564 | -3.10 |
| -0.755 | -2.67 |

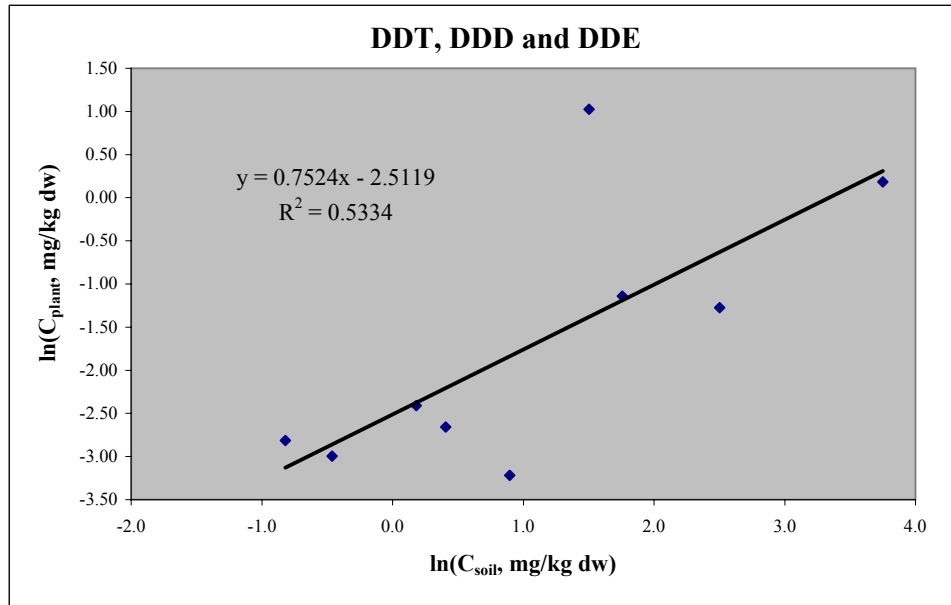
SUMMARY OUTPUT

| <i>Regression Statistics</i> | |
|------------------------------|-------------|
| Multiple R | 0.902579601 |
| R Square | 0.814649936 |
| Adjusted R Square | 0.802293265 |
| Standard Error | 1.040939846 |
| Observations | 17 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-------------|-----------|----------|-----------------------|
| Regression | 1 | 71.43660592 | 71.43661 | 65.92795 | 7.1692E-07 |
| Residual | 15 | 16.25333645 | 1.083556 | | |
| Total | 16 | 87.68994237 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept | -2.157869032 | 0.395465007 | -5.45654 | 6.62E-05 | -3.00078274 | -1.31496 | -3.0007827 | -1.31495533 |
| X Variable 1 | 0.859537607 | 0.105859566 | 8.119603 | 7.17E-07 | 0.63390328 | 1.085172 | 0.6339033 | 1.08517193 |



| $\ln(C_{soil}, \text{mg/kg dw})$ | $\ln(C_{plant}, \text{mg/kg dw})$ |
|----------------------------------|-----------------------------------|
| -0.8 | -2.81 |
| 0.2 | -2.41 |
| 1.5 | 1.03 |
| 0.9 | -3.22 |
| -0.5 | -3.00 |
| 0.4 | -2.66 |
| 2.5 | -1.27 |
| 1.8 | -1.14 |
| 3.7 | 0.18 |

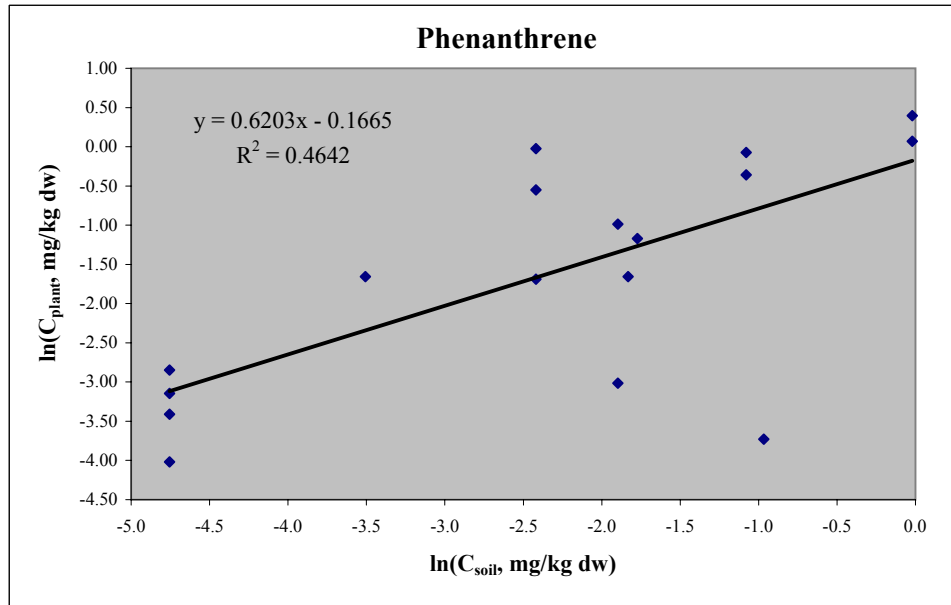
SUMMARY OUTPUT

| <i>Regression Statistics</i> | |
|------------------------------|-------------|
| Multiple R | 0.730321659 |
| R Square | 0.533369725 |
| Adjusted R Square | 0.466708258 |
| Standard Error | 1.098986582 |
| Observations | 9 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-------------|-----------|----------|-----------------------|
| Regression | 1 | 9.663584966 | 9.663585 | 8.00117 | 0.02545601 |
| Residual | 7 | 8.454400559 | 1.207772 | | |
| Total | 8 | 18.11798553 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept | -2.511937879 | 0.465410395 | -5.39725 | 0.001011 | -3.61245858 | -1.41142 | -3.6124586 | -1.41141717 |
| X Variable 1 | 0.752355338 | 0.265978334 | 2.828634 | 0.025456 | 0.12341652 | 1.381294 | 0.1234165 | 1.38129416 |



| $\ln(C_{\text{soil}}, \text{mg/kg dw})$ | $\ln(C_{\text{plant}}, \text{mg/kg dw})$ |
|---|--|
| -2.4 | -1.69 |
| -1.9 | -0.99 |
| -2.4 | -0.55 |
| -1.1 | -0.36 |
| 0.0 | 0.07 |
| -4.8 | -4.02 |
| -1.9 | -3.02 |
| -1.1 | -0.07 |
| -2.4 | -0.02 |
| 0.0 | 0.40 |
| -4.8 | -3.15 |
| -4.8 | -3.41 |
| -4.8 | -2.85 |
| -1.0 | -3.73 |
| -1.8 | -1.66 |
| -3.51 | -1.66 |
| -1.772 | -1.17 |

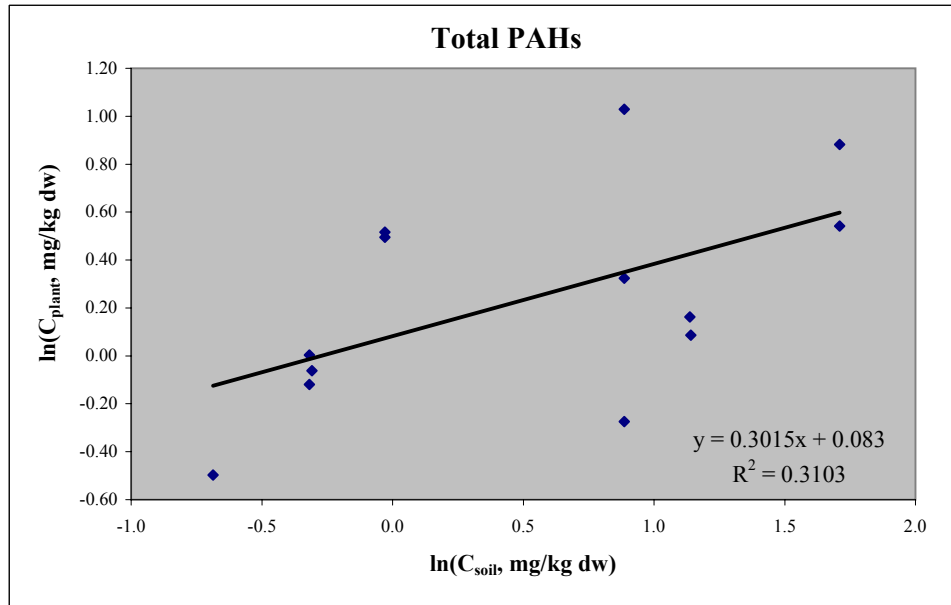
SUMMARY OUTPUT

| Regression Statistics | |
|-----------------------|-------------|
| Multiple R | 0.681293808 |
| R Square | 0.464161253 |
| Adjusted R Square | 0.428438669 |
| Standard Error | 1.108606538 |
| Observations | 17 |

ANOVA

| | df | SS | MS | F | Significance F |
|------------|----|-------------|----------|---------|----------------|
| Regression | 1 | 15.96911685 | 15.96912 | 12.9935 | 0.00260075 |
| Residual | 15 | 18.43512685 | 1.229008 | | |
| Total | 16 | 34.4042437 | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|--------------|--------------|----------------|----------|----------|------------|-----------|-------------|-------------|
| Intercept | -0.16651164 | 0.488996405 | -0.34052 | 0.738189 | -1.2087828 | 0.87576 | -1.2087828 | 0.87575952 |
| X Variable 1 | 0.620257058 | 0.172071404 | 3.604649 | 0.002601 | 0.25349554 | 0.987019 | 0.2534955 | 0.98701857 |



| $\ln(C_{\text{soil}}, \text{mg/kg dw})$ | $\ln(C_{\text{plant}}, \text{mg/kg dw})$ |
|---|--|
| 0.0 | 0.52 |
| 1.7 | 0.54 |
| 0.9 | 0.32 |
| -0.3 | -0.12 |
| 0.9 | -0.27 |
| 0.0 | 0.50 |
| 1.7 | 0.88 |
| -0.3 | 0.00 |
| 0.9 | 1.03 |
| 1.1 | 0.09 |
| -0.3 | -0.06 |
| -0.7 | -0.50 |
| 1.1 | 0.16 |

SUMMARY OUTPUT

| <i>Regression Statistics</i> | |
|------------------------------|-------------|
| Multiple R | 0.557010992 |
| R Square | 0.310261245 |
| Adjusted R Square | 0.247557722 |
| Standard Error | 0.386981558 |
| Observations | 13 |

ANOVA

| | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-------------|-----------|----------|-----------------------|
| Regression | 1 | 0.740996445 | 0.740996 | 4.948067 | 0.04799237 |
| Residual | 11 | 1.647301988 | 0.149755 | | |
| Total | 12 | 2.388298432 | | | |

| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept | 0.082971219 | 0.127862385 | 0.64891 | 0.529711 | -0.19845199 | 0.364394 | -0.198452 | 0.36439443 |
| X Variable 1 | 0.301466221 | 0.135525452 | 2.224425 | 0.047992 | 0.00317671 | 0.599756 | 0.0031767 | 0.59975573 |



Eco-SSL Attachment 4-1
Appendix D
Bioaccumulation Data for DDT, DDD and DDE

February 2005
Revised April 2007

This page intentionally left blank

Appendix D-1 Bioaccumulation Data for the Uptake of DDT, DDD and DDE from Soil into Invertebrates

| Species Information | | Exposure | | | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | BAF | | Reference | |
|--------------------------------------|--------------------|---------------|-------|----------|-----------------------|---------------------------------|--|--------------------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|--|-----------------|-------------------------------|-----------------------|--------------------------|-----|-----------|-------------------------------|
| Common Name (<i>Genus/Species</i>) | Field (F)/ Lab (L) | Chemical Form | Group | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet Weight or Dry Weight? ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight? ³ | % Moisture Soil | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | | BAF (Tissue /Soil (mg/kg dw)) |
| Beetle (<i>Agonomus sp.</i>) | F | p,p'-DDE | DDE | Resident | 0.1 | mg/kg | ww | NR | 6.25 | 0.6 | -0.4700 | NR | 0.02 | mg/kg | ww | 16-23 | 1.19 | 0.024 | -3.7377 | C | 26.3 | Davis, 1968 |
| Beetle (<i>Agonomus sp.</i>) | F | p,p'-DDE | DDE | Resident | 0.4 | mg/kg | ww | NR | 6.25 | 2.5 | 0.9163 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.3322 | C | 70.0 | Davis, 1968 |
| Beetle (<i>Agonomus sp.</i>) | F | p,p'-DDE | DDE | Resident | 0.06 | mg/kg | ww | NR | 6.25 | 0.4 | -0.9808 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.1282 | C | 3.2 | Davis, 1968 |
| Beetle (<i>Agonomus sp.</i>) | F | p,p'-DDE | DDE | Resident | 0.7 | mg/kg | ww | NR | 6.25 | 4.4 | 1.4759 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.4351 | C | 18.4 | Davis, 1968 |
| Beetle (<i>Harpalus rufipes</i>) | L | Total DDT | DDT | 84 d | 3.5 | mg/kg | NR | NA | 6.25 | 21.9 | 3.0853 | No | 2.5 | mg/kg | NR | NR | 1 | 2.5 | 0.9163 | C | 8.75 | Dempster, 1968 |
| Beetle (<i>Harpalus rufipes</i>) | L | Total DDT | DDT | 84 d | 6.1 | mg/kg | NR | NA | 6.25 | 38.1 | 3.6409 | No | 5 | mg/kg | NR | NR | 1 | 5 | 1.6094 | C | 7.63 | Dempster, 1968 |
| Beetle (<i>Harpalus rufipes</i>) | L | Total DDT | DDT | 84 d | 25.4 | mg/kg | NR | NA | 6.25 | 158.8 | 5.0673 | No | 10 | mg/kg | NR | NR | 1 | 10 | 2.3026 | C | 15.9 | Dempster, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 0.3 | mg/kg | ww | NR | 6.25 | 1.9 | 0.6286 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.1282 | C | 15.8 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 0.07 | mg/kg | ww | NR | 6.25 | 0.4 | -0.8267 | NR | 0.02 | mg/kg | ww | 16-23 | 1.19 | 0.024 | -3.7377 | C | 18.4 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 0.1 | mg/kg | ww | NR | 6.25 | 0.6 | -0.4700 | NR | 0.02 | mg/kg | ww | 16-23 | 1.19 | 0.024 | -3.7377 | C | 26.3 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.3 | 0.2231 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.3322 | C | 35.0 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 2.2 | mg/kg | ww | NR | 6.25 | 13.8 | 2.6210 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.1282 | C | 116 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDE | DDE | Resident | 0.6 | mg/kg | ww | NR | 6.25 | 3.8 | 1.3218 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.4351 | C | 15.8 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDT | DDT | Resident | 0.5 | mg/kg | ww | NR | 6.25 | 3.1 | 1.1394 | NR | 1.5 | mg/kg | ww | 16-23 | 1.19 | 1.786 | 0.5798 | C | 1.8 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | p,p'-DDT | DDT | Resident | 0.5 | mg/kg | ww | NR | 6.25 | 3.1 | 1.1394 | NR | 13.3 | mg/kg | ww | 16-23 | 1.19 | 15.833 | 2.7621 | C | 0.2 | Davis, 1968 |
| Beetle (<i>Poecilus chalcites</i>) | F | Total DDT | DDT | resident | 0.19 | mg/kg | ww | NA | 6.25 | 1.19 | 0.1719 | NR | 0.08 | mg/kg | ww | 78.05 | 4.56 | 0.364 | -1.0093 | C | 3.26 | Korschgen, 1970 |
| Beetle (<i>Poecilus chalcites</i>) | F | Total DDT | DDT | resident | 0.47 | mg/kg | ww | NA | 6.25 | 2.94 | 1.0776 | NR | 0.07 | mg/kg | ww | 78.05 | 4.56 | 0.319 | -1.1429 | C | 9.21 | Korschgen, 1970 |
| Beetle (<i>Poecilus chalcites</i>) | F | Total DDT | DDT | resident | 0.09 | mg/kg | ww | NA | 6.25 | 0.56 | -0.5754 | NR | 0.05 | mg/kg | ww | 78.05 | 4.56 | 0.228 | -1.4793 | C | 2.47 | Korschgen, 1970 |
| Beetle (unidentified) | F | p,p'-DDE | DDE | Resident | 0.05 | mg/kg | ww | NR | 6.25 | 0.3 | -1.1632 | NR | 0.02 | mg/kg | ww | 16-23 | 1.19 | 0.024 | -3.7377 | C | 13.1 | Davis, 1968 |
| Beetle (unidentified) | F | p,p'-DDE | DDE | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.3 | 0.2231 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.3322 | C | 35.0 | Davis, 1968 |
| Beetle (unidentified) | F | p,p'-DDE | DDE | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.3 | 0.2231 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.3322 | C | 35.0 | Davis, 1968 |
| Beetles | F | p,p'-DDT | DDT | NR | 0.095 | mg/kg | NR | 84 | 7.14 | 0.679 | -0.3878 | NR | 0.37 | mg/kg | NR | NA | 1 | 0.37 | -0.9943 | C | 1.83 | Davis and Harrison, 1966 |
| Beetles | F | p,p'-DDT | DDT | NR | 0.5 | mg/kg | NR | 84 | 7.14 | 3.57 | 1.2730 | NR | 7.4 | mg/kg | NR | NA | 1 | 7.4 | 2.0015 | C | 0.48 | Davis and Harrison, 1966 |
| Beetles | F | p,p'-DDE | DDE | NR | 3.6 | mg/kg | NR | 84 | 7.14 | 25.7 | 3.2470 | NR | 4.3 | mg/kg | NR | NA | 1 | 4.3 | 1.4586 | C | 5.98 | Davis and Harrison, 1966 |
| Cricket (<i>Gryllus assimilis</i>) | F | Total DDT | DDT | resident | 0.12 | mg/kg | ww | NA | 6.25 | 0.75 | -0.2877 | NR | 0.05 | mg/kg | ww | 78.05 | 4.56 | 0.228 | -1.4793 | C | 3.29 | Korschgen, 1970 |
| Cricket (<i>Gryllus assimilis</i>) | F | Total DDT | DDT | resident | 0.08 | mg/kg | ww | NA | 6.25 | 0.5 | -0.6931 | NR | 0.08 | mg/kg | ww | 78.05 | 4.56 | 0.364 | -1.0093 | C | 1.37 | Korschgen, 1970 |
| Cricket (<i>Gryllus assimilis</i>) | F | Total DDT | DDT | resident | 0.08 | mg/kg | ww | NA | 6.25 | 0.5 | -0.6931 | NR | 0.07 | mg/kg | ww | 78.05 | 4.56 | 0.319 | -1.1429 | C | 1.57 | Korschgen, 1970 |
| Cricket (<i>Gryllus assimilis</i>) | F | Total DDT | DDT | resident | 0.04 | mg/kg | ww | NA | 6.25 | 0.25 | -1.3863 | NR | 0.05 | mg/kg | ww | 78.05 | 4.56 | 0.228 | -1.4793 | C | 1.10 | Korschgen, 1970 |
| Earthworm | F | p,p'-DDT | DDT | NR | 2.1 | mg/kg | NR | 84 | 7.14 | 15 | 2.7081 | NR | 0.37 | mg/kg | NR | NA | 1 | 0.37 | -0.9943 | C | 40.5 | Davis and Harrison, 1966 |
| Earthworm | F | p,p'-DDT | DDT | NR | 0.2 | mg/kg | NR | 84 | 7.14 | 1.43 | 0.3567 | NR | 0.06 | mg/kg | NR | NA | 1 | 0.06 | -2.8134 | C | 23.8 | Davis and Harrison, 1966 |
| Earthworm | F | DDT | DDT | NR | 157 | mg/kg | dw | NR | 1 | 157 | 5.0562 | NR | 19 | mg/kg | dw | NA | 1 | 19 | 2.9444 | C | 8.26 | Dustman and Stickel, 1966 |
| Earthworm | F | Total DDT | DDT | 11 yr | 28.8 | mg/kg | NR | 84 | 7.14 | 206 | 5.3265 | NR | 13.6 | mg/kg | dw | NA | 1 | 13.6 | 2.6101 | C | 15.1 | Collett and Harrison, 1968 |
| Earthworm | F | p,p'-DDT | DDT | Resident | 2.1 | mg/kg | ww | NR | 6.25 | 13.1 | 2.5745 | NR | 0.3 | mg/kg | ww | 16-23 | 1.19 | 0.357 | -1.0296 | C | 36.8 | Davis, 1968 |
| Earthworm | F | Total DDT | DDT | 8 yr | 0.315 | mg/kg | NR | NR | 6.25 | 1.969 | 0.6774 | NR | 1.3 | mg/kg | NR | NR | 1 | 1.3 | 0.2624 | C | 1.51 | Dimond, 1970 |
| Earthworm | F | Total DDT | DDT | 6 yr | 0.13 | mg/kg | NR | NR | 6.25 | 0.813 | -0.2076 | NR | 1.2 | mg/kg | NR | NR | 1 | 1.2 | 0.1823 | C | 0.68 | Dimond, 1970 |
| Earthworm | F | Total DDT | DDT | 3 yr | 0.157 | mg/kg | NR | NR | 6.25 | 0.981 | -0.0189 | NR | 1.55 | mg/kg | NR | NR | 1 | 1.55 | 0.4383 | C | 0.63 | Dimond, 1970 |
| Earthworm | F | DDE | DDE | 6 yr | 0.77 | mg/kg | dw | NA | 1 | 0.77 | -0.2614 | NR | 0.17 | mg/kg | dw | NA | 1 | 0.17 | -1.7720 | C | 4.53 | Gish, 1970 |
| Earthworm | F | p,p'-DDE | DDE | NR | 0.9 | mg/kg | NR | 84 | 7.14 | 6.43 | 1.8608 | NR | 0.11 | mg/kg | NR | NA | 1 | 0.11 | -2.2073 | C | 58.4 | Davis and Harrison, 1966 |
| Earthworm | F | p,p'-DDT | DDT | Resident | 11.7 | mg/kg | ww | NR | 6.25 | 73.1 | 4.2922 | NR | 1.5 | mg/kg | ww | 16-23 | 1.19 | 1.79 | 0.5798 | C | 41.0 | Davis, 1968 |
| Earthworm | F | p,p'-DDT | DDT | Resident | 30.4 | mg/kg | ww | NR | 6.25 | 190 | 5.2470 | NR | 13.3 | mg/kg | ww | 16-23 | 1.19 | 15.83 | 2.7621 | C | 12.0 | Davis, 1968 |
| Earthworm | F | DDT | DDT | 6 yr | 0.36 | mg/kg | dw | NA | 1 | 0.36 | -1.0217 | NR | 0.02 | mg/kg | dw | NA | 1 | 0.02 | -3.9120 | C | 18.0 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.81 | mg/kg | dw | NA | 1 | 1.81 | 0.5933 | NR | 0.13 | mg/kg | dw | NA | 1 | 0.13 | -2.0402 | C | 13.9 | Gish, 1970 |
| Earthworm | F | p,p'-DDT | DDT | NR | 21.05 | mg/kg | NR | 84 | 7.14 | 150.4 | 5.0130 | NR | 7.4 | mg/kg | NR | NA | 1 | 7.4 | 2.0015 | C | 20.3 | Davis and Harrison, 1966 |
| Earthworm | F | p,p'-DDT | DDT | NR | 1.25 | mg/kg | NR | 84 | 7.14 | 8.93 | 2.1893 | NR | 0.7 | mg/kg | NR | NA | 1 | 0.7 | -0.3567 | C | 12.8 | Davis and Harrison, 1966 |
| Earthworm | F | p,p'-DDE | DDE | NR | 4.3 | mg/kg | NR | 84 | 7.14 | 30.71 | 3.4247 | NR | 1.20 | mg/kg | NR | NA | 1 | 1.2 | 0.1823 | C | 25.6 | Davis and Harrison, 1966 |
| Earthworm | F | DDD | DDD | 1 yr | 1.18 | mg/kg | dw | NA | 1 | 1.18 | 0.1655 | NR | 0.34 | mg/kg | dw | NA | 1 | 0.34 | -1.0788 | C | 3.47 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 21.33 | mg/kg | dw | NA | 1 | 21.33 | 3.0601 | NR | 0.14 | mg/kg | dw | NA | 1 | 0.14 | -1.9661 | C | 152 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.1 | mg/kg | dw | NA | 1 | 1.1 | 0.0953 | NR | 0.28 | mg/kg | dw | NA | 1 | 0.28 | -1.2730 | C | 3.93 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 1.47 | mg/kg | dw | NA | 1 | 1.47 | 0.3853 | NR | 0.22 | mg/kg | dw | NA | 1 | 0.22 | -1.5141 | C | 6.68 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 1.57 | mg/kg | dw | NA | 1 | 1.57 | 0.4511 | NR | 0.13 | mg/kg | dw | NA | 1 | 0.13 | -2.0402 | C | 12.1 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 4.2 | mg/kg | dw | NA | 1 | 4.2 | 1.4351 | NR | 0.31 | mg/kg | dw | NA | 1 | 0.31 | -1.1712 | C | 13.5 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 8.86 | mg/kg | dw | NA | 1 | 8.86 | 2.1815 | NR | 0.28 | mg/kg | dw | NA | 1 | 0.28 | -1.2730 | C | 31.6 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 3.14 | mg/kg | dw | NA | 1 | 3.14 | 1.1442 | NR | 2.06 | mg/kg | dw | NA | 1 | 2.06 | 0.7227 | C | 1.52 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 2.52 | mg/kg | dw | NA | 1 | 2.52 | 0.9243 | NR | 2.8 | mg/kg | dw | NA | 1 | 2.8 | 1.0296 | C | 0.90 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 1.1 | mg/kg | dw | NA | 1 | 1.1 | 0.0953 | NR | 0.015 | mg/kg | dw | NA | 1 | 0.015 | -4.1997 | C | 73.3 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 6.19 | mg/kg | dw | NA | 1 | 6.19 | 1.8229 | NR | 0.43 | mg/kg | dw | NA | 1 | 0.43 | -0.8440 | C | 14.4 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 12.33 | mg/kg | dw | NA | 1 | 12.33 | 2.5120 | NR | 2.63 | mg/kg | dw | NA | 1 | 2.63 | 0.9670 | C | 4.69 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 140.74 | mg/kg | dw | NA | 1 | 140.74 | 4.9469 | NR | 3.43 | mg/kg | dw | NA | 1 | 3.43 | 1.2326 | C | 41.0 | Gish, 1970 |

Appendix D-1 Bioaccumulation Data for the Uptake of DDT, DDD and DDE from Soil into Invertebrates

| Species Information | | Exposure | | | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | BAF | | Reference | | |
|-----------------------------|--------------------|---------------|-------|----------|-----------------------|---------------------------------|----------------------------|--------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|----------------------------|-----------------|-------------------------------|-----------------------|--------------------------|-----------|-------|-------------------------------|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Chemical Form | Group | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet Weight or Dry Weight?¹ | % Moisture Tissue² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight?³ | % Moisture Soil | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | | R/C | BAF (Tissue /Soil (mg/kg dw)) |
| Earthworm | F | DDD | DDD | NR | 0.17 | mg/kg | dw | NA | 1 | 0.17 | -1.7720 | NR | 0.011 | mg/kg | dw | NA | 1 | 0.011 | -4.5099 | C | 15.5 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 0.4 | mg/kg | dw | NA | 1 | 0.4 | -0.9163 | NR | 0.0067 | mg/kg | dw | NA | 1 | 0.0067 | -5.0056 | C | 59.7 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 0.21 | mg/kg | dw | NA | 1 | 0.21 | -1.5606 | NR | 0.014 | mg/kg | dw | NA | 1 | 0.014 | -4.2687 | C | 15.0 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.24 | mg/kg | dw | NA | 1 | 0.24 | -1.4271 | NR | 0.024 | mg/kg | dw | NA | 1 | 0.024 | -3.7297 | C | 10.0 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 0.6 | mg/kg | dw | NA | 1 | 0.6 | -0.5108 | NR | 0.008 | mg/kg | dw | NA | 1 | 0.008 | -4.8283 | C | 75.0 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 0.25 | mg/kg | dw | NA | 1 | 0.25 | -1.3863 | NR | 0.021 | mg/kg | dw | NA | 1 | 0.021 | -3.8632 | C | 11.9 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.18 | mg/kg | dw | NA | 1 | 0.18 | -1.7148 | NR | 0.032 | mg/kg | dw | NA | 1 | 0.032 | -3.4420 | C | 5.63 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 1.14 | mg/kg | dw | NA | 1 | 1.14 | 0.1310 | NR | 0.026 | mg/kg | dw | NA | 1 | 0.026 | -3.6497 | C | 43.85 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 3 yr | 2.03 | mg/kg | dw | NA | 1 | 2.03 | 0.7080 | NR | 0.21 | mg/kg | dw | NA | 1 | 0.21 | -1.5606 | C | 9.67 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 3 yr | 1.21 | mg/kg | dw | NA | 1 | 1.21 | 0.1906 | NR | 0.069 | mg/kg | dw | NA | 1 | 0.069 | -2.6736 | C | 17.5 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 0.11 | mg/kg | dw | NA | 1 | 0.11 | -2.2073 | NR | 0.012 | mg/kg | dw | NA | 1 | 0.012 | -4.4228 | C | 9.17 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 0.86 | mg/kg | dw | NA | 1 | 0.86 | -0.1508 | NR | 0.11 | mg/kg | dw | NA | 1 | 0.11 | -2.2073 | C | 7.82 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.25 | mg/kg | dw | NA | 1 | 0.25 | -1.3863 | NR | 0.037 | mg/kg | dw | NA | 1 | 0.037 | -3.2968 | C | 6.76 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 0.41 | mg/kg | dw | NA | 1 | 0.41 | -0.8916 | NR | 0.02 | mg/kg | dw | NA | 1 | 0.02 | -3.9120 | C | 20.5 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.33 | mg/kg | dw | NA | 1 | 0.33 | -1.1087 | NR | 0.007 | mg/kg | dw | NA | 1 | 0.007 | -4.9618 | C | 47.1 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 10 yr | 0.1 | mg/kg | dw | NA | 1 | 0.1 | -2.3026 | NR | 0.0099 | mg/kg | dw | NA | 1 | 0.0099 | -4.6152 | C | 10.1 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 11.85 | mg/kg | dw | NA | 1 | 11.85 | 2.4723 | NR | 0.86 | mg/kg | dw | NA | 1 | 0.86 | -0.1508 | C | 13.8 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 23.8 | mg/kg | dw | NA | 1 | 23.8 | 3.1697 | NR | 1.52 | mg/kg | dw | NA | 1 | 1.52 | 0.4187 | C | 15.7 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 75.54 | mg/kg | dw | NA | 1 | 75.54 | 4.3247 | NR | 0.19 | mg/kg | dw | NA | 1 | 0.19 | -1.6607 | C | 398 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 0.3 | mg/kg | dw | NA | 1 | 0.3 | -1.2040 | NR | 0.077 | mg/kg | dw | NA | 1 | 0.077 | -2.5639 | C | 3.90 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 0.16 | mg/kg | dw | NA | 1 | 0.16 | -1.8326 | NR | 0.07 | mg/kg | dw | NA | 1 | 0.07 | -2.6593 | C | 2.29 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 0.63 | mg/kg | dw | NA | 1 | 0.63 | -0.4620 | NR | 0.036 | mg/kg | dw | NA | 1 | 0.036 | -3.3242 | C | 17.5 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 2.5 yr | 0.063 | mg/kg | dw | NA | 1 | 0.063 | -2.7646 | NR | 0.018 | mg/kg | dw | NA | 1 | 0.018 | -4.0174 | C | 3.50 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 0.092 | mg/kg | dw | NA | 1 | 0.092 | -2.3860 | NR | 0.0069 | mg/kg | dw | NA | 1 | 0.0069 | -4.9762 | C | 13.3 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 0.41 | mg/kg | dw | NA | 1 | 0.41 | -0.8916 | NR | 0.029 | mg/kg | dw | NA | 1 | 0.029 | -3.5405 | C | 14.1 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 0.46 | mg/kg | dw | NA | 1 | 0.46 | -0.7765 | NR | 0.014 | mg/kg | dw | NA | 1 | 0.014 | -4.2687 | C | 32.9 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 0.083 | mg/kg | dw | NA | 1 | 0.083 | -2.4889 | NR | 0.009 | mg/kg | dw | NA | 1 | 0.009 | -4.7105 | C | 9.22 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 17.63 | mg/kg | dw | NA | 1 | 17.63 | 2.8696 | NR | 4.36 | mg/kg | dw | NA | 1 | 4.36 | 1.4725 | C | 4.04 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 18.76 | mg/kg | dw | NA | 1 | 18.76 | 2.9317 | NR | 5.56 | mg/kg | dw | NA | 1 | 5.56 | 1.7156 | C | 3.37 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 1.09 | mg/kg | dw | NA | 1 | 1.09 | 0.0862 | NR | 5.38 | mg/kg | dw | NA | 1 | 5.38 | 1.6827 | C | 0.20 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 9.58 | mg/kg | dw | NA | 1 | 9.58 | 2.2597 | NR | 4.28 | mg/kg | dw | NA | 1 | 4.28 | 1.4540 | C | 2.24 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 5.23 | mg/kg | dw | NA | 1 | 5.23 | 1.6544 | NR | 5.56 | mg/kg | dw | NA | 1 | 5.56 | 1.7156 | C | 0.94 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 0.73 | mg/kg | dw | NA | 1 | 0.73 | -0.3147 | NR | 1.64 | mg/kg | dw | NA | 1 | 1.64 | 0.4947 | C | 0.45 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 2.74 | mg/kg | dw | NA | 1 | 2.74 | 1.0080 | NR | 0.89 | mg/kg | dw | NA | 1 | 0.89 | -0.1165 | C | 3.08 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 1.13 | mg/kg | dw | NA | 1 | 1.13 | 0.1222 | NR | 2.5 | mg/kg | dw | NA | 1 | 2.5 | 0.9163 | C | 0.45 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.13 | mg/kg | dw | NA | 1 | 1.13 | 0.1222 | NR | 0.2 | mg/kg | dw | NA | 1 | 0.2 | -1.6094 | C | 5.65 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 0.59 | mg/kg | dw | NA | 1 | 0.59 | -0.5276 | NR | 0.52 | mg/kg | dw | NA | 1 | 0.52 | -0.6539 | C | 1.13 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.31 | mg/kg | dw | NA | 1 | 1.31 | 0.2700 | NR | 0.22 | mg/kg | dw | NA | 1 | 0.22 | -1.5141 | C | 5.95 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 2.03 | mg/kg | dw | NA | 1 | 2.03 | 0.7080 | NR | 0.55 | mg/kg | dw | NA | 1 | 0.55 | -0.5978 | C | 3.69 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 56.01 | mg/kg | dw | NA | 1 | 56.01 | 4.0255 | NR | 5.33 | mg/kg | dw | NA | 1 | 5.33 | 1.6734 | C | 10.5 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 2.12 | mg/kg | dw | NA | 1 | 2.12 | 0.7514 | NR | 12.73 | mg/kg | dw | NA | 1 | 12.73 | 2.5440 | C | 0.17 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.19 | mg/kg | dw | NA | 1 | 1.19 | 0.1740 | NR | 0.72 | mg/kg | dw | NA | 1 | 0.72 | -0.3285 | C | 1.65 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 1.66 | mg/kg | dw | NA | 1 | 1.66 | 0.5068 | NR | 0.95 | mg/kg | dw | NA | 1 | 0.95 | -0.0513 | C | 1.75 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 5.56 | mg/kg | dw | NA | 1 | 5.56 | 1.7156 | NR | 1.14 | mg/kg | dw | NA | 1 | 1.14 | 0.1310 | C | 4.88 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 0.27 | mg/kg | dw | NA | 1 | 0.27 | -1.3093 | NR | 0.035 | mg/kg | dw | NA | 1 | 0.035 | -3.3524 | C | 7.71 | Gish, 1970 |
| Earthworm | F | DDD | DDD | NR | 0.2 | mg/kg | dw | NA | 1 | 0.2 | -1.6094 | NR | 0.051 | mg/kg | dw | NA | 1 | 0.051 | -2.9759 | C | 3.92 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 1.45 | mg/kg | dw | NA | 1 | 1.45 | 0.3716 | NR | 0.026 | mg/kg | dw | NA | 1 | 0.026 | -3.6497 | C | 55.8 | Gish, 1970 |
| Earthworm | F | DDE | DDE | NR | 0.51 | mg/kg | dw | NA | 1 | 0.51 | -0.6733 | NR | 0.13 | mg/kg | dw | NA | 1 | 0.13 | -2.0402 | C | 3.92 | Gish, 1970 |
| Earthworm | F | DDT | DDT | NR | 4.7 | mg/kg | dw | NA | 1 | 4.7 | 1.5476 | NR | 0.34 | mg/kg | dw | NA | 1 | 0.34 | -1.0788 | C | 13.8 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.94 | mg/kg | dw | NA | 1 | 1.94 | 0.6627 | NR | 0.15 | mg/kg | dw | NA | 1 | 0.15 | -1.8971 | C | 12.9 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 1.63 | mg/kg | dw | NA | 1 | 1.63 | 0.4886 | NR | 0.34 | mg/kg | dw | NA | 1 | 0.34 | -1.0788 | C | 4.79 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 21.39 | mg/kg | dw | NA | 1 | 21.39 | 3.0629 | NR | 0.17 | mg/kg | dw | NA | 1 | 0.17 | -1.7720 | C | 126 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 5.99 | mg/kg | dw | NA | 1 | 5.99 | 1.7901 | NR | 0.63 | mg/kg | dw | NA | 1 | 0.63 | -0.4620 | C | 9.51 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 4.86 | mg/kg | dw | NA | 1 | 4.86 | 1.5810 | NR | 1.68 | mg/kg | dw | NA | 1 | 1.68 | 0.5188 | C | 2.89 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 20.85 | mg/kg | dw | NA | 1 | 20.85 | 3.0374 | NR | 0.63 | mg/kg | dw | NA | 1 | 0.63 | -0.4620 | C | 33.1 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.35 | mg/kg | dw | NA | 1 | 1.35 | 0.3001 | NR | 0.12 | mg/kg | dw | NA | 1 | 0.12 | -2.1203 | C | 11.3 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.75 | mg/kg | dw | NA | 1 | 0.75 | -0.2877 | NR | 0.31 | mg/kg | dw | NA | 1 | 0.31 | -1.1712 | C | 2.42 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 7.37 | mg/kg | dw | NA | 1 | 7.37 | 1.9974 | NR | 0.075 | mg/kg | dw | NA | 1 | 0.075 | -2.5903 | C | 98.3 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.43 | mg/kg | dw | NA | 1 | 1.43 | 0.3577 | NR | 0.24 | mg/kg | dw | NA | 1 | 0.24 | -1.4271 | C | 5.96 | Gish, 1970 |

Appendix D-1 Bioaccumulation Data for the Uptake of DDT, DDD and DDE from Soil into Invertebrates

| Species Information | | Exposure | | | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | | BAF | | Reference |
|---|--------------------|---------------|-------|----------|-----------------------|---------------------------------|--|--------------------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|--|-----------------|-------------------------------|-----------------------|--------------------------|-----|-------------------------------|-----------------------------|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Chemical Form | Group | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet Weight or Dry Weight? ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight? ³ | % Moisture Soil | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | BAF (Tissue /Soil) (mg/kg dw) | |
| Earthworm | F | DDD | DDD | 1 yr | 0.53 | mg/kg | dw | NA | 1 | 0.53 | -0.6349 | NR | 0.34 | mg/kg | dw | NA | 1 | 0.34 | -1.0788 | C | 1.56 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 4.02 | mg/kg | dw | NA | 1 | 4.02 | 1.3913 | NR | 0.097 | mg/kg | dw | NA | 1 | 0.097 | -2.3330 | C | 41.4 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.59 | mg/kg | dw | NA | 1 | 1.59 | 0.4637 | NR | 0.28 | mg/kg | dw | NA | 1 | 0.28 | -1.2730 | C | 5.68 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 1.19 | mg/kg | dw | NA | 1 | 1.19 | 0.1740 | NR | 1.52 | mg/kg | dw | NA | 1 | 1.52 | 0.4187 | C | 0.78 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 9.36 | mg/kg | dw | NA | 1 | 9.36 | 2.2364 | NR | 0.64 | mg/kg | dw | NA | 1 | 0.64 | -0.4463 | C | 14.6 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 3.64 | mg/kg | dw | NA | 1 | 3.64 | 1.2920 | NR | 0.11 | mg/kg | dw | NA | 1 | 0.11 | -2.2073 | C | 33.1 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 10.71 | mg/kg | dw | NA | 1 | 10.71 | 2.3712 | NR | 0.28 | mg/kg | dw | NA | 1 | 0.28 | -1.2730 | C | 38.3 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 5.25 | mg/kg | dw | NA | 1 | 5.25 | 1.6582 | NR | 0.066 | mg/kg | dw | NA | 1 | 0.066 | -2.7181 | C | 79.5 | Gish, 1970 |
| Earthworm | F | DDE | DDE | 1 yr | 1.53 | mg/kg | dw | NA | 1 | 1.53 | 0.4253 | NR | 0.23 | mg/kg | dw | NA | 1 | 0.23 | -1.4697 | C | 6.65 | Gish, 1970 |
| Earthworm | F | DDD | DDD | 1 yr | 0.87 | mg/kg | dw | NA | 1 | 0.87 | -0.1393 | NR | 0.45 | mg/kg | dw | NA | 1 | 0.45 | -0.7985 | C | 1.93 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 5.07 | mg/kg | dw | NA | 1 | 5.07 | 1.6233 | NR | 0.073 | mg/kg | dw | NA | 1 | 0.073 | -2.6173 | C | 69.5 | Gish, 1970 |
| Earthworm | F | DDT | DDT | 1 yr | 2.93 | mg/kg | dw | NA | 1 | 2.93 | 1.0750 | NR | 0.24 | mg/kg | dw | NA | 1 | 0.24 | -1.4271 | C | 12.2 | Gish, 1970 |
| Earthworm | F | Total DDT | DDT | | 2.8 | mg/kg | dw | NA | 1 | 2.8 | 1.0296 | N | 0.46 | mg/kg | dw | NR | 1 | 0.46 | -0.7765 | | 6.1 | Beyer and Gish, 1980 |
| Earthworm | F | Total DDT | DDT | | 2.2 | mg/kg | dw | NA | 1 | 2.2 | 0.7885 | N | 0.49 | mg/kg | dw | NR | 1 | 0.49 | -0.7133 | | 4.5 | Beyer and Gish, 1980 |
| Earthworm | F | Total DDT | DDT | | 5.2 | mg/kg | dw | NA | 1 | 5.2 | 1.6487 | N | 1.4 | mg/kg | dw | NA | 1 | 1.4 | 0.3365 | | 3.7 | Beyer and Gish, 1980 |
| Earthworm | F | Total DDT | DDT | | 7.4 | mg/kg | dw | NA | 1 | 7.4 | 2.0015 | N | 1.5 | mg/kg | dw | NA | 1 | 1.5 | 0.4055 | | 4.9 | Beyer and Gish, 1980 |
| Earthworm | F | Total DDT | DDT | | 30 | mg/kg | dw | NA | 1 | 30 | 3.4012 | N | 4.7 | mg/kg | dw | NA | 1 | 4.7 | 1.5476 | | 6.4 | Beyer and Gish, 1980 |
| Earthworm | F | Total DDT | DDT | | 32 | mg/kg | dw | NA | 1 | 32 | 3.4657 | N | 6.3 | mg/kg | dw | NA | 1 | 6.3 | 1.8405 | | 5.1 | Beyer and Gish, 1980 |
| Earthworm | F | p,p'-DDE | DDE | Resident | 0.9 | mg/kg | ww | NR | 6.25 | 5.6 | 1.7272 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.1282 | C | 47.3 | Davis, 1968 |
| Earthworm | F | p,p'-DDE | DDE | Resident | 2.1 | mg/kg | ww | NR | 6.25 | 13.1 | 2.5745 | NR | 0.3 | mg/kg | ww | 16-23 | 1.19 | 0.357 | -1.0296 | C | 36.8 | Davis, 1968 |
| Earthworm | F | o,p'-DDT | DDT | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.3 | 0.2231 | NR | 0.04 | mg/kg | ww | 16-23 | 1.19 | 0.048 | -3.0445 | C | 26.3 | Davis, 1968 |
| Earthworm | F | o,p'-DDT | DDT | Resident | 0.9 | mg/kg | ww | NR | 6.25 | 5.6 | 1.7272 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.4351 | C | 23.6 | Davis, 1968 |
| Earthworm | F | o,p'-DDT | DDT | Resident | 1.6 | mg/kg | ww | NR | 6.25 | 10.0 | 2.3026 | NR | 13.3 | mg/kg | ww | 16-23 | 1.19 | 15.833 | 2.7621 | C | 0.63 | Davis, 1968 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | DDT | DDT | Resident | 28 | mg/kg | ww | NR | 6.25 | 175 | 5.1648 | NR | 6.3 | mg/kg | dw | NR | 1 | 6.3 | 1.8405 | C | 27.8 | Hunt and Sacho, 1969 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | DDE | DDE | Resident | 6.3 | mg/kg | ww | NR | 6.25 | 39.38 | 3.6731 | NR | 2.0 | mg/kg | dw | NR | 1 | 2 | 0.6931 | C | 19.7 | Hunt and Sacho, 1969 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | DDT | DDT | Resident | 18 | mg/kg | ww | NR | 6.25 | 112.5 | 4.7230 | NR | 8.6 | mg/kg | dw | NR | 1 | 8.6 | 2.1518 | C | 13.1 | Hunt and Sacho, 1969 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | DDE | DDE | Resident | 4.7 | mg/kg | ww | NR | 6.25 | 29.38 | 3.3801 | NR | 2.5 | mg/kg | dw | NR | 1 | 2.5 | 0.9163 | C | 11.8 | Hunt and Sacho, 1969 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | p,p'-DDT | DDT | NR | 1.5 | mg/kg | NR | NA | 6.25 | 9.38 | 2.2380 | NR | 0.64 | mg/kg | dw | NA | 1 | 0.640 | -0.4463 | R/C | 14.6 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | p,p'-DDT | DDT | NR | 2.9 | mg/kg | NR | NA | 6.25 | 18.13 | 2.8973 | NR | 0.64 | mg/kg | dw | NA | 1 | 0.640 | -0.4463 | R/C | 28.3 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | o,p'-DDT | DDT | NR | 0.35 | mg/kg | NR | NA | 6.25 | 2.19 | 0.7828 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 28.8 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | o,p'-DDT | DDT | NR | 0.72 | mg/kg | NR | NA | 6.25 | 4.50 | 1.5041 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 3.47 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | p,p'-DDT | DDT | NR | 0.77 | mg/kg | NR | NA | 6.25 | 4.81 | 1.5712 | NR | 0.64 | mg/kg | dw | NA | 1 | 0.640 | -0.4463 | R/C | 7.52 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | o,p'-DDT | DDT | NR | 0.19 | mg/kg | NR | NA | 6.25 | 1.19 | 0.1719 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 7.64 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora rosea</i>) | F | p,p'-DDT | DDT | NR | 1.6 | mg/kg | NR | NR | 6.25 | 10 | 2.3026 | NR | 0.64 | mg/kg | ww | NA | 1 | 0.64 | -0.4463 | R/C | 1.86 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Allolobophora rosea</i>) | F | o,p'-DDT | DDT | NR | 0.3 | mg/kg | NR | NR | 6.25 | 1.88 | 0.6286 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 15.9 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>H. caliginosus trapezoides</i>) | F | DDE | DDE | NR | 14 | ug/g | ww | NR | 6.25 | 87.5 | 4.4716 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 16.2 | Barker, 1958 |
| Earthworm (<i>H. caliginosus trapezoides</i>) | F | DDT | DDT | NR | 39 | ug/g | ww | NR | 6.25 | 243.8 | 5.4961 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 25.7 | Barker, 1958 |
| Earthworm (<i>Helodrilus zeteki</i>) | F | DDE | DDE | NR | 33 | ug/g | ww | NR | 6.25 | 206.3 | 5.3291 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 38.2 | Barker, 1958 |
| Earthworm (<i>Helodrilus zeteki</i>) | F | DDT | DDT | NR | 164 | ug/g | ww | NR | 6.25 | 1025.0 | 6.9324 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 108 | Barker, 1958 |
| Earthworm (<i>L. terrestris</i> and <i>A. caliginosa</i>) | F | DDT | DDT | NR | 21 | mg/kg | NR | NR | 6.25 | 131.25 | 4.8771 | NR | 56 | mg/kg | NR | NR | 1 | 56 | 4.0254 | | 2.34 | Doane, 1962 |
| Earthworm (Lumbricidae) | F | Total DDT | DDT | Resident | 0.05 | mg/kg | ww | NA | 6.25 | 0.3125 | -1.1632 | NR | 0.05 | mg/kg | ww | 78.05 | 4.56 | 0.228 | -1.4793 | C | 1.37 | Korschgen, 1970 |
| Earthworm (Lumbricidae) | F | Total DDT | DDT | Resident | 0.14 | mg/kg | ww | NA | 6.25 | 0.875 | -0.1335 | NR | 0.08 | mg/kg | ww | 78.05 | 4.56 | 0.364 | -1.0093 | C | 2.40 | Korschgen, 1970 |
| Earthworm (Lumbricidae) | F | Total DDT | DDT | Resident | 0.13 | mg/kg | ww | NA | 6.25 | 0.8125 | -0.2076 | NR | 0.05 | mg/kg | ww | 78.05 | 4.56 | 0.228 | -1.4793 | C | 3.57 | Korschgen, 1970 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | DDE | DDE | NR | 59 | ug/g | ww | NR | 6.25 | 368.8 | 5.9101 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 68.3 | Barker, 1958 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | DDT | DDT | NR | 145 | ug/g | ww | NR | 6.25 | 906.3 | 6.8093 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 95.4 | Barker, 1958 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | p,p'-DDT | DDT | Resident | 260 | ug/kg fat | NR | NA | 0.000125 | 0.0325 | -3.4265 | Y | 6.8 | ug/kg | dw | NA | 0.001 | 0.0068 | -4.9908 | | 4.78 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | p,p'-DDT | DDT | Resident | 80.0 | ug/kg fat | NR | NA | 0.000125 | 0.0100 | -4.6052 | Y | 1.4 | ug/kg | dw | NA | 0.001 | 0.0014 | -6.5713 | | 7.14 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | o,p'-DDT | DDT | Resident | 410.0 | ug/kg fat | NR | NA | 0.000125 | 0.0513 | -2.9710 | Y | 4.3 | ug/kg | dw | NA | 0.001 | 0.0043 | -5.4491 | | 11.9 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | p,p'-DDT | DDT | Resident | 520.0 | ug/kg fat | NR | NA | 0.000125 | 0.0650 | -2.7334 | Y | 3.2 | ug/kg | dw | NA | 0.001 | 0.0032 | -5.7446 | | 20.3 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | p,p'-DDT | DDT | Resident | 180.0 | ug/kg fat | NR | NA | 0.000125 | 0.0225 | -3.7942 | Y | 12 | ug/kg | dw | NA | 0.001 | 0.012 | -4.4228 | | 1.88 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | Total DDT | DDT | Resident | 750.0 | ug/kg fat | NR | NA | 0.000125 | 0.0938 | -2.3671 | Y | 15 | ug/kg | dw | NA | 0.001 | 0.015 | -4.1997 | | 6.25 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | Total DDT | DDT | Resident | 250.0 | ug/kg fat | NR | NA | 0.000125 | 0.0313 | -3.4657 | Y | 92 | ug/kg | dw | NA | 0.001 | 0.092 | -2.3860 | | 0.34 | Hendriks et al. 1995 |
| Earthworm (<i>Lumbricus sp</i>) | F | DDT | DDT | Resident | 16.2 | mg/kg | ww | NR | 6.25 | 101.3 | 4.6176 | NR | 6.3 | mg/kg | dw | NR | 1 | 6.3 | 1.8405 | C | 16.1 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus sp</i>) | F | DDE | DDE | Resident | 3.9 | mg/kg | ww | NR | 6.25 | 24.38 | 3.1936 | NR | 2.0 | mg/kg | dw | NR | 1 | 2 | 0.6931 | C | 12.2 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus sp.</i>) | F | DDT | DDT | Resident | 10.2 | mg/kg | ww | NR | 6.25 | 63.75 | 4.1550 | NR | 8.6 | mg/kg | dw | NR | 1 | 8.6 | 2.1518 | C | 7.41 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus sp.</i>) | F | DDE | DDE | Resident | 3.3 | mg/kg | ww | NR | 6.25 | 20.63 | 3.0265 | NR | 2.5 | mg/kg | dw | NR | 1 | 2.5 | 0.9163 | C | 8.25 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDE | DDE | NR | 24 | ug/g | ww | NR | 6.25 | 150 | 5.0106 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 27.8 | Barker, 1958 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDT | DDT | NR | 33 | ug/g | ww | NR | 6.25 | 206.3 | 5.3291 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 21.7 | Barker, 1958 |
| Earthworm (<i>Helodrilus caliginosus</i>) | F | DDT | DDT | 2 yr | 64.8 | ug/g | NR | NA | 6.25 | 405.0 | 6.0039 | NR | 30.1 | ug/g | NR | NA | 1 | 30.1 | 3.4045 | C | 13.5 | Boykins, 1966 |

Appendix D-1 Bioaccumulation Data for the Uptake of DDT, DDD and DDE from Soil into Invertebrates

| Species Information | | Exposure | | | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | BAF | | Reference | |
|---|--------------------|---------------|-------|----------|-----------------------|---------------------------------|----------------------------|--------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|----------------------------|-----------------|-------------------------------|-----------------------|--------------------------|-----|-----------|-------------------------------|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Chemical Form | Group | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet Weight or Dry Weight?¹ | % Moisture Tissue² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight?³ | % Moisture Soil | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | | BAF (Tissue /Soil (mg/kg dw)) |
| Earthworm (<i>Lumbricus terrestris</i>) | F | p,p'-DDT | DDT | NR | 0.54 | mg/kg | NR | NR | 6.25 | 3.38 | 1.2164 | NR | 0.64 | mg/kg | dw | NA | 1 | 0.635 | -0.4537 | R/C | 5.31 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | o,p'-DDT | DDT | NR | 0.068 | mg/kg | NR | NA | 6.25 | 0.43 | -0.8557 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 5.36 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDT | DDT | Resident | 9.5 | mg/kg | ww | NR | 6.25 | 59.38 | 4.0839 | NR | 13.8 | mg/kg | dw | NR | 1 | 13.8 | 2.6247 | C | 4.30 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDE | DDE | Resident | 10 | mg/kg | ww | NR | 6.25 | 62.5 | 4.1352 | NR | 4.2 | mg/kg | dw | NR | 1 | 4.2 | 1.4351 | C | 14.9 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDT | DDT | Resident | 11.3 | mg/kg | ww | NR | 6.25 | 70.63 | 4.2574 | NR | 6.3 | mg/kg | dw | NR | 1 | 6.3 | 1.8405 | C | 11.2 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDE | DDE | Resident | 4.8 | mg/kg | ww | NR | 6.25 | 30 | 3.4012 | NR | 2.0 | mg/kg | dw | NR | 1 | 2 | 0.6931 | C | 15.0 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | L | DDT | DDT | 6 mo | 4 | ug/g | NR | NA | 6.25 | 25 | 3.2189 | Y | 0.9 | ug/g | NR | NR | 1 | 0.9 | -0.1054 | C | 27.8 | Edwards and Jeffis, 1974 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDT | DDT | Resident | 4.1 | mg/kg | ww | NR | 6.25 | 25.63 | 3.2436 | NR | 8.6 | mg/kg | dw | NR | 1 | 8.6 | 2.1518 | C | 2.98 | Hunt and Sacho, 1969 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDE | DDE | Resident | 2.7 | mg/kg | ww | NR | 6.25 | 16.88 | 2.8258 | NR | 2.5 | mg/kg | dw | NR | 1 | 2.5 | 0.9163 | C | 6.75 | Hunt and Sacho, 1969 |
| Earthworm (mixed) | F | DDE | DDE | NR | 73 | ug/g | ww | NR | 6.25 | 456.3 | 6.1230 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 84.5 | Barker, 1958 |
| Earthworm (mixed) | F | DDT | DDT | NR | 79 | ug/g | ww | NR | 6.25 | 493.8 | 6.2020 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 52.0 | Barker, 1958 |
| Earthworm (<i>Octolailum cyaneum</i>) | F | p,p'-DDT | DDT | NR | 0.67 | mg/kg | NR | NA | 6.25 | 4.19 | 1.4321 | NR | 0.64 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 784 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Octolailum cyaneum</i>) | F | o,p'-DDT | DDT | NR | 0.19 | mg/kg | NR | NA | 6.25 | 1.19 | 0.1719 | NR | 0.14 | mg/kg | ww | NA | 1 | 0.63 | -0.4620 | R/C | 6.65 | Wheatley and Hardeman, 1968 |
| Earthworm (<i>Octolailum lacteum</i>) | F | DDE | DDE | NR | 22 | ug/g | ww | NR | 6.25 | 137.5 | 4.9236 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 25.5 | Barker, 1958 |
| Earthworm (<i>Octolailum lacteum</i>) | F | DDT | DDT | NR | 82 | ug/g | ww | NR | 6.25 | 512.5 | 6.2393 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 53.9 | Barker, 1958 |
| Earthworm (<i>Pheretima posthuma</i>) | L | Total DDT | DDT | 10 w | 12 | mg/kg | NR | NR | 7.14 | 85.71 | 4.4510 | Yes | 1 | mg/kg | NR | NR | 1 | 1 | 0.0000 | C | 85.7 | Yadav et al. 1976 |
| Earthworm (unidentified) | F | DDE | DDE | NR | 3 | ug/g | ww | NR | 6.25 | 18.8 | 2.9312 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 3.47 | Barker, 1958 |
| Earthworm (unidentified) | F | DDT | DDT | 2 w | 87.0 | ug/g | NR | NR | 6.25 | 543.8 | 6.2985 | NR | 298.1 | ug/g | NR | NR | 1 | 298.1 | 5.6974 | C | 1.82 | Boykins, 1966 |
| Earthworm (unidentified) | F | DDT | DDT | 1 yr | 67.7 | ug/g | NR | NA | 6.25 | 423.1 | 6.0477 | NR | 90.1 | ug/g | NR | NA | 1 | 90.1 | 4.5009 | C | 4.70 | Boykins, 1966 |
| Earthworm (unidentified) | F | DDT | DDT | 1.5 yr | 63.6 | ug/g | NR | NA | 6.25 | 397.5 | 5.9852 | NR | 50.1 | ug/g | NR | NA | 1 | 50.1 | 3.9140 | C | 7.93 | Boykins, 1966 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | DDT | DDT | 1.5 yr | 62.9 | ug/g | NR | NA | 6.25 | 393.1 | 5.9741 | NR | 30.1 | ug/g | NR | NA | 1 | 30.1 | 3.4045 | C | 13.1 | Boykins, 1966 |
| Earthworm (unidentified) | F | DDT | DDT | NR | 65 | ug/g | ww | NR | 6.25 | 406.3 | 6.0070 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 42.8 | Barker, 1958 |
| Earthworm (unidentified) | F | DDE | DDE | NR | 23 | ug/g | ww | NR | 6.25 | 143.8 | 4.9681 | NR | 5.4 | ug/g | dw | NR | 1 | 5.4 | 1.6864 | C | 26.6 | Barker, 1958 |
| Earthworm (unidentified) | F | DDT | DDT | NR | 109 | ug/g | ww | NR | 6.25 | 681.3 | 6.5239 | NR | 9.5 | ug/g | dw | NR | 1 | 9.5 | 2.2513 | C | 71.7 | Barker, 1958 |
| Earthworm (unidentified) | F | DDE | DDE | NR | 33 | ug/g | ww | NR | 6.25 | 206.3 | 5.3291 | NR | 0.3 | ug/g | dw | NR | 1 | 0.3 | -1.2040 | C | 688 | Barker, 1958 |
| Earthworm (unidentified) | F | DDT | DDT | NR | 86 | ug/g | ww | NR | 6.25 | 537.5 | 6.2869 | NR | 16.9 | ug/g | dw | NR | 1 | 16.9 | 2.8273 | C | 31.8 | Barker, 1958 |
| Slugs | F | p,p'-DDT | DDT | NR | 14.55 | mg/kg | NR | 84 | 7.14 | 103.9 | 4.6437 | NR | 7.40 | mg/kg | NR | NA | 1 | 7.4 | 2.0015 | C | 14.0 | Davis and Harrison, 1966 |
| Slugs | F | o,p'-DDT | DDT | NR | 1.5 | mg/kg | NR | 84 | 7.14 | 10.7 | 2.3716 | NR | 0.70 | mg/kg | NR | NA | 1 | 0.7 | -0.3567 | C | 15.3 | Davis and Harrison, 1966 |
| Slugs | F | p,p'-DDE | DDE | NR | 1.9 | mg/kg | NR | 84 | 7.14 | 13.6 | 2.6080 | NR | 1.20 | mg/kg | NR | NA | 1 | 1.2 | 0.1823 | C | 11.3 | Davis and Harrison, 1966 |
| Slugs | F | DDE | DDE | 1 yr | 14.96 | mg/kg | dw | NA | 1 | 14.96 | 2.7054 | NR | 4.36 | mg/kg | dw | NA | 1 | 4.36 | 1.4725 | C | 3.43 | Gish, 1970 |
| Slugs | F | DDD | DDD | 1 yr | 12.18 | mg/kg | dw | NA | 1 | 12.18 | 2.4998 | NR | 5.56 | mg/kg | dw | NA | 1 | 5.56 | 1.7156 | C | 2.19 | Gish, 1970 |
| Slugs | F | DDT | DDT | 1 yr | 7.33 | mg/kg | dw | NA | 1 | 7.33 | 1.9920 | NR | 5.38 | mg/kg | dw | NA | 1 | 5.38 | 1.6827 | C | 1.36 | Gish, 1970 |
| Slugs | F | DDE | DDE | 1 yr | 15.93 | mg/kg | dw | NA | 1 | 15.93 | 2.7682 | NR | 4.36 | mg/kg | dw | NA | 1 | 4.36 | 1.4725 | C | 3.65 | Gish, 1970 |
| Slugs | F | DDD | DDD | 1 yr | 15.93 | mg/kg | dw | NA | 1 | 15.93 | 2.7682 | NR | 5.56 | mg/kg | dw | NA | 1 | 5.56 | 1.7156 | C | 2.87 | Gish, 1970 |
| Slugs | F | DDT | DDT | 1 yr | 13.26 | mg/kg | dw | NA | 1 | 13.26 | 2.5848 | NR | 5.38 | mg/kg | dw | NA | 1 | 5.38 | 1.6827 | C | 2.46 | Gish, 1970 |
| Slugs | F | DDE | DDE | 1 yr | 4.24 | mg/kg | dw | NA | 1 | 4.24 | 1.4446 | NR | 0.89 | mg/kg | dw | NA | 1 | 0.89 | -0.1165 | C | 4.76 | Gish, 1970 |
| Slugs | F | DDT | DDT | 1 yr | 11.93 | mg/kg | dw | NA | 1 | 11.93 | 2.4791 | NR | 2.5 | mg/kg | dw | NA | 1 | 2.5 | 0.9163 | C | 4.77 | Gish, 1970 |
| Slugs | F | DDE | DDE | 1 yr | 10 | mg/kg | dw | NA | 1 | 10 | 2.3026 | NR | 0.63 | mg/kg | dw | NA | 1 | 0.63 | -0.4620 | C | 15.9 | Gish, 1970 |
| Slugs | F | DDD | DDD | 1 yr | 6.03 | mg/kg | dw | NA | 1 | 6.03 | 1.7967 | NR | 1.68 | mg/kg | dw | NA | 1 | 1.68 | 0.5188 | C | 3.59 | Gish, 1970 |
| Slugs | F | DDT | DDT | 1 yr | 36.67 | mg/kg | dw | NA | 1 | 36.67 | 3.6020 | NR | 0.63 | mg/kg | dw | NA | 1 | 0.63 | -0.4620 | C | 58.2 | Gish, 1970 |
| Slugs | F | DDE | DDE | 1 yr | 4.37 | mg/kg | dw | NA | 1 | 4.37 | 1.4748 | NR | 0.12 | mg/kg | dw | NA | 1 | 0.12 | -2.1203 | C | 36.4 | Gish, 1970 |
| Slugs | F | DDD | DDD | 1 yr | 4.75 | mg/kg | dw | NA | 1 | 4.75 | 1.5581 | NR | 0.31 | mg/kg | dw | NA | 1 | 0.31 | -1.1712 | C | 15.3 | Gish, 1970 |
| Slugs | F | DDT | DDT | 1 yr | 15 | mg/kg | dw | NA | 1 | 15 | 2.7081 | NR | 0.075 | mg/kg | dw | NA | 1 | 0.075 | -2.5903 | C | 200 | Gish, 1970 |

¹ If not reported, wet weight is assumed.

² If not reported, 16% solids assumed.

³ If not reported, dry weight assumed.

NA = Not applicable

NR = Not reported

dw = dry weight

ww = wet weight

R = Reported

C = Calculated

d = days

$$\ln(\text{tissue}) = \text{slope} * \ln(\text{soil}) + \text{intercept}$$

$$\text{slope} \quad 0.8561$$

$$\text{intercept} \quad 2.1287$$

$$R^2 \quad 0.6673$$

$$p \text{ value} < 0.0001$$

Median BAF = 11.3

Appendix D-2 Bioaccumulation Data for Uptake of DDT, DDD or DDE from Diet into Mammals and Birds

| Species Information | Exposure Information | | | | | Tissue Information | | | | | | | | Oral Exposure Information | | | | | BAF | | Reference | | | |
|---|-----------------------------|---------------|---------------|-------|----------------|--------------------|-------------|-----------------------|-----------------------------|--------------------|--|-------------------------------|-------------------------|---------------------------|---------------------|---------------------------|---------------------------|------------------------------------|-------------------------------|--------------------------|-----------|-------------------|-----------------------------|---|
| | Common Name (Genus/Species) | Field (F/Lab) | Chemical Form | Group | Exposure Route | Duration | Tissue Type | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet or Dry Weight? | % Moisture Content Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | In (Tissue Conc.) | Reported Diet Conc. | Reported Diet Conc. Units | Wet Weight or Dry Weight? | Moisture Content Diet ³ | Conversion Factor to mg/kg dw | Oral Exposure (mg/kg dw) | | In(Diet Exposure) | R/C | BAF (Tissue mg/kg dw / Diet (mg/kg dw)) |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | NR | Carcass | 35.3 | mg/kg | ww | NR | 3.125 | 110.3125 | 4.703 | 5.9 | mg/kg | ww | NR | 3.13 | 18.44 | 2.914 | C | 5.98 | Rudolph et al., 1983 | |
| Barn owl (<i>Tyto alba</i>) | L | DDE | DDE | Diet | 2 y | Carcass | 112 | mg/kg | ww | NR | 3.125 | 350 | 5.858 | 2.83 | mg/kg | ww | NR | 3.125 | 8.844 | 2.180 | C | 39.6 | Mendenhall et al., 1983 | |
| Barn owl (<i>Tyto alba</i>) | L | DDE | DDE | Diet | 2 y | Carcass | 78 | mg/kg | ww | 68 | 3.125 | 243.75 | 5.496 | 2.83 | mg/kg | ww | NR | 3.125 | 8.844 | 2.180 | C | 27.6 | Mendenhall et al., 1983 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDT | DDT | Diet | 5 d | Carcass | 1.6 | ug/g | NR | NR | 3.125 | 5.0 | 1.609 | 50 | mg/kg | NR | NR | 1 | 50 | 3.912 | C | 0.100 | DeWitt et al., 1955 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDT | DDT | Diet | 5 d | Carcass | 4.1 | ug/g | NR | NR | 3.125 | 12.8 | 2.550 | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 0.128 | DeWitt et al., 1955 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDT | DDT | Diet | 5 d | Carcass | 19.3 | ug/g | NR | NR | 3.125 | 60.3 | 4.100 | 250 | mg/kg | NR | NR | 1 | 250 | 5.521 | C | 0.241 | DeWitt et al., 1955 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDT | DDT | Diet | 5 d | Carcass | 40.8 | ug/g | NR | NR | 3.125 | 127.5 | 4.848 | 500 | mg/kg | NR | NR | 1 | 500 | 6.215 | C | 0.255 | DeWitt et al., 1955 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDT | DDT | Diet | 5 d | Carcass | 73.2 | ug/g | NR | NR | 3.125 | 228.8 | 5.433 | 1000 | mg/kg | NR | NR | 1 | 1000 | 6.908 | C | 0.229 | DeWitt et al., 1955 | |
| Pheasant | L | DDT | DDT | Diet | 5 d | Carcass | 100.3 | ug/g | NR | NR | 3.125 | 313.4 | 5.748 | 250 | mg/kg | NR | NR | 1 | 250 | 5.521 | C | 1.25 | DeWitt et al., 1955 | |
| Black duck (<i>Anas rubripes</i>) | L | DDE | DDE | Diet | 2 bs | Carcass | 151.5 | mg/kg | ww | NR | 3.125 | 473.4 | 6.160 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 47.3 | Longcore and Stendell, 1977 | |
| Black duck (<i>Anas rubripes</i>) | L | DDE | DDE | Diet | 3 bs | Carcass | 159.6 | mg/kg | ww | NR | 3.125 | 498.8 | 6.212 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 49.9 | Longcore and Stendell, 1977 | |
| Mallard (<i>Anas platyrhynchos</i>) | L | DDT | DDT | Diet | 10 d | Carcass | 22.44 | mg/kg | ww | NR | 3.125 | 70.125 | 4.250 | 500 | mg/kg | NR | NR | 1 | 500 | 6.215 | C | 0.140 | Friend and Trainer, 1974 | |
| Mallard (<i>Anas platyrhynchos</i>) | L | DDT | DDT | Diet | 10 d | Carcass | 38.86 | mg/kg | ww | NR | 3.125 | 121.4375 | 4.799 | 900 | mg/kg | NR | NR | 1 | 900 | 6.802 | C | 0.135 | Friend and Trainer, 1974 | |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | 3 m | Carcass | 33 | mg/kg | ww | NR | 3.125 | 103.1 | 4.636 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 10.3 | Wiemeyer et al., 1986 | |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | NR | Carcass | 67 | mg/kg | ww | NR | 3.125 | 209.4 | 5.344 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 20.9 | Wiemeyer et al., 1986 | |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | NR | Carcass | 56 | mg/kg | ww | NR | 3.125 | 175 | 5.165 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 17.5 | Wiemeyer et al., 1986 | |
| Brown-headed cowbird | L | p,p'-DDT | DDT | Diet | 13 d | Carcass | 119.28 | mg/kg | ww | NR | 3.125 | 373 | 5.921 | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 3.73 | Van Velzen et al., 1966 | |
| Cowbird (<i>Molothrus ater</i>) | L | p,p'-DDT | DDT | Diet | 12 d | Carcass | 46 | mg/kg | ww | NR | 3.125 | 144 | 4.968 | 500 | mg/kg | NR | NR | 1 | 500 | 6.215 | C | 0.288 | Stickel et al., 1996 | |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | NR | Carcass | 1.02 | ug/g | ww | NR | 3.125 | 3.19 | 1.159 | 0.037 | mg/kg | NR | NR | 1 | 0.037 | -3.297 | C | 86.1 | Lowe and Stendell, 1991 | |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | NR | Carcass | 0.40 | ug/g | ww | NR | 3.125 | 1.25 | 0.223 | 0.0135 | mg/kg | NR | NR | 1 | 0.0135 | -4.305 | C | 92.6 | Lowe and Stendell, 1991 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDE | DDE | Diet | 12 w | Carcass | 25.3 | mg/kg | NR | 68 | 3.125 | 79.1 | 4.370 | 5 | mg/kg | dw | NR | 1 | 5 | 1.609 | C | 15.8 | Dieter, 1974 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDE | DDE | Diet | 12 w | Carcass | 125.2 | mg/kg | NR | 68 | 3.125 | 391 | 5.969 | 25 | mg/kg | dw | NR | 1 | 25 | 3.219 | C | 15.7 | Dieter, 1974 | |
| Japanese Quail (<i>Coturnix coturnix</i>) | L | DDE | DDE | Diet | 12 w | Carcass | 415.8 | mg/kg | NR | 68 | 3.125 | 1299 | 7.170 | 100 | mg/kg | dw | NR | 1 | 100 | 4.605 | C | 13.0 | Dieter, 1974 | |
| Mallard (<i>Anas platyrhynchos</i>) | L | p,p'-DDE | DDE | Diet | 96 d | Whole body | 9.6 | mg/kg | ww | NR | 3.125 | 30 | 3.401 | 40 | mg/kg | NR | NR | 1 | 40 | 3.689 | C | 0.750 | Haegele and Hudson, 1974 | |
| Starling (<i>Sturnus vulgaris</i>) | L | DDE | DDE | Diet | 12 w | Carcass | 197.6 | mg/kg | NR | NR | 3.125 | 618 | 6.426 | 25 | mg/kg | NR | NR | 1 | 25 | 3.219 | C | 24.7 | Dieter, 1975 | |
| Starling (<i>Sturnus vulgaris</i>) | L | DDE | DDE | Diet | 12 w | Carcass | 680.9 | mg/kg | NR | NR | 3.125 | 2128 | 7.663 | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 21.3 | Dieter, 1975 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 23.6 | mg/kg | ww | NR | 3.125 | 73.8 | 4.301 | 5 | mg/kg | ww | NR | 4.0 | 20 | 2.996 | C | 3.69 | Greichus and Hannon, 1973 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 34 | mg/kg | ww | NR | 3.125 | 106 | 4.666 | 5 | mg/kg | ww | NR | 4.0 | 20 | 2.996 | C | 5.31 | Greichus and Hannon, 1973 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 104 | mg/kg | ww | NR | 3.125 | 325 | 5.784 | 12.5 | mg/kg | ww | NR | 4.0 | 50 | 3.912 | C | 6.50 | Greichus and Hannon, 1973 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 103 | mg/kg | ww | NR | 3.125 | 322 | 5.774 | 12.5 | mg/kg | ww | NR | 4.0 | 50 | 3.912 | C | 6.44 | Greichus and Hannon, 1973 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 242 | mg/kg | ww | 68 | 3.125 | 756 | 6.628 | 25 | mg/kg | ww | NR | 4.0 | 100 | 4.605 | C | 7.56 | Greichus and Hannon, 1973 | |
| Double-crested cormorants (<i>Phalacrocorax a. auritus</i>) | L | Total DDT | DDT | Diet | 20 d | Carcass | 207 | mg/kg | ww | 68 | 3.125 | 647 | 6.472 | 25 | mg/kg | ww | NR | 4.0 | 100 | 4.605 | C | 6.47 | Greichus and Hannon, 1973 | |
| Robin (<i>Turdus migratorius</i>) | L | DDT | DDT | Diet | | Carcass | 6.7 | mg/kg | ww | 68 | 3.125 | 20.9 | 3.042 | 0.7 | mg/kg | ww | NR | 4.0 | 100 | 4.605 | C | 6.47 | Greichus and Hannon, 1973 | |
| Robin (<i>Turdus migratorius</i>) | L | DDT | DDT | Diet | | Carcass | 7.3 | mg/kg | ww | 68 | 3.125 | 22.8 | 3.127 | 1.75 | mg/kg | ww | NR | 4.0 | 100 | 4.605 | C | 6.47 | Greichus and Hannon, 1973 | |
| Robin (<i>Turdus migratorius</i>) | F | Total DDT | DDT | Diet | 8 yr | Whole body | 2.26 | mg/kg | NR | 68 | 3.125 | 7.06 | 1.955 | 0.315 | mg/kg | NR | NR | 84 | 6.25 | 1.96875 | 0.677 | C | 3.59 | Johnson et al., 1976 |
| Robin (<i>Turdus migratorius</i>) | F | Total DDT | DDT | Diet | 6 yr | Whole body | 3.48 | mg/kg | NR | 68 | 3.125 | 10.9 | 2.386 | 0.13 | mg/kg | NR | NR | 84 | 6.25 | 0.8125 | -0.208 | C | 13.4 | Johnson et al., 1976 |
| Robin (<i>Turdus migratorius</i>) | F | Total DDT | DDT | Diet | 3 yr | Whole body | 5.29 | mg/kg | NR | 68 | 3.125 | 16.5 | 2.805 | 0.157 | mg/kg | NR | NR | 84 | 6.25 | 0.98125 | -0.019 | C | 16.8 | Johnson et al., 1976 |
| Robin (<i>Turdus migratorius</i>) | F | Total DDT | DDT | Diet | 2 yr | Whole body | 4.22 | mg/kg | NR | 68 | 3.125 | 13.2 | 2.579 | 0.097 | mg/kg | NR | NR | 84 | 6.25 | 0.60625 | -0.500 | C | 21.8 | Johnson et al., 1976 |
| American kestrel (<i>Falco sparverius</i>) | L | DDE | DDE | Diet | 60 d | Carcass | 232 | mg/kg | ww | NR | 3.125 | 725 | 6.586 | 48 | mg/kg | NR | NR | 3.125 | 150 | 5.011 | C | 4.83 | Stendell et al., 1989 | |
| American kestrel (<i>Falco sparverius</i>) | L | p,p'-DDE | DDE | Diet | NR | Carcass | 287.2 | mg/kg | dw | NR | 1 | 287 | 5.660 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 28.7 | Porter and Wiemeyer, 1972 | |
| American kestrel (<i>Falco sparverius</i>) | L | p,p'-DDE | DDE | Diet | NR | Carcass | 204.2 | mg/kg | dw | NR | 1 | 204 | 5.319 | 10 | mg/kg | dw | NR | 1 | 10 | 2.303 | C | 20.4 | Porter and Wiemeyer, 1972 | |
| Short-tailed shrew (<i>Blarina brevicauda</i>) | L | DDT | DDT | Diet | 7-17 d | Carcass | 1159.1 | mg/kg | ww | NR | 3.13 | 3622 | 8.195 | 400 | mg/kg | dw | NR | 1.000 | 400 | 5.991 | C | 9.06 | Blus, 1978 | |
| Short-tailed shrew (<i>Blarina brevicauda</i>) | L | DDT | DDT | Diet | NR | Carcass | 626.7 | mg/kg | ww | NR | 3.13 | 1958 | 7.580 | 400 | mg/kg | dw | NR | 1.000 | 400 | 5.991 | C | 4.90 | Blus, 1978 | |
| Brown bat (<i>Myotis lucifugus</i>) | L | DDE | DDE | Diet | 40 d | Carcass | 680 | mg/kg | ww | NR | 3.13 | 2125 | 7.662 | 150 | mg/kg | NR | NR | 6.25 | 6.843 | 2.227 | C | 2.27 | Clark and Stafford, 1981 | |
| Brown bat (<i>Myotis lucifugus</i>) | L | DDE | DDE | Diet | 40 d | Carcass | 2900 | mg/kg | ww | NR | 3.13 | 9063 | 9.112 | 480 | mg/kg | NR | NR | 6.25 | 3000 | 8.006 | C | 3.02 | Clark and Stafford, 1981 | |
| Free-tailed bat (<i>Tadarida brasiliensis</i>) | L | DDE | DDE | Diet | 39 d | Carcass | 623 | mg/kg | ww | NR | 3.13 | 1947 | 7.574 | 107 | mg/kg | NR | NR | 6.25 | 669 | 6.505 | C | 2.91 | Clark and Kroll, 1977 | |
| Free-tailed bat (<i>Tadarida brasiliensis</i>) | L | DDE | DDE | Diet | 39 d | Carcass | 509 | mg/kg | ww | NR | 3.13 | 1591 | 7.372 | 107 | mg/kg | NR | NR | 6.25 | 669 | 6.505 | C | 2.38 | Clark and Kroll, 1977 | |
| Free-tailed bat (<i>Tadarida brasiliensis</i>) | L | DDE | DDE | Diet | 39 d | Carcass | 330 | mg/kg | ww | NR | 3.13 | 1656 | 7.412 | 107 | mg/kg | NR | NR | 6.25 | 669 | 6.505 | C | 2.48 | Clark and Kroll, 1977 | |
| Free-tailed bat (<i>Tadarida brasiliensis</i>) | L | DDE | DDE | Diet | 39 d | Carcass | 478 | mg/kg | ww | NR | 3.13 | 1494 | 7.309 | 107 | mg/kg | NR | NR | 6.25 | 669 | 6.505 | C | 2.23 | Clark and Kroll, 1977 | |
| Rat (<i>Rattus norvegicus</i>) | L | Total DDT | DDT | Diet | 120 d | Carcass | 1.43 | mg/kg | NR | NR | 3.13 | 4.469 | 1.497 | 4.25 | mg/kg | NR | NR | 1 | 4.25 | 1.447 | C | 1.05 | Martin et al., 1976 | |
| Rat (<i>Rattus norvegicus</i>) | L | Total DDT | DDT | Diet | 120 d | Carcass | 2.24 | mg/kg | NR | NR | 3.13 | 7.000 | 1.946 | 4.25 | mg/kg | NR | NR | 1 | 7.55 | 2.022 | C | 0.93 | Martin et al., 1976 | |
| White-footed mouse (<i>Peromyscus maniculatus</i>) | F | Total DDT | DDT | Diet | Resident | Whole body | 0.13 | mg/kg | ww | 66.5 | 2.99 | 0.388 | -0.946596 | 0.0855 | mg/kg | ww | NR | 6.67 | 0.570 | -0.562 | C | 0.681 | Korschgen 1970 | |
| Rat (<i>Rattus norvegicus</i>) | L | p,p'-DDT | DDT | Diet | 14 d | Whole Body | 0.14 | ug/g | NR | NR | 3.13 | 0.438 | -0.827 | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 0.104 | Wrenn et al., 1971 | |
| Rat (<i>Rattus norvegicus</i>) | L | p,p'-DDT | DDT | Diet | 14 d | Whole Body | 0.24 | mg/kg | NR | NR | 3.13 | 0.750 | -0.288 | 20 | mg/kg | NR | NR | 1 | 7.55 | 2.022 | C | 0.10 | Wrenn et al., 1971 | |
| Rat (<i>Rattus norvegicus</i>) | L | p,p'-DDT | DDT | Diet | 14 d | Whole Body | 0.45 | mg/kg | NR | NR | 3.13 | 1.406 | 0.341 | 40 | mg/kg | NR | NR | 1 | 7.55 | 2.022 | C | 0.19 | Wrenn et al., 1971 | |

¹ If not specified, wet weight is assumed
² If not reported, 32% solids is assumed.
³ If not specified, dry weight is assumed

d = days
dw = dry weight
ww = wet weight
NA=Not Applicable
NR = Not Reported
C=Calculated
R=Reported

$$\ln(\text{tissue}) = \text{slope} * \ln(\text{Diet}) + \text{intercept}$$

slope 0.6630
intercept 2.3833
R² 0.4810
p value <0.0001

Median BAF = 4.83

Appendix D DDT, DDD and DDE References

- Barker, R.J. 1958. Notes on some ecological effects of DDT sprayed on elms. *J. Wildl. Manage.* 22: 269-274.
- Beyer, W. N. and Gish, C. D. 1980. Persistence in Earthworms and Potential Hazards to Birds of Soil Applied DDT, Dieldrin and Heptachlor. *J. Appl. Ecol.* 17(2): 295-307.
- Blus, L. J. 1978. Short-Tailed shrews: Toxicity and residue relationships of DDT, Dieldrin and Endrin. *Archives of Environ. Contam. and Toxic.* 7: 83-98.
- Boykins, EA. 1966. DDT residues in the food chains of birds. *Atlantic Naturalist.* 21: 18-26.
- Clark, D. R. and J. C. Kroll. 1977. Effects of DDE on experimentally poisoned Free-tailed bats (*Tadarida brasiliensis*): Lethal brain concentrations. *Journal of Toxicology and Environmental Health.* 3: 893-901.
- Clark, D. R. and C. J. Stafford. 1981. Effects of DDE and PCBs (Aroclor 1260) on experimentally poisoned female little brown bats (*Myotis lucifugus*): Lethal brain concentrations. *Journal of Toxicology and Environmental Health.* 7: 925-934.
- Collett, N. and D. L. Harrison. 1968. Some observations on the effects of using organochlorine sprays in an orchard. *New Zealand J. Sci.* 11: 371-379.
- Davis, B. N. K. 1968. The soil macrofauna and organochlorine residues at twelve agricultural sites near Huntingdon. *Ann. Applied Biol.* 61: 29-45.
- Davis, B. N. K. and R. B. Harrison. 1966. Organochlorine insecticide residues in soil invertebrates. *Nature.* 211: 1424-1425.
- Dempster, J. P. 1968. The Control of *Pieris rapae* with DDT III. Some Changes in the Crop Fauna. *J. Appl. Ecol.* 5: 463-475.
- De Witt, J. B., J. V. Derby, and J. F. Mangan. 1955. DDT vs. Wildlife. Relationships between quantities ingested, toxic effects and tissue storage. *Journal of the American Pharmaceutical Association.* XLIV(1): 22-24.
- Dieter, M. P. 1974. Plasma enzyme activities in Coturnix quail fed graded doses of DDE, polychlorinated biphenyl, malathion, and mercuric chloride. *Toxicology and Applied Pharmacology.* 27: 86-98.
- Dieter, M. P. 1975. Further studies on the use of enzyme profiles to monitor residue accumulation in wildlife: Plasma enzymes in starlings fed graded concentrations of Morsodren,

DDE, Aroclor 1254, and Malathion. *Archives of Environ. Contam. and Toxicol.* 3(2): 142-150.

Dimond, JB, GY Belyea, RE Kadunce, SA Getchell, and JA Blease. 1970. DDT residues in robins and earthworms associated with contaminated forest soils. *Can. Entomol.* 102: 1122-1130.

Doane, C. C. 1962. Effects of Certain Insecticides on Earthworms. *J. Econ. Entomol.* 55(3): 416-418.

Dustman, E. H. and L. F. Stickel. 1966. Pesticide residues in the ecosystem. In Pesticides and their effects on soils and water, *Smer. Soc. Agron., Spec. Publ.* 8, 109-121.

Edwards, C. A. and Jeffs, K. 1974. The Rate of Uptake of DDT from Soils by Earthworms. *Nature.* 247: 157-158.

Friend, M. and D. O. Trainor. 1974. Experimental DDT-duck hepatitis virus interaction studies. *J. Wildlife Management.* 38(4): 887-895.

Gish, C.D. 1970. Organochlorine insecticide residues in soils and soil invertebrates from agricultural lands. *Pestic. Monit. J.* 3: 241-252.

Greichus, Y. A. and M. R. Hannon. 1973. Distribution and biochemical effects of DDT, DDD, and DDE in penned double-crested cormorants. *Toxicol. and Applied Pharmacology.* 26(4): 483-494.

Haegele, M. A. and R. H. Hudson. 1974. Eggshell thinning and residues in mallards one year after DDE exposure. *Archives of Environ. Contamination and Toxicology.* 2(4): 356-363.

Hendricks, A. J., W. C. Ma, J. J. Brouns, E. M. de Ruiter-Dijkman and R. Gast. 1995. Modelling and monitoring organochlorine and heavy metal accumulation in soils, earthworms, and shrews in Rhine-delta floodplains. *Archives of Environ. Contamination and Toxicology.* 29: 115-127.

Hunt, L. B. and R.J. Sacho. 1969. Response of robins to DDT and methoxychlor. *J. Wildl. Manage.* 33:336-345.

Johnson, E. V., L. M. Guilford, and D. Q. Thompson. 1976. The effects of orchard pesticide applications on breeding robins. *The Wilson Bulletin.* 88(1): 19-35.

Korschgen, L. J. 1970. Soil-food-chain-pesticide wildlife relationships in aldrin-treated fields. *J. Wildl. Manage.* 34: 186-199.

Longcore, J. R. and R. C. Stendall. 1977. Shell thinning and reproductive impairment in Black ducks after cessation of DDE dosage. *Archives of Environ. Contamination and Toxicology.* 6:

293-304.

Lowe, T. P., and R. C. Stendell. 1991. Eggshell modifications in captive American kestrels resulting from Aroclor 1248 in the diet. *Archives of Environ. Contamination and Toxicology*. 20: 519-522.

Martin, W. L., R. W. Rogers, H. W. Essig, H. W. Chambers, and L. B. Coons. 1976. Influence of dietary treatment on rat carcass DDT residues and toxicity parameters. *Journal of Animal Science*. 43(4): 786-791.

Mendenhall, V. M., E. E. Klaas, and M. A. McLanes. 1983. Breeding success of barn owls (*Tyto alba*) fed low levels of DDE and Dieldrin. *Arch Environ. Contam. Toxicol.* 12: 235-240.

Porter, R. D. and Wiemeyer, S. N. 1972. DDE at low dietary levels kills captive American Kestrels. *Bulletin of Environmental Contamination and Toxicology*. 8(4): 193-207.

Rudolf, R. W., D. W. Anderson and R. W. Resborough. 1983. Kestrel Predatory Behavior under Chronic Low-level exposure to DDE. *J. Environ. Pollution (Ser A)*. 32: 121-126.

Stendell, W., W. N. Beyer and R. A. Stehn. 1989. Accumulation of lead and organochlorine residues in captive americal kestrels fed pine voles from Apple Orchards. *Journal of Wildlife Diseases*. 25(3): 388-389.

Stickel, L. F., W. H. Stickel, and R. Christensen. 1966. Residues of DDT in brains and bodies of birds that died on dosage and in survivors. *Science*. 151 (3717): 1549-1551.

Wheatley, G. A. and J. A. Hardman. 1968. Organochlorine insecticide residues in earthworms from arable soils. *J. Sci. Food Agr.* 19:219-225.

Wiemeyer, S. N., R. D. Porter, G. L. Hensler, and J. R. Maestrelli. 1986. *DDE, DDT + Dieldrin: Residues in American Kestrels and Relations to Reproduction*. U.S. Fish and Wildlife Service Technical Report No. 6. 33 pp.

Wrenn, T. R., J. R. Weyant, G. F. Fries, and J. Bitman. 1971. Effect of several dietary levels of o,p'-DDT on reproduction and lactation in the rat. *Bulletin of Environ. Contam. and Toxicology*. 6(5): 471-480.

Yadav, D. V., Pillai, M. K. K., and Agarwal, H. C. 1976. Uptake and Metabolism of DDT and Lindane by the Earthworm, *Pheretima posthuma*. *Bull. Environ. Contam. Toxicol.* 16(5): 541-545.

This Page Intentionally Left Blank



Eco-SSL Attachment 4-1
Appendix E
Bioaccumulation Data for Dieldrin

February 2005
Revised April 2007

This page intentionally left blank

Appendix E-1 Bioaccumulation Data for Uptake of Dieldrin from Soil into Soil Invertebrates

| Species Information | | Exposure | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | | BAF | | Reference |
|---|--------------------|----------|-----------------------|---------------------------------|---------------------------------------|--------------------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|---------------------------------------|------------------------------|-------------------------------|-----------------------|--------------------------|-----|--|--------------------------|
| Common Name (<i>Genus/Species</i>) | Field (F)/ Lab (L) | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet weight or Dry Weight ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | In (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight ³ | % Moisture Soil ⁴ | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | In (Soil Conc. mg/kg dw) | R/C | BAF (Tissue (mg/kg dw) /Soil (mg/kg dw)) | |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.05 | mg/kg | ww | NR | 6.25 | 0.3125 | -1.163 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.435 | C | 1.3 | Davis, 1968 |
| Earthworm (<i>Lumbricus terrestris</i>) | F | NR | 1.6 | mg/kg | ww | NR | 6.25 | 10.00 | 2.30258509 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 15.6 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 2.2 | mg/kg | ww | NR | 6.25 | 13.75 | 2.62103882 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 21.5 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora caliginosa</i>) | F | NR | 3.8 | mg/kg | ww | NR | 6.25 | 23.75 | 3.16758253 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 37.1 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 4.6 | mg/kg | ww | NR | 6.25 | 28.75 | 3.35863777 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 44.9 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora rosea</i>) | F | NR | 3.9 | mg/kg | ww | NR | 6.25 | 24.38 | 3.19355802 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 38.1 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Octolaium cyaneum</i>) | F | NR | 2.4 | mg/kg | ww | NR | 6.25 | 15.00 | 2.7080502 | NR | 0.640 | mg/kg | dw | NR | 1 | 0.64 | -0.4462871 | C | 23.4 | Wheatley & Hardman, 1968 |
| Earthworm | F | Resident | 0.98 | mg/kg | ww | 66.50 | 6.25 | 6.125 | 1.81238 | NR | 0.24 | mg/kg | ww | 21.95 | 1.281 | 0.307 | -1.1793 | C | 19.92 | Korschgen, 1970 |
| Beetles | NR | Resident | 0.105 | mg/kg | NR | NR | 7.14 | 0.75 | -0.28768 | NR | 0.365 | mg/kg | NR | NR | 1 | 0.365 | -1.0078579 | R | 2.05 | Davis & Harrison, 1966 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.04 | mg/kg | ww | NR | 6.25 | 0.25 | -1.386 | NR | 0.7 | mg/kg | ww | 16-23 | 1.19 | 0.833 | -0.182 | C | 0.3 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.08 | mg/kg | ww | NR | 6.25 | 0.5 | -0.693 | NR | 0.04 | mg/kg | ww | 16-23 | 1.19 | 0.048 | -3.045 | C | 10.5 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.01 | mg/kg | ww | NR | 6.25 | 0.0625 | -2.773 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.332 | C | 1.8 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.09 | mg/kg | ww | NR | 6.25 | 0.5625 | -0.575 | NR | 0.06 | mg/kg | ww | 16-23 | 1.19 | 0.071 | -2.639 | C | 7.9 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.04 | mg/kg | ww | NR | 6.25 | 0.25 | -1.386 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.128 | C | 2.1 | Davis, 1968 |
| Beetle (<i>Agonum sp.</i>) | F | Resident | 0.1 | mg/kg | ww | NR | 6.25 | 0.625 | -0.470 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.435 | C | 2.6 | Davis, 1968 |
| Beetle (<i>Agonum sp.</i>) | F | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.25 | 0.223 | NR | 0.7 | mg/kg | ww | 16-23 | 1.19 | 0.833 | -0.182 | C | 1.5 | Davis, 1968 |
| Beetle (<i>Agonum sp.</i>) | F | Resident | 0.06 | mg/kg | ww | NR | 6.25 | 0.375 | -0.981 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.332 | C | 10.5 | Davis, 1968 |
| Beetle (<i>Agonum sp.</i>) | F | Resident | 0.06 | mg/kg | ww | NR | 6.25 | 0.375 | -0.981 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.128 | C | 3.2 | Davis, 1968 |
| Beetle (<i>Agonum sp.</i>) | F | Resident | 0.1 | mg/kg | ww | NR | 6.25 | 0.625 | -0.470 | NR | 0.04 | mg/kg | ww | 16-23 | 1.19 | 0.048 | -3.045 | C | 13.1 | Davis, 1968 |
| Beetle (Staphylinidae) | F | Resident | 0.2 | mg/kg | ww | NR | 6.25 | 1.25 | 0.223 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.435 | C | 5.3 | Davis, 1968 |
| Beetle (Staphylinidae) | F | Resident | 0.08 | mg/kg | ww | NR | 6.25 | 0.5 | -0.693 | NR | 0.03 | mg/kg | ww | 16-23 | 1.19 | 0.036 | -3.332 | C | 14.0 | Davis, 1968 |
| Earthworm | F | Resident | 0.8 | mg/kg | ww | NR | 6.25 | 5 | 1.609 | NR | 0.2 | mg/kg | ww | 16-23 | 1.19 | 0.238 | -1.435 | C | 21.0 | Davis, 1968 |
| Earthworm | F | Resident | 0.4 | mg/kg | ww | NR | 6.25 | 2.5 | 0.916 | NR | 0.04 | mg/kg | ww | 16-23 | 1.19 | 0.048 | -3.045 | C | 52.5 | Davis, 1968 |
| Earthworm | F | Resident | 0.5 | mg/kg | ww | NR | 6.25 | 3.125 | 1.139 | NR | 0.1 | mg/kg | ww | 16-23 | 1.19 | 0.119 | -2.128 | C | 26.3 | Davis, 1968 |
| Beetle (<i>Harpalus aeneus</i>) | F | Resident | 0.1 | mg/kg | ww | NR | 6.25 | 0.625 | -0.470 | NR | 0.08 | mg/kg | ww | 16-23 | 1.19 | 0.095 | -2.351 | C | 6.6 | Davis, 1968 |
| Earthworm | F | 1 yr | 0.78 | mg/kg | dw | NR | 1 | 0.78 | -0.2484614 | NR | 0.083 | mg/kg | dw | NR | 1 | 0.083 | -2.4889147 | C | 9.40 | Gish, 1970 |
| Earthworm | F | Resident | 2.48 | mg/kg | ww | 66.50 | 6.25 | 15.5 | 2.74084 | NR | 0.23 | mg/kg | ww | 21.95 | 1.281 | 0.295 | -1.2219 | C | 52.60 | Korschgen, 1970 |
| Earthworm | F | Resident | 1.09 | mg/kg | ww | 66.50 | 6.25 | 6.8125 | 1.91876 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.320 | -1.1385 | C | 21.27 | Korschgen, 1970 |
| Cricket (<i>Gryllus assimilis</i>) | F | Resident | 0.09 | mg/kg | ww | 68.37 | 6.25 | 0.5625 | -0.57536 | NR | 0.24 | mg/kg | ww | 21.95 | 1.281 | 0.307 | -1.1793 | C | 1.83 | Korschgen, 1970 |
| Earthworm | NR | Resident | 0.43 | mg/kg | NR | NR | 7.14 | 3.207 | 1.12214 | NR | 0.365 | mg/kg | NR | NR | 1 | 0.365 | -1.0078579 | R | 8.41 | Davis & Harrison, 1966 |
| Slugs | NR | Resident | 0.3 | mg/kg | NR | NR | 7.14 | 2.14 | 0.76214 | NR | 0.365 | mg/kg | NR | NR | 1 | 0.365 | -1.0078579 | R | 5.87 | Davis & Harrison, 1966 |
| Earthworm | F | | 7 | mg/kg | dw | NR | 1 | 7 | 1.94591015 | N | 0.41 | mg/kg | dw | NR | 1 | 0.41 | -0.8915981 | C | 17.1 | Beyer and Gish, 1980 |
| Earthworm | F | | 8.5 | mg/kg | dw | NR | 1 | 8.5 | 2.14006616 | N | 0.51 | mg/kg | dw | NR | 1 | 0.51 | -0.6733446 | C | 16.7 | Beyer and Gish, 1980 |
| Earthworm | F | | 19 | mg/kg | dw | NR | 1 | 19 | 2.94443898 | N | 1.3 | mg/kg | dw | NR | 1 | 1.3 | 0.26236426 | C | 14.6 | Beyer and Gish, 1980 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | resident | 140 | ug/kg lipid | NR | NR | 0.000125 | 0.0175 | -4.0455544 | Y | 4.1 | ug/kg | NR | NR | 0.001 | 0.0041 | -5.4967683 | C | 4.27 | Hendricks et al 1995 |
| Earthworm (<i>Lumbricus rubellus</i>) | F | resident | 99 | ug/kg lipid | NR | NR | 0.000125 | 0.01238 | -4.392077 | Y | 8.4 | ug/kg | NR | NR | 0.001 | 0.0084 | -4.7795236 | C | 1.47 | Hendricks et al 1995 |
| Earthworm | F | 1 yr | 0.63 | mg/kg | dw | NR | 1 | 0.63 | -0.4620355 | NR | 0.013 | mg/kg | dw | NR | 1 | 0.013 | -4.3428059 | C | 48.46 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.18 | mg/kg | dw | NR | 1 | 0.18 | -1.7147984 | NR | 0.01 | mg/kg | dw | NR | 1 | 0.01 | -4.6051702 | C | 18.00 | Gish, 1970 |
| Earthworm | F | 1 yr | 1.93 | mg/kg | dw | NR | 1 | 1.93 | 0.65752 | NR | 0.28 | mg/kg | dw | NR | 1 | 0.28 | -1.2729657 | C | 6.89 | Gish, 1970 |
| Earthworm | F | 3 yr | 1.64 | mg/kg | dw | NR | 1 | 1.64 | 0.49469624 | NR | 0.25 | mg/kg | dw | NR | 1 | 0.25 | -1.3862944 | C | 6.56 | Gish, 1970 |
| Earthworm | F | NR | 0.13 | mg/kg | dw | NR | 1 | 0.13 | -2.0402208 | NR | 0.016 | mg/kg | dw | NR | 1 | 0.016 | -4.1351666 | C | 8.13 | Gish, 1970 |
| Earthworm | F | 3 yr | 0.26 | mg/kg | dw | NR | 1 | 0.26 | -1.3470736 | NR | 0.0076 | mg/kg | dw | NR | 1 | 0.0076 | -4.879607 | C | 34.21 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.92 | mg/kg | dw | NR | 1 | 0.92 | -0.083 | NR | 0.23 | mg/kg | dw | NR | 1 | 0.23 | -1.469676 | C | 4.00 | Gish, 1970 |
| Earthworm | F | 1 yr | 3.1 | mg/kg | dw | NR | 1 | 3.1 | 1.131 | NR | 0.15 | mg/kg | dw | NR | 1 | 0.15 | -1.89712 | C | 20.67 | Gish, 1970 |
| Earthworm | F | 1 yr | 3.5 | mg/kg | dw | NR | 1 | 3.5 | 1.253 | NR | 0.52 | mg/kg | dw | NR | 1 | 0.52 | -0.6539265 | C | 6.73 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.78 | mg/kg | dw | NR | 1 | 0.78 | -0.248 | NR | 0.35 | mg/kg | dw | NR | 1 | 0.35 | -1.0498221 | C | 2.23 | Gish, 1970 |
| Earthworm | F | 2 yr | 0.36 | mg/kg | dw | NR | 1 | 0.36 | -1.022 | NR | 0.072 | mg/kg | dw | NR | 1 | 0.072 | -2.6310892 | C | 5.00 | Gish, 1970 |
| Earthworm | F | NR | 0.76 | mg/kg | dw | NR | 1 | 0.76 | -0.274 | NR | 0.026 | mg/kg | dw | NR | 1 | 0.026 | -3.6496587 | C | 29.23 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.24 | mg/kg | dw | NR | 1 | 0.24 | -1.427 | NR | 0.03 | mg/kg | dw | NR | 1 | 0.03 | -3.5065579 | C | 8.00 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.82 | mg/kg | dw | NR | 1 | 0.82 | -0.198 | NR | 0.024 | mg/kg | dw | NR | 1 | 0.024 | -3.7297014 | C | 34.17 | Gish, 1970 |
| Slugs | F | 1 yr | 2.84 | mg/kg | dw | NR | 1 | 2.84 | 1.044 | NR | 0.024 | mg/kg | dw | NR | 1 | 0.024 | -3.7297014 | C | 118.33 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.42 | mg/kg | dw | NR | 1 | 0.42 | -0.868 | NR | 0.019 | mg/kg | dw | NR | 1 | 0.019 | -3.9633163 | C | 22.11 | Gish, 1970 |

Appendix E-1 Bioaccumulation Data for Uptake of Dieldrin from Soil into Soil Invertebrates

| Species Information | | Exposure | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | | BAF | | Reference |
|---|--------------------|----------|-----------------------|---------------------------------|---------------------------------------|--------------------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|---------------------------------------|------------------------------|-------------------------------|-----------------------|--------------------------|-----|-------------------------------|---------------------------|
| Common Name (<i>Genus/Species</i>) | Field (F)/ Lab (L) | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet weight or Dry Weight ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight ³ | % Moisture Soil ¹ | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | BAF (Tissue /Soil (mg/kg dw)) | |
| Earthworm | F | 1 yr | 0.16 | mg/kg | dw | NR | 1 | 0.16 | -1.833 | NR | 0.021 | mg/kg | dw | NR | 1 | 0.021 | -3.8632328 | C | 7.62 | Gish, 1970 |
| Earthworm | F | 1 yr | 22.54 | mg/kg | dw | NR | 1 | 22.5 | 3.115 | NR | 1.02 | mg/kg | dw | NR | 1 | 1.02 | 0.01980263 | C | 22.10 | Gish, 1970 |
| Earthworm | F | NR | 1.71 | mg/kg | dw | NR | 1 | 1.71 | 0.536 | NR | 0.025 | mg/kg | dw | NR | 1 | 0.025 | -3.6888795 | C | 68.40 | Gish, 1970 |
| Slugs | F | 1 yr | 0.43 | mg/kg | dw | NR | 1 | 0.43 | -0.844 | NR | 0.01 | mg/kg | dw | NR | 1 | 0.01 | -4.6051702 | C | 43.00 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.23 | mg/kg | dw | NR | 1 | 0.23 | -1.470 | NR | 0.01 | mg/kg | dw | NR | 1 | 0.01 | -4.6051702 | C | 23.00 | Gish, 1970 |
| Earthworm | F | 1 yr | 0.23 | mg/kg | dw | NR | 1 | 0.23 | -1.470 | NR | 0.017 | mg/kg | dw | NR | 1 | 0.017 | -4.0745419 | C | 13.53 | Gish, 1970 |
| Earthworm | F | 2 yr | 1.91 | mg/kg | dw | NR | 1 | 1.91 | 0.647 | NR | 0.024 | mg/kg | dw | NR | 1 | 0.024 | -3.7297014 | C | 79.58 | Gish, 1970 |
| Earthworm | F | 2 yr | 1.1 | mg/kg | dw | NR | 1 | 1.1 | 0.095 | NR | 0.22 | mg/kg | dw | NR | 1 | 0.22 | -1.5141277 | C | 5.00 | Gish, 1970 |
| Earthworm | F | | 23 | mg/kg | dw | NR | 1 | 23 | 3.135 | N | 1.3 | mg/kg | dw | NR | 1 | 1.3 | 0.26236426 | C | 17.7 | Beyer and Gish, 1980 |
| Earthworm | F | | 57 | mg/kg | dw | NR | 1 | 57 | 4.043 | N | 4.5 | mg/kg | dw | NR | 1 | 4.5 | 1.5040774 | C | 12.7 | Beyer and Gish, 1980 |
| Earthworm | F | | 50 | mg/kg | dw | NR | 1 | 50 | 3.912 | N | 3.4 | mg/kg | dw | NR | 1 | 3.4 | 1.22377543 | C | 14.7 | Beyer and Gish, 1980 |
| Earthworm | F | | 50 | mg/kg | dw | NR | 1 | 50 | 3.912 | N | 3.4 | mg/kg | dw | NR | 1 | 3.4 | 1.22377543 | C | 14.7 | Beyer and Gish, 1980 |
| Earthworm | F | | 50 | mg/kg | dw | NR | 1 | 50 | 3.912 | N | 3.4 | mg/kg | dw | NR | 1 | 3.4 | 1.22377543 | C | 14.7 | Beyer and Gish, 1980 |
| Earthworm (<i>Lumbricus rubellus</i>) | L | 30 d | 1 | ug/kg | ww | NR | 6.25 | 6.25 | 1.833 | N | 0.7 | mg/kg | dw | NR | 1 | 0.7 | -0.3566749 | C | 8.93 | Lord et al., 1980 |
| Earthworm | F | 20 d | 21.65 | ug/kg | ww | NR | 6.25 | 135 | 4.908 | N | 25 | mg/kg | dw | NR | 1 | 25 | 3.21887582 | C | 5.41 | Jefferies and Davis, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 0.033 | mg/kg | ww | NR | 6.25 | 0.21 | -1.579 | NR | 0.003 | mg/kg | dw | NR | 1 | 0.003 | -5.809143 | C | 68.8 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 0.028 | mg/kg | ww | NR | 6.25 | 0.18 | -1.743 | NR | 0.003 | mg/kg | dw | NR | 1 | 0.003 | -5.809143 | C | 58.3 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 0.7 | mg/kg | ww | NR | 6.25 | 4.38 | 1.476 | NR | 0.500 | mg/kg | dw | NR | 1 | 0.5 | -0.6931472 | C | 8.8 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 1.8 | mg/kg | ww | NR | 6.25 | 11.25 | 2.420 | NR | 0.500 | mg/kg | dw | NR | 1 | 0.5 | -0.6931472 | C | 22.5 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 1.0 | mg/kg | ww | NR | 6.25 | 6.25 | 1.833 | NR | 0.750 | mg/kg | dw | NR | 1 | 0.75 | -0.2876821 | C | 8.3 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 2.0 | mg/kg | ww | NR | 6.25 | 12.5 | 2.526 | NR | 0.750 | mg/kg | dw | NR | 1 | 0.75 | -0.2876821 | C | 16.7 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 1.3 | mg/kg | ww | NR | 6.25 | 8.13 | 2.095 | NR | 1.00 | mg/kg | dw | NR | 1 | 1 | 0 | C | 8.1 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 2.9 | mg/kg | ww | NR | 6.25 | 18.1 | 2.897 | NR | 1.00 | mg/kg | dw | NR | 1 | 1 | 0 | C | 18.1 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora longa</i>) | F | NR | 1.3 | mg/kg | ww | NR | 6.25 | 8.13 | 2.095 | NR | 1.25 | mg/kg | dw | NR | 1 | 1.25 | 0.22314355 | C | 6.5 | Wheatley & Hardman, 1968 |
| Earthworm (<i>Allolobophora chlorotica</i>) | F | NR | 2.1 | mg/kg | ww | NR | 6.25 | 13.1 | 2.575 | NR | 1.25 | mg/kg | dw | NR | 1 | 1.25 | 0.22314355 | C | 10.5 | Wheatley & Hardman, 1968 |
| Cricket (<i>Gryllus assimilis</i>) | F | Resident | 0.07 | mg/kg | ww | 68.37 | 6.25 | 0.438 | -0.827 | NR | 0.23 | mg/kg | ww | 21.95 | 1.281 | 0.295 | -1.2219 | C | 1.48 | Korschgen, 1970 |
| Cricket (<i>Gryllus assimilis</i>) | F | Resident | 0.16 | mg/kg | ww | 68.37 | 6.25 | 1.0 | 0.000 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.320 | -1.1385 | C | 3.12 | Korschgen, 1970 |
| Beetle (<i>Harpalus pennsylvanicus</i>) | F | Resident | 0.39 | mg/kg | ww | 59.95 | 6.25 | 2.44 | 0.891 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.307 | -1.1809 | C | 7.94 | Korschgen, 1970 |
| Beetle (<i>Harpalus pennsylvanicus</i>) | F | Resident | 2.11 | mg/kg | ww | 59.95 | 6.25 | 13.19 | 2.579 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.295 | -1.2208 | C | 44.7 | Korschgen, 1970 |
| Beetle (<i>Harpalus pennsylvanicus</i>) | F | Resident | 0.24 | mg/kg | ww | 59.95 | 6.25 | 1.5 | 0.405 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.320 | -1.1394 | C | 4.69 | Korschgen, 1970 |
| Beetle (<i>Poecilus chalcites</i>) | F | Resident | 19.44 | mg/kg | ww | 59.95 | 6.25 | 121.5 | 4.800 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.307 | -1.1809 | C | 396 | Korschgen, 1970 |
| Beetle (<i>Poecilus chalcites</i>) | F | Resident | 6.59 | mg/kg | ww | 59.95 | 6.25 | 41.19 | 3.718 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.295 | -1.2208 | C | 140 | Korschgen, 1970 |
| Beetle (<i>Poecilus chalcites</i>) | F | Resident | 2.64 | mg/kg | ww | 59.95 | 6.25 | 16.5 | 2.803 | NR | 0.25 | mg/kg | ww | 21.95 | 1.281 | 0.320 | -1.1394 | C | 51.56 | Korschgen, 1970 |

¹ If not reported, wet weight is assumed.

NA = Not applicable

ww = wet weight

² If not reported, 16% solids assumed.

NR = Not reported

R = Reported

³ If not reported, dry weight assumed.

dw = dry weight

C = Calculated

d = days

$$\ln(\text{tissue}) = \text{slope} * \ln(\text{soil}) + \text{intercept}$$

slope 0.8756

intercept 2.276

R² 0.6392

p value <0.0001

Median = 14.71

Appendix E-2 Bioaccumulation Data for Uptake of Dieldrin from Diet into Mammals and Birds

| Species Information | Exposure | | | Tissue Information | | | | | | | | Oral Exposure Information | | | | | | | BAF | | Reference |
|--|--------------------------------------|--------------------|----------------|--------------------|-------------|-----------------------|-----------------------------|--|--------------------------------|-------------------------------|-------------------------|---------------------------|---------------------|---------------------------|---------------------------|------------------------------------|-------------------------------|--------------------------|-------------------|-------|-------------------------|
| | Common Name (<i>Genus/Species</i>) | Field (F)/ Lab (L) | Exposure Route | Duration | Tissue Type | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet Weight or Dry Weight? ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln(Tissue Conc.) | Reported Diet Conc. | Reported Diet Conc. Units | Wet Weight or Dry Weight? | Moisture Content Diet ^d | Conversion Factor to mg/kg dw | Diet Exposure (mg/kg dw) | ln(Diet Exposure) | R/C | |
| Short-tailed shrew (<i>Blarina brevicauda</i>) | L | Diet | NR | Carcass | 61 | mg/kg | NR | NR | 3.125 | 191 | 5.250 | 50 | mg/kg | dw | NR | 1 | 50 | 3.9120 | C | 3.8 | Blus, 1978 |
| Short-tailed shrew (<i>Blarina brevicauda</i>) | L | Diet | NR | Carcass | 55 | mg/kg | NR | NR | 3.125 | 172 | 5.147 | 50 | mg/kg | dw | NR | 1 | 50 | 3.9120 | C | 3.4 | Blus, 1978 |
| Sheep (<i>Ovis aries</i>) | L | Diet | 1 yr | Carcass | 110 | mg/kg fat | dw | NA | 0.456 | 50 | 3.915 | 0.5 | mg/kg | dw | NR | 1 | 0.5 | -0.6931 | C | 100 | Davison 1970 |
| Sheep (<i>Ovis aries</i>) | L | Diet | 1 yr | Carcass | 203 | mg/kg fat | dw | NA | 0.468 | 95 | 4.554 | 1 | mg/kg | dw | NR | 1 | 1 | 0.0000 | C | 95 | Davison 1970 |
| Sheep (<i>Ovis aries</i>) | L | Diet | 1 yr | Carcass | 752 | mg/kg fat | dw | NA | 0.398 | 299 | 5.701 | 2 | mg/kg | dw | NR | 1 | 2 | 0.6931 | C | 150 | Davison 1970 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 15.9 | mg/kg | ww | 73.55 | 3.781 | 60.1 | 4.096 | 250 | mg/kg | NR | NR | 1 | 250 | 5.521 | C | 0.24 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 17 | mg/kg | ww | 70.4 | 3.378 | 57.4 | 4.051 | 250 | ppm | NR | NR | 1 | 250 | 5.521 | C | 0.23 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 23.85 | mg/kg | ww | 69.2 | 3.247 | 77.4 | 4.349 | 250 | ppm | NR | NR | 1 | 250 | 5.521 | C | 0.31 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 8.04 | mg/kg | ww | 72.9 | 3.690 | 29.7 | 3.390 | 250 | ppm | NR | NR | 1 | 250 | 5.521 | C | 0.12 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 7.8 | mg/kg | ww | 73.73 | 3.807 | 29.7 | 3.391 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 0.59 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 25.4 | mg/kg | ww | 69.72 | 3.303 | 83.9 | 4.429 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 1.68 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 33.92 | mg/kg | ww | 70.17 | 3.352 | 113.7 | 4.734 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 2.27 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 9.95 | mg/kg | ww | 72.39 | 3.622 | 36.0 | 3.585 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 3.60 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 21.23 | mg/kg | ww | 71.78 | 3.544 | 75.2 | 4.321 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 7.52 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 30.4 | mg/kg | ww | 70.94 | 3.441 | 104.6 | 4.650 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 10.5 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 22.42 | mg/kg | ww | 70.28 | 3.365 | 75.4 | 4.323 | 250 | ppm | NR | NR | 1 | 250 | 5.521 | C | 0.30 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 34.72 | mg/kg | ww | 69.52 | 3.281 | 113.9 | 4.735 | 250 | ppm | NR | NR | 1 | 250 | 5.521 | C | 0.46 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 51.1 | mg/kg | ww | 71.29 | 3.483 | 178.0 | 5.182 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 3.56 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 9.43 | mg/kg | ww | 69.24 | 3.251 | 30.7 | 3.423 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 0.61 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 50.09 | mg/kg | ww | 65.98 | 2.939 | 147.2 | 4.992 | 50 | ppm | NR | NR | 1 | 50 | 3.912 | C | 2.94 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 35.71 | mg/kg | ww | 68.74 | 3.199 | 114.2 | 4.738 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 11.4 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 21.67 | mg/kg | ww | 63.69 | 2.754 | 59.7 | 4.089 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 5.97 | Stickel et al., 1969 |
| Japanese quail (<i>Coturnix coturnix</i>) | L | Diet | NR | Carcass | 18.03 | mg/kg | ww | 67.04 | 3.034 | 54.7 | 4.002 | 10 | ppm | NR | NR | 1 | 10 | 2.303 | C | 5.47 | Stickel et al., 1969 |
| American kestrel (<i>Falco sparverius</i>) | L | Diet | NR | Carcass | 0.1 | ug/g | ww | NR | 3.125 | 0.3125 | -1.1631508 | 0.015 | ug/g | ww | 62 | 2.632 | 0.0395 | -3.232 | C | 7.92 | Lowe and Stendell, 1991 |
| Barn owl (<i>Tyto alba</i>) | L | Diet | 2 yr | Carcass | 9.6 | mg/kg | ww | NR | 3.125 | 30.0 | 3.401 | 0.58 | mg/kg | ww | NR | 3.125 | 1.8125 | 0.595 | C | 5.297 | Mendenhall et al. 1983 |
| Barn owl (<i>Tyto alba</i>) | L | Diet | 2 yr | Carcass | 9.2 | mg/kg | ww | NR | 3.125 | 28.75 | 3.359 | 0.58 | mg/kg | ww | NR | 3.125 | 1.8125 | 0.595 | C | 5.076 | Mendenhall et al. 1983 |
| American kestrel (<i>Falco sparverius</i>) | L | Diet | 60 d | Carcass | 232 | mg/kg | ww | NR | 3.125 | 725 | 6.586 | 1.2 | mg/kg | NR | NR | 1 | 1.2 | 0.182 | C | 193 | Stendell et al., 1989 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.06 | mg/kg | NR | NR | 3.125 | 0.1875 | -1.674 | 0.05 | mg/kg | NR | NR | 1 | 0.05 | -2.996 | C | 1.20 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.05 | mg/kg | NR | NR | 3.125 | 0.15625 | -1.856 | 0.05 | mg/kg | NR | NR | 1 | 0.05 | -2.996 | C | 1.00 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.34 | mg/kg | NR | NR | 3.125 | 1.0625 | 0.061 | 0.5 | mg/kg | NR | NR | 1 | 0.5 | -0.693 | C | 0.68 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.37 | mg/kg | NR | NR | 3.125 | 1.15625 | 0.145 | 0.5 | mg/kg | NR | NR | 1 | 0.5 | -0.693 | C | 0.74 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.37 | mg/kg | NR | NR | 3.125 | 1.15625 | 0.145 | 0.5 | mg/kg | NR | NR | 1 | 0.5 | -0.693 | C | 0.74 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.91 | mg/kg | NR | NR | 3.125 | 2.84375 | 1.045 | 1.5 | mg/kg | NR | NR | 1 | 1.5 | 0.405 | C | 0.61 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.79 | mg/kg | NR | NR | 3.125 | 2.46875 | 0.904 | 1.5 | mg/kg | NR | NR | 1 | 1.5 | 0.405 | C | 0.53 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 4.12 | mg/kg | NR | NR | 3.125 | 12.875 | 2.555 | 5.0 | mg/kg | NR | NR | 1 | 5 | 1.609 | C | 0.82 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 3.13 | mg/kg | NR | NR | 3.125 | 9.78125 | 2.280 | 5.0 | mg/kg | NR | NR | 1 | 5 | 1.609 | C | 0.63 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 8.5 | mg/kg | NR | NR | 3.125 | 26.5625 | 3.280 | 15.0 | mg/kg | NR | NR | 1 | 15 | 2.708 | C | 0.57 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 7.1 | mg/kg | NR | NR | 3.125 | 22.1875 | 3.100 | 15.0 | mg/kg | NR | NR | 1 | 15 | 2.708 | C | 0.47 | Wiese et al., 1968 |
| Crowned Guinea-Fowl (<i>Numida meleagris L.</i>) | L | Diet | 21 m | Carcass | 0.15 | mg/kg | NR | NR | 3.125 | 0.46875 | -0.758 | 0.15 | mg/kg | NR | NR | 1 | 0.15 | -1.897 | C | 1.0 | Wiese et al., 1968 |

¹ If not specified, wet weight is assumed

NA=Not Applicable

R=Reported

² If not reported, 32% solids is assumed.

NR = Not Reported

³ If not specified, dry weight is assumed

C=Calculated

$$\ln(\text{tissue}) = \text{slope} * \ln(\text{diet}) + \text{intercept}$$

slope 0.6076

intercept 1.9582

R² 0.5119

p value <0.0001

Median BAF = 1.2

Appendix E Dieldrin References

- Beyer, W. N. and Gish, C. D. 1980. Persistence in Earthworms and Potential Hazards to Birds of Soil Applied DDT, Dieldrin and Heptachlor. *J. Appl. Ecol.* 17(2): 295-307.
- Blus, L. J. 1978. Short-Tailed shrews: Toxicity and residue relationships of DDT, Dieldrin and Endrin. *Archives of Environ. Contam. and Toxic.* 7: 83-98.
- Davis, B. N. K. 1968. The soil macrofauna and organochlorine residues at twelve agricultural sites near Huntingdon. *Ann. Applied Biol.* 61: 29-45.
- Davis, B. N. K. and R. B. Harrison. 1966. Organochlorine insecticide residues in soil invertebrates. *Nature.* 211: 1424-1425.
- Davison, K.L. 1970. Dieldrin accumulation in tissues of sheep. *J. Agric. Food. Chem* 18: 1156-1160.
- Gish, C.D. 1970. Organochlorine insecticide residues in soils and soil invertebrates from agricultural lands. *Pestic. Monit. J.* 3: 241-252.
- Hendricks, A. J., W. C. Ma, J. J. Brouns, E. M. de Ruiter-Dijkman and R. Gast. 1995. Modelling and monitoring organochlorine and heavy metal accumulation in soils, earthworms, and shrews in Rhine-delta floodplains. *Archives of Environ. Contamination and Toxicology.* 29: 115-127.
- Jefferies, D. J. and B. N. K. Davis. 1968. Dynamics of Dieldrin in soil, earthworms and song thrushes. *Journal of Wildlife Management.* 42(3): 441-455.
- Korschgen, L.J. 1970. Soil-food-chain-pesticide wildlife relationships in aldrin-treated fields. *J. Wildl. Manage.* 34: 186-199.
- Lord, K. A., G. G. Briggs, M. C. Neale, and R. Manlove. 1980. Uptake of pesticides from water and soil by earthworms. *Pesticide Science.* 11: 401-408.
- Lowe, T. P., and R. C. Stendell. 1991. Eggshell modifications in captive American kestrels resulting from Aroclor 1248 in the diet. *Archives of Environ. Contamination and Toxicology.* 20: 519-522.
- Mendenhall, V. M., E. E. Klaas, and M. A. McLanes. 1983. Breeding success of barn owls (*Tyto alba*) fed low levels of DDE and Dieldrin. *Arch Environ. Contam. Toxicol.* 12: 235-240.
- Stendell, W., W. N. Beyer and R. A. Stehn. 1989. Accumulation of lead and organochlorine residues

in captive americal kestrels fed pine voles from Apple Orchards. *Journal of Wildlife Diseases*. 25(3): 388-389.

Stickell, W. H., L. F. Stickel, and J. W. Spann. 1969. Tissue residues of Dieldrin in relation to mortality in birds and mammals. In: *Chemical Fallout Current Research on Pesticides*. Ed by M. W. Miller and G. G. Berg. Springfield, Charles C. Thomas Publishers.

Wheatley, GA and JA Hardman. 1968. Organochlorine insecticide residues in earthworms from arable soils. *J. Sci. Food Agr.* 19: 219-225.

Wiese, I.H., N. C. J. Basson, J. H. Van der Vyver, and J. H. Van der Merwe. 1968. Toxicology and dynamics of dieldrin in the Crowned Guinea-Fowl (*Numida meleagris L.*). *Phytophylactica*. 1: 161-176.



Eco-SSL Attachment 4-1
Appendix F
Bioaccumulation Data for Pentachlorophenol

February 2005
Revised April 2007

This page intentionally left blank

Appendix F-1 Bioaccumulation Data for Uptake of Pentachlorophenol from Soil into Plant Foliage

| Species Information | | Exposure | | Plant Tissue Information | | | | | | | | | Soil Information | | | | | | BAF | | Reference |
|--------------------------------------|-----------------------------|----------|----------------|-----------------------------|--------------------------------------|---|--------------------------------------|-------------------------------------|-------------------------------|-------------------------------------|---------|---------------------------|------------------------------------|------------------------------------|------------------------------------|-------------------------------------|--------------------------|--------------------------------|-----|--|---------------------------|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Duration | Tissue Type | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet weight or Dry Weight? ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | ln (Tissue Conc. mg/kg dw) | Rinsed? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight? | % Moisture Soil ³ | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | ln (Soil Conc. mg/kg dw) | R/C | BAF (Tissue mg/kg dw /Soil (mg/kg dw)) | |
| Fescue | F | NR | Foliage | 0.03672 | mg/kg | dw | NR | 1 | 0.03672 | -3.30 | NR | 5.1 | mg/kg | dw | NR | 1 | 5.1 | 1.629 | C | 0.0072 | Bellin and O'Connor, 1990 |
| Fescue | F | NR | Foliage | 0.00051 | mg/kg | dw | NR | 1 | 0.00051 | -7.58 | NR | 5.1 | mg/kg | dw | NR | 1 | 5.1 | 1.629 | C | 0.0001 | Bellin and O'Connor, 1990 |
| Soybean (<i>Glycine max</i>) | L | 90 d | Foliage | 5.21 | ug/g | ww | NR | 6.67 | 34.7 | 3.55 | NR | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 3.47 | Casterline et al., 1985 |
| Soybean (<i>Glycine max</i>) | L | 90 d | Foliage | 3.47 | ug/g | ww | NR | 6.67 | 23.1 | 3.14 | NR | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 2.31 | Casterline et al., 1985 |
| Soybean (<i>Glycine max</i>) | L | 90 d | Foliage | 11.74 | ug/g | ww | NR | 6.67 | 78.3 | 4.36 | NR | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 7.83 | Casterline et al., 1985 |
| Spinach (<i>Spinacia oleracea</i>) | L | 64 d | Foliage | 9.3 | ug/g | ww | NR | 6.67 | 62.0 | 4.13 | NR | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 6.20 | Casterline et al., 1985 |
| Barley (<i>Hordeum vulgare</i>) | L | 7 d | Foliage | 5.1 | mg/kg | ww | NR | 6.67 | 34.0 | 3.53 | NR | 6 | mg/kg | dw | NR | 1 | 6 | 1.792 | C | 5.67 | Scheunert et al., 1986 |
| Barley (<i>Hordeum vulgare</i>) | L | 7 d | Foliage | 2.1 | mg/kg | ww | NR | 6.67 | 14.0 | 2.64 | NR | 1 | mg/kg | dw | NR | 1 | 1 | 0.000 | C | 14.01 | Scheunert et al., 1986 |
| Corn (<i>Zea mays</i>) | L | 7 d | Foliage | 13.8 | mg/kg | ww | NR | 6.67 | 92.0 | 4.52 | NR | 2 | mg/kg | dw | NR | 1 | 2 | 0.693 | C | 46.02 | Scheunert et al., 1986 |
| Corn (<i>Zea mays</i>) | L | 14 d | NR | 1.008 | mg/kg | NR | NR | 6.67 | 6.7 | 1.91 | NR | 0.2375 | mg/kg | dw | NR | 1 | 0.2375 | -1.438 | C | 28.31 | Lu et al., |

¹ If not reported, assumed to be wet weight (ww).

² If not reported, assumed to be 15% dry matter.

³ If not reported, assumed to be dry weight (dw).

C = BAF calculated

dw = dry weight

m = month

NA = Not Applicable

NR = Not Reported

R = Reported

R/C = BAF reported and either tissue concentration or soil concentration calculated

w = week

ww = wet weight

| | |
|-------------------|------|
| Median BAF | 5.93 |
|-------------------|------|

Regression statistics

slope 0.0787

intercept 1.5822

R² 0.0006

Appendix F-2 Bioaccumulation Data for the Uptake of Pentachlorophenol from Soil into Soil Invertebrates

| Species Information | | Information | | Invertebrate Tissue Information | | | | | | | Soil Information | | | | | | | BAF | | Reference |
|---|--------------------|-------------|-----------------------|---------------------------------|--|--------------------------------|-------------------------------|-------------------------|----------------------------|------------|---------------------|---------------------------|--|-----------------|-------------------------------|-----------------------|--------------------------|------|--|-------------------------|
| Common Name (Genus/Species) | Field (F)/ Lab (L) | Duration | Reported Tissue Conc. | Reported Tissue Conc. Units | Wet weight or Dry Weight? ¹ | % Moisture Tissue ² | Conversion Factor to mg/kg dw | Tissue Conc. (mg/kg dw) | In (Tissue Conc. mg/kg dw) | Depurated? | Reported Soil Conc. | Reported Soil Conc. Units | Wet Weight or Dry Weight? ³ | % Moisture Soil | Conversion Factor to mg/kg dw | Soil Conc. (mg/kg dw) | In (Soil Conc. mg/kg dw) | R/ C | BAF (Tissue (mg/kg/dw) /Soil (mg/kg dw)) | |
| Earthworm (<i>Lumbricus rubellus</i>) | L | NR | NR | NR | NR | NR | | NR | | NR | NR | NR | NR | NR | NR | NR | | R | 8.00 | van Gestel and Ma, 1988 |
| Earthworm (<i>Eisenia foetida andrei</i>) | L | NR | NR | NR | NR | NR | | NR | | NR | NR | NR | NR | NR | NR | NR | | R | 3.40 | van Gestel and Ma, 1988 |
| Earthworm (<i>Allolobophora caliginosa</i>) | L | 14 d | 17.7 | ug/g | ww | NR | 6.25 | 111 | 4.706 | No | 2.2 | ug/g | dw | NR | 1 | 2.2 | 0.788 | C | 50.3 | Haque and Ebing, 1988 |
| Earthworm (<i>Allolobophora caliginosa</i>) | L | 14 d | 144 | ug/g | ww | NR | 6.25 | 900 | 6.802 | No | 11.2 | ug/g | dw | NR | 1 | 11.2 | 2.416 | C | 80.4 | Haque and Ebing, 1988 |
| Earthworm (<i>Allolobophora caliginosa</i>) | L | 131 d | 11.5 | ug/g | ww | NR | 6.25 | 71.9 | 4.275 | No | 1.8 | ug/g | NR | NR | 1 | 1.8 | 0.588 | C | 39.9 | Haque and Ebing, 1988 |
| Earthworm (<i>Lumbricus terrestris</i>) | L | 131 d | 40 | ug/g | ww | NR | 6.25 | 250 | 5.521 | No | 1.8 | ug/g | NR | NR | 1 | 1.8 | 0.588 | C | 138.9 | Haque and Ebing, 1988 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 2.65 | mmol/kg | NR | NR | 1666.66 | 4417 | 8.393 | NR | 1800 | mg/kg | NR | NR | 1 | 1800 | 7.496 | C | 2.45 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.74 | mmol/kg | NR | NR | 1666.66 | 1233 | 7.117 | NR | 1000 | mg/kg | NR | NR | 1 | 1000 | 6.908 | C | 1.23 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.62 | mmol/kg | NR | NR | 1666.66 | 1033 | 6.941 | NR | 560 | mg/kg | NR | NR | 1 | 560 | 6.328 | C | 1.85 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.56 | mmol/kg | NR | NR | 1666.66 | 933 | 6.839 | NR | 320 | mg/kg | NR | NR | 1 | 320 | 5.768 | C | 2.92 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.59 | mmol/kg | NR | NR | 1666.66 | 983 | 6.891 | NR | 180 | mg/kg | NR | NR | 1 | 180 | 5.193 | C | 5.46 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.8 | mmol/kg | NR | NR | 1666.66 | 1333 | 7.195 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 13.3 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.33 | mmol/kg | NR | NR | 1666.66 | 550 | 6.310 | NR | 56 | mg/kg | NR | NR | 1 | 56 | 4.025 | C | 9.82 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.79 | mmol/kg | NR | NR | 1666.66 | 1317 | 7.183 | NR | 32 | mg/kg | NR | NR | 1 | 32 | 3.466 | C | 41.1 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.44 | mmol/kg | NR | NR | 1666.66 | 733 | 6.598 | NR | 18 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 40.7 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.21 | mmol/kg | NR | NR | 1666.66 | 350 | 5.858 | NR | 10 | mg/kg | NR | NR | 1 | 10 | 2.303 | C | 35.0 | Fitzgerald et al. 1997 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.39 | mmol/kg | NR | NR | 1666.66 | 2317 | 7.748 | NR | 1800 | mg/kg | NR | NR | 1 | 1800 | 7.496 | C | 1.29 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.19 | mmol/kg | NR | NR | 1666.66 | 1983 | 7.593 | NR | 1000 | mg/kg | NR | NR | 1 | 1000 | 6.908 | C | 1.98 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.35 | mmol/kg | NR | NR | 1666.66 | 2250 | 7.719 | NR | 560 | mg/kg | NR | NR | 1 | 560 | 6.328 | C | 4.02 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.16 | mmol/kg | NR | NR | 1666.66 | 1933 | 7.567 | NR | 320 | mg/kg | NR | NR | 1 | 320 | 5.768 | C | 6.04 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.58 | mmol/kg | NR | NR | 1666.66 | 2633 | 7.876 | NR | 180 | mg/kg | NR | NR | 1 | 180 | 5.193 | C | 14.6 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.51 | mmol/kg | NR | NR | 1666.66 | 850 | 6.745 | NR | 100 | mg/kg | NR | NR | 1 | 100 | 4.605 | C | 8.50 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 0.84 | mmol/kg | NR | NR | 1666.66 | 1400 | 7.244 | NR | 56 | mg/kg | NR | NR | 1 | 56 | 4.025 | C | 25.0 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.16 | mmol/kg | NR | NR | 1666.66 | 1933 | 7.567 | NR | 32 | mg/kg | NR | NR | 1 | 32 | 3.466 | C | 60.4 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia foetida</i>) | L | 28 d | 1.29 | mmol/kg | NR | NR | 1666.66 | 2150 | 7.673 | NR | 18 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 119 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia eugeniae</i>) | L | 28 d | 0.41 | mmol/kg | NR | NR | 1666.66 | 683 | 6.527 | NR | 560 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 38.0 | Fitzgerald et al. 1996 |
| Earthworm (<i>Eisenia eugeniae</i>) | L | 28 d | 0.61 | mmol/kg | NR | NR | 1666.66 | 1017 | 6.924 | NR | 180 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 56.5 | Fitzgerald et al. 1996 |
| Earthworm (<i>L. terrestris</i>) | L | 28 d | 0.47 | mmol/kg | NR | NR | 1666.66 | 783 | 6.664 | NR | 560 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 43.5 | Fitzgerald et al. 1996 |
| Earthworm (<i>L. terrestris</i>) | L | 28 d | 2.18 | mmol/kg | NR | NR | 1666.66 | 3633 | 8.198 | NR | 180 | mg/kg | NR | NR | 1 | 18 | 2.890 | C | 201.9 | Fitzgerald et al. 1996 |

¹ If not reported, wet weight is assumed.

² If not reported, 16% solids assumed.

³ If not reported, dry weight assumed.

NA = Not applicable

NR = Not reported

dw = dry weight

ww = wet weight

R = Reported

C = Calculated

d = days

ln(tissue) = slope * ln(soil) + intercept

slope 0.3308

intercept 5.546

R² 0.4965

p value <0.0001

Median BAF = 14.6

Appendix F Pentachlorophenol References

- Bellin, C.A. and O'Connor, G.A. 1990. Plant uptake of pentachlorophenol from sludge-amended soils. *J. Environ. Qual.* 19(3): 598-602.
- Casterline, J.L., Barnett, N.M., and Ku, Y. 1985. Uptake, translocation, and transformation of pentachlorophenol in soybean and spinach plants. *Environ. Res.* 37: 101-118.
- Fitzgerald, D.G., Lanno, R.P., Klee, U., Farwell, A., and Dixon, D.G. 1997. Critical body residues (CBRS): Applications in the assessment of pentachlorophenol toxicity to *Eisenia fetida* in artificial soil. *Soil Biol. Biochem.* 29(3-4): 685-688.
- Fitzgerald, D.G., Warner, K.A., Lanno, R.P., and Dixon, G. 1996. Assessing the effects of modifying factors on pentachlorophenol toxicity to earthworms: Applications of body residues. *Environ. Tox. Chem.* 15(12): 2299-2304.
- Gile, J.D., Collins, J.C., and Gillett, J.W. 1982. Fate and impact of wood preservatives in a terrestrial microcosm. *J. Agric. Food Chem.* 30: 295-301.
- Haque, A., and W. Ebing. 1988. Uptake and accumulation of pentachlorophenol and sodium pentachlorophenol by earthworms from water and soil. *Sci. Total Environ.* 68:113-125.
- Haque, A., Gruttke, H., Kratz, W., Kielhorn, U., Weigmann, G., Meyer, G., Bornkamm, R., Schuphan, I., and Ebing, W. 1988. Environmental fate and distribution of sodium [14C] pentachlorophenate in a section of urban wasteland ecosystem. *Sci. Total Environ.* 68: 127-139.
- Haque, A., I. Scheunert and F. Korte. 1978. Isolation and identification of a metabolite of pentachlorophenol-14C in rice plants. *Chemosphere.* 1: 65-69.
- Lu, P. Y., R. L. Metcalf and L. K. Cole. 1978. The environmental fate of 14C-pentachlorophenol in laboratory model ecosystems. In: Rao, K. (ed.), *Pentachlorophenol*. Plenum Press, New York. pp. 53-63.
- Scheunert, I., Qiao, Z., Korte, F., 1986. Comparative studies of the fate of atrazine-14C and pentachlorophenol-14C in various laboratory and outdoor soil-plant systems. *J. Environ. Sci. Health, Part B.* 21(6): 457-485.
- van Gestel, C.A.M., and W. Ma. 1988. Toxicity and bioaccumulation of chlorophenols in earthworms in relation to bioavailability in soil. *Ecotoxicol. Environ. Saf.* 15: 289-297.
- Weiss, U. M., I. Scheunert, W. Klein, and F. Korte. 1982. Fate of pentachlorophenol-14C in soil under controlled conditions. *J. Agric. Food Chem.* 30: 1191-1194.