Appendix I

Human Health Risk Assessment*

**** Since publication of the Draft EIS, the health risk analysis has been revised based on updated project data (revised tables are included; original tables have been left in this appendix for the Final EIS, so that the reader may easily compare values between the original and updated results).***

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Health Risk Analysis

The various activities anticipated at the proposed Western Greenbrier co-generation power plant in Rainelle, Greenbrier County, West Virginia, that will result in the release of chemicals, directly or indirectly, in the area surrounding the proposed site. Specifically, operation of the power plant will result in the release of chemicals that are products of fuel combustion. Additionally, fugitive emissions are anticipated to result from a small portion of the volatile fraction of the coal and waste coal (gob) stream being released to the atmosphere during receiving, storage, and handling activities.

Estimation of Media Concentrations

Chemicals of potential concern (COPC) that are anticipated to be present in stack and fugitive emissions at the proposed site will be dispersed in air and deposited at varying rates into different environmental media such as land, surface water, and vegetation. Additionally, deposited constituents may accumulate in animal tissue as a result of feeding activities. In order to estimate potential human exposures to these constituents, it is necessary to quantify the environmental concentrations of each constituent of concern at the points where exposure is likely to occur. The degree to which a constituent may dissipate or accumulate in a specific environmental medium is dictated by its physical and constituent properties as well as local terrain and meteorological conditions.

Not all constituents emitted from the proposed power plant will persist through each complete pathway. For example, all of the constituents selected for evaluation are transferred in air (alone or adsorbed onto particles) and may be available to a receptor via inhalation. However, only a subset of the selected constituents will be present in soil, dust, water, etc. In addition, some constituents are likely to partition into the fatty compartments of the body, whereas others are not. Subsequently, constituents selected for evaluation were assessed for completion of each exposure pathway.

Human Exposure Scenario Identification

For a chemical exposure to occur at any site, the following conditions must be met: (1) source, (2) release mechanism, (3) migration pathway, (4) exposure route, and (5) receptor population. Consequently, there is no unacceptable carcinogenic risk (or non-carcinogen hazard) if either a chemical-specific (toxic) effect or exposure is not present. It is clear that human receptors may come into contact with COPC emitted to the atmosphere from the proposed power plant (i.e., stack and fugitive emissions) via two primary exposure routes – either directly through inhalation or indirectly as a result of subsequent ingestion of water, soil, vegetation, and animal tissue that become contaminated by COPC through the food chain (U.S. EPA, 1998a).

Evaluation of human health risks associated with exposure to air emissions from combustion facilities requires an assessment of ground-level ambient air concentrations of vapors and

particulates, annual wet and dry deposition rates for particulates, and annual wet and dry deposition rates for vapors within the area of concern. Additionally, mass balance equations must be employed that account for the degradation, transformation, and release processes that will ultimately influence the partitioning of COPC among solids (sediment or soil particles), water, and air (U.S. EPA, 2003a).

The modeling effort for this risk assessment considered four environmental transport pathways. Specifically, the models used in the characterization follow anticipated point source emissions (from the stack of the proposed power plant) as well as non-point source fugitive emissions resulting from various activities at the facility to the atmosphere, watershed, subsurface (i.e., vadose zone and aquifer), and surface water.

Chemicals in the various media are subject to various fate processes that can influence the concentration as well as the toxicity of the constituent. The fate processes that were considered in the risk characterization portion of the EIS include:

- Chemical/biological transformation (and associated products)
- Linear partitioning (e.g., water/air, water/soil, air/plant, water/biota)
- Nonlinear partitioning (e.g., metals in the vadose zone)
- Chemical reactions/speciation (e.g., mercury in surface water)

The fate and transport models used in the risk assessment were based on those in the U.S. EPA *Methodology for Assessing Health Risks Associated With Multiple Pathways of Exposure to Combustor Emissions* (U.S. EPA, 1998a), the U.S. EPA *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (U.S. EPA, 1998b) and subsequent correction to the Protocol (U.S. EPA, 1999b).

COPC Contact Rate

The predictive approach to exposure assessment is the method that is used most commonly to support U.S. EPA risk assessments and risk-based regulatory decisions for chemical agents of concern. Estimates based on this approach require information based on output from chemical transport modeling, transformations resulting from environmental fate processes, and knowledge of activities that bring the receptor in contact with the chemicals. This type of assessment can be used for all of the principal exposure routes (i.e., ingestion, inhalation, and dermal absorption) and environmental settings (i.e., occupational and residential environments, recreational activities, outdoor ambient air, indoor air, and consumption of foods and drinking water). An exposure assessment quantifies the magnitude, duration, and routes of exposure to chemicals and characterizes and enumerates the exposed populations.

Oftentimes, adequate empirical data are not readily available to develop and validate credible predictive techniques for some exposure scenarios. Consequently, analysts may resort to the use of federally or state ascribed default assumptions for exposure parameters (i.e., the individual variables that comprise an exposure algorithm and jointly determine the value of the exposure estimate) and scenarios (the conditions under which exposure takes place).

Considerations that were given to the various exposure pathways in this risk assessment are described below.

Air Exposure Pathway –

Receptors will be exposed directly to COPC in vapor, particulate, and particle-bound phases as a result of normal inhalation (U.S. EPA, 1998b). Exposure from vapor and particulate inhalation are affected by vapor and particulate COPC concentrations, respiration rate during the period of exposure, and exposure length.

Food Exposure Pathways –

Plants and animals may be impacted by emission sources via direct uptake of COPC from air or from COPC deposited in soil. Consequently, humans may be exposed to COPC via the food chain when the plants and animal tissue are consumed. The amount of COPC exposure through this pathway is a function of the types of food consumed, amount of food consumed per day, concentration of COPC in the food, and percentage of the diet contaminated by COPC (U.S. EPA, 1998b).

Soil Exposure Pathways –

Children and adults may be exposed to COPC in soil as a result of incidental ingestion of soil that has adhered to their hands. COPC exposure via this route is influenced by soil concentration, rate of soil ingestion during the time of exposure, and length of time spent in the vicinity of the contaminated soil (U.S. EPA, 1998b).

Water Exposure Pathways –

Surface water (i.e., river/stream, lake, farm pond) or collected precipitation (e.g., cistern) that is used as a drinking water source will introduce water ingestion as a possible exposure pathway (U.S. EPA, 1998b). Additionally, recreational and/or subsistence fishing activities, with subsequent use of the fish and crustaceans as a food source, make the food chain an important route of exposure for communities that have surface water bodies in the vicinity of a combustion unit.

Exposure Scenarios

In the interest of conservatism, the following receptors and pathways were considered for the risk assessment:

- Resident/Home Gardener (adult and child)
  - Consumption of homegrown produce;
  - Consumption of locally raised beef, milk, pork, chicken and eggs;
  - Incidental soil ingestion;
  - Direct inhalation of vapors and particulates.
- Subsistence Farmer (adult and child)
  - Consumption of farm-produced beef and milk;
  - Consumption of homegrown produce;
  - Consumption of farm-produced pork, chicken and eggs;
  - Incidental soil ingestion;
  - Direct inhalation of vapors and particulates.
- Nursing Infant
  - Exposure to dioxin in mother's milk for all exposure scenarios.
- Subsistence Fisher (adult and child)
  - Consumption of homegrown produce;
  - Consumption of locally raised beef, milk, pork, chicken and eggs;
  - Incidental soil ingestion;
  - Direct inhalation of vapors and particulates;
  - Consumption of fish from specific waterbodies.
- School/Day Care Child
  - Incidental soil ingestion;
  - Direct inhalation of vapors and particulates.
- Hospital Patient/Extended Care Resident
  - Direct inhalation of vapors and particulates.

A scenario that considers workers who might work at the proposed power plant and live within the study area is not required in any of the guidance relative to performing screening-level risk analyses of facilities that burn hazardous waste. Additionally, individuals characterized in that scenario would be expected to spend only a portion of time at one location within the study area and may exit the study area for significant lengths of time.

Each of the receptors was evaluated using average baghouse outlet emissions of chemicals that were measured during the Pilot-Scale Boiler Emissions Test conducted by TRC Environmental Corporation on September 17, 2004, as well as U.S. Environmental Protection Agency AP-42 Series emission factors for other chemicals that are also associated with anthracite coal combustors.

An important part of the exposure assessment is the identification of subgroups, within the potentially exposed population of the study area. It is assumed that the exposure of each receptor can be represented using exposure factors that reflect patterns of behavior and activity representative of the receptor sub-group.

The use of the subsistence farmer, resident/home gardener, nursing infant, subsistence fisher, and sensitive sub-population (i.e., student/day care child and hospital patient/extended care resident) scenarios represent a conservative approach. The assumptions used in each scenario to calculate the estimated exposures to these receptors are expected to be the highest exposures found. These receptors were chosen to be the most conservative for individuals living in the area of the proposed power plant; so that if found to be within acceptable U.S. EPA guideline values, then the potential for exposure to the remaining population would be much lower. The exposure assumptions for each of the receptor types are described below.

Resident/Home Gardener (adult and child) –

The resident/home gardener is exposed via consumption of locally grown vegetables; locally raised beef, pork, chicken, and eggs (average contamination from a 20-km^2 area); incidental soil ingestion; and direct inhalation of vapors and particles. The primary difference between the typical resident/home gardener and a typical farmer is the difference in soil concentration based on the different exposure duration. Soil ingestion and direct air inhalation is based on average concentrations close to the receptor location.

Subsistence Farmer (adult and child) –

A subsistence farmer is a farmer who is assumed to raise cattle for both beef and milk consumption and grows produce for home consumption. In addition, the subsistence farmer is exposed via consumption of farm-raised pork, chicken, and eggs. The fraction of contaminated beef, milk, pork, chicken, eggs, and produce consumed by the subsistence farmer is assumed to be one. That is, a subsistence farmer would be a farmer who derives 100-percent of the food consumed from their own farm. Soil ingestion and direct air inhalation are based on conditions close to the receptor location.

Nursing Infant (all scenarios) –

The presence of compounds in mothers' milk provides an exposure pathway to infants,

who constitute a sensitive subpopulation. Concentrations of dioxins in the breast milk was estimated based on the maternal dietary intake of soil, vegetation, beef, dairy, pork, poultry, and eggs, as well as inhalation of ambient air. This approach was used to characterize exposure of infants to dioxins in breast milk.

Subsistence Fisher (adult and child) –

The subsistence fisher is exposed via consumption of contaminated fish and homegrown produce, incidental soil ingestion, and direct inhalation of vapors and particles. The fraction of contaminated fish and produce consumed by the subsistence fisher is assumed to be 100%. As a conservative measure, the subsistence fisher is also assumed to eat locally raised beef, pork, chicken, and eggs (average contamination from a 20-km^2 area). Soil ingestion and direct air inhalation is based on concentrations close to the receptor location.

Exposure Routes

The three primary exposure routes generally considered in human health risk assessments include inhalation, ingestion, and dermal absorption. Primary exposure routes, representing both direct and indirect pathways of exposure were considered in the risk assessment for the proposed power plant. These routes and associated pathways include:

- Inhalation of air;
- Ingestion of soil;
- Ingestion of locally-grown and home-grown produce;
- Ingestion of farm-produced beef and milk, pork, chicken, and eggs;
- Ingestion of locally-raised beef and milk, pork, chicken, and eggs;
- Ingestion of surface water;
- Ingestion of locally-caught fish; and
- Ingestion of mothers' breast milk by infants.

U.S. EPA has concluded that the potential for groundwater to become contaminated from combustor stack emissions by this pathway is limited, and that further evaluation of this pathway is unnecessary in risk assessments for combustor facilities (U.S. EPA, 1998b).

The dermal absorption route of exposure (from soil or water) was not considered for the purpose of this risk assessment because available data indicate that the contribution of dermal exposure to soils to overall risk is typically small (U.S. EPA, 1998b).

Human Health Risk and Hazard Characterization

The objective of the risk characterization portion of the risk assessment is to evaluate the potential health impacts of exposure to the constituents of emissions released into the environment by the proposed power plant. Risk characterization is the final step of the risk assessment process. In this step, cancer and non-cancer toxicity values for the COPC found in stack and fugitive emissions are examined in conjunction with estimated exposure doses corresponding to the receptor scenarios: resident/home gardener (adult and child), subsistence farmer (adult and child), nursing infant (all scenarios), subsistence fisher, school/day care child, and hospital patient/extended care resident. Total lifetime cancer risks and non-cancer hazards associated with direct and indirect exposures to constituents of the facility emissions will be compared with values considered acceptable by U.S. EPA.

Of special note is the method by which infant exposure to dioxin in mothers' breast milk will be assessed. The presence of compounds in mothers' milk provides an exposure pathway to infants, who constitute a sensitive subpopulation. The concentration of a constituent in breast milk is based on the maternal dietary intake of soil, vegetation, beef, dairy, pork, poultry, and eggs, as well as inhalation of air. However, because of the contracted exposure duration (i.e., one year) of the infant, "risk" to the infant was not calculated in the same fashion as for older children and adults. The nursing infant scenario evaluated exposure to dioxins in its mother's breast milk during a nursing period of one year. The exposure to an infant was compared to 50 pg/kg/day (5.0×10^{-8} mg/kg/day) established by U.S. EPA *Estimating Exposure to Dioxin-Like Compounds. Volume II: Properties, Sources, Occurrences, and Background Exposures, EPA/600/6-88/005Cb* (U.S. EPA, 1994).

U.S. EPA guidelines were followed in characterizing the health risks for carcinogenic constituents of stack and fugitive emissions from the proposed power plant. Cancer risks were calculated by multiplying lifetime average daily doses (LADD) by the respective chemical- and pathway-specific cancer slope factors (CSF). To account for exposures to multiple COPC it was assumed that cancer risks are additive (U.S. EPA, *The Risk Assessment Guidelines of 1999*). Pathway-specific risks were calculated by summing the cancer risk estimates of the individual COPC relevant to each pathway. Individuals might also be exposed to a given COPC or a combination of COPC through several pathways. In order to account for risks resulting from multipathway exposures, the total cancer risks for different receptor scenarios were calculated by summing the risks for all carcinogenic COPC across appropriate routes of exposure.

Non-cancer impacts on human health were evaluated by comparing projected or estimated daily constituent intakes with reference levels for each COPC. Reference doses (RfD) and reference concentrations (RfC) represent, respectively, estimated daily oral or inhalation exposure levels not expected to result in any adverse health effects in persons exposed over their entire lifetimes. Margins of safety are incorporated into the derivation of RfD and RfC values. Even sensitive subpopulations (such as children and the aged) should be protected when exposed to a given COPC at levels as high as the RfD

or RfC. RfD values are expressed in units of milligrams (mg) compound per kilogram (kg) body weight per day. RfC values are expressed in units of mg compound per cubic meter (m^3) of air. RfC values may be compared directly to exposure concentrations in air because human exposure characteristics (i.e., inhalation rate of 20 m^3/day and average adult male body weight of 70 kg) have been incorporated into their derivation.

The ratio of an exposure dose (or concentration) to the RfD (or RfC) is called the hazard quotient (HQ). A HQ of one or below is considered by the U.S. EPA to be protective of human health. For example, if the HQ is 0.01 (1×10^{-2}) then the calculated dose is 100 times less than the RfD or RfC and expected to safeguard the health of even the most sensitive members of the population. It should be noted that the RfD and RfC are not actual thresholds for adverse effects; therefore ratios greater than one do not necessarily indicate a non-cancer hazard. In fact, in some cases, depending on the substance being evaluated, a dose that is more than an order of magnitude greater than the RfD or RfC may not lead to adverse health effects.

A hazard index (HI) is used to assess the overall potential for non-cancer effects posed by combined constituent exposures (U.S. EPA, 1989). The HI is often calculated for those constituents that affect the same target organ (e.g., liver, nervous system, etc.) and is equal to the sum of the respective HQ for those constituents.

Risk Characterization Results

The total carcinogenic risks and non-carcinogenic hazards anticipated for the various receptors in the vicinity of the proposed power plant are as follows:

Receptor	Total Risk* (cancer)	Hazard Index* (non-cancer)
Resident/Home Gardener		
Adult	***$0.00076x10^{-4}$***	***0.01972***
Child	***$0.00023x10^{-4}$***	***0.02347***
Subsistence Farmer		
Adult	***$0.0002x10^{-4}$***	***0.00043***
Child	***$0.000051x10^{-4}$***	***0.00063***
Subsistence Fisher		
Adult	***$0.0011x10^{-4}$***	***0.00269***
Child	***$0.00035x10^{-4}$***	***0.00381***
School/Day Care Child	***$0.000019x10^{-4}$***	***0.0002***
Hospital Patient/Extended Care Resident	***$0.0000016x10^{-4}$***	***0.0000002***
U.S. EPA Criteria (Acceptable Risk Defined as Less Than)	1×10^{-4}	1.0

**** Values were updated because of new modeling efforts based on updated project data.***

The anticipated risks for all receptors are orders of magnitude lower than the acceptable range of 10^{-4} to 10^{-6}. Likewise, for non-carcinogens, the anticipated hazard indices are orders of magnitude below 1. The chemical-specific risks and hazards for each receptor are presented in this appendix.

Risk Assessment References

US EPA (1989). *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Interim Final*. EPA/540/1-89/002. Office of Emergency and Remedial Response. Washington, DC, 1989.

US EPA (1994). *Estimating Exposure to Dioxin-Like Compounds Vol.ume II: Properties, Sources, Occurrence and Background Exposure*. EPA/600/6-88/005Cb. Office of Research and Development. Washington DC.

U.S. EPA (1998a). *Methodology for Assessing Health Risks Associated With Multiple Pathways of Exposure to Combustor Emissions*. EPA600/R-98/137. National Center for Environmental Assessment. Cincinnati, OH. Update to EPA/600/6-90/003, *Methodology for Assessing Health Risks Associated With Indirect Exposure to Combustor Emissions*.

U.S. EPA (1998b). *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. EPA530-D-98-001A. Office of Solid Waste and Emergency Response. Peer Review Draft, July 1998.

U.S. EPA (1999a). *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. EPA530-D-99-001A. Office of Solid Waste and Emergency Response. Peer Review Draft, August 1999.

U.S. EPA (1999b). Correction to the publication "*Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*". Memorandum to Waste Management Division Directors, Regions I-X, and State Hazardous Waste Directors from Barnes Johnson, Director of Economics, Methods, and Risk Analysis Division. August 2, 1999.

U.S. EPA (1999c). *Guidelines for Carcinogen Risk Assessment*. NCEA-F-0644. Risk Assessment Forum. Washington, DC. Review Draft, July 1999.

US EPA (2003a). *Multimedia, Multipathway, and Multireceptor Risk Assessment (3MRA) Modeling System. Volume I: Modeling System and Science*. EPA530-D-03-001a. Office of Research and Development and Office of Solid Waste. Washington, DC. SAB Review Draft, July 2003.

Table 1. Risk Analysis - Resident Home Gardener (Location: L4 (Rainelle Downtown))

Chemical	Total Daily Intake						Total Risk				Total Hazard			
	Carcinogen Total Daily Intake		Noncarcinogen Total Daily Intake		Total Daily Inhalation		Total Risk		Inhalation Risk		Total Hazard		Inhalation Hazard	
	Resident/Home Gardener Adult (mg/kg-day) IAR	Resident/Home Gardener Child (mg/kg-day) ICR	Resident/Home Gardener Adult (mg/kg-day) IARn	Resident/Home Gardener Child (mg/kg-day) ICRn	Resident/Home Gardener Adult (mg/kg-day) ADIa	Resident/Home Gardener Child (mg/kg-day) ADIc	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child
PCDD/PCDF														
2,3,7,8-Tetrachlorodibenzodioxin	5.15E-14	4.03E-14	5.15E-14	4.03E-14	4.49E-18	2.00E-18	3.2E-09	5.0E-10	6.7E-13	3.0E-13				
Volatiles														
Acetaldehyde	2.35E-07	3.22E-07	2.35E-07	3.22E-07	7.98E-09	3.55E-09			6.1E-11	2.7E-11				
Acetone	2.01E-11	2.75E-11	2.01E-11	2.75E-11	9.03E-12	4.01E-12					2.14E-11	2.64E-11	1.00E-11	4.01E-12
Acetophenone	5.28E-10	7.31E-10	5.28E-10	7.31E-10	2.15E-10	9.54E-11					5.06E-09	7.01E-10	2.15E-09	9.54E-11
Acrolein	2.18E-08	3.22E-08	2.18E-08	3.22E-08	4.06E-09	1.80E-09					4.17E-05	6.18E-05	8.12E-06	3.61E-06
Benzene	1.29E-11	1.81E-11	1.29E-11	1.81E-11	4.25E-12	1.89E-12	2.9E-13	8.2E-14	1.1E-13	5.1E-14	3.10E-09	4.34E-09	1.06E-09	4.72E-10
Benzyl chloride	2.82E-08	4.29E-08	2.82E-08	4.29E-08	9.79E-09	4.35E-09	2.0E-09	6.0E-10			1.35E-05	2.06E-05	4.90E-06	2.18E-06
Carbon disulfide	2.19E-11	2.99E-11	2.19E-11	2.99E-11	1.44E-12	6.39E-13					2.10E-10	2.87E-10	1.44E-11	6.39E-12
Chlorobenzene	1.45E-09	1.99E-09	1.45E-09	1.99E-09	3.11E-10	1.38E-10					6.94E-08	9.55E-09	1.56E-08	6.92E-10
Chloroform	6.26E-12	9.32E-12	6.26E-12	9.32E-12	9.01E-13	4.00E-13			7.3E-14	3.2E-14	6.00E-10	8.93E-10	9.01E-11	4.00E-11
Cumene	6.74E-11	8.47E-11	6.74E-11	8.47E-11	7.52E-11	3.34E-11					6.46E-10	2.03E-10	7.52E-10	8.35E-11
Ethylbenzene	7.08E-10	1.04E-09	7.08E-10	1.04E-09	1.32E-09	5.87E-10					6.79E-09	9.10E-09	1.32E-08	5.34E-09
Ethyl Chloride (chloroethane)	2.00E-10	2.71E-10	2.00E-10	2.71E-10	5.91E-10	2.62E-10	2.4E-13	6.5E-14			4.80E-10	6.50E-10	1.48E-09	6.56E-10
Ethylene dichloride (I,2-dichloroethane)	8.68E-10	1.35E-09	8.68E-10	1.35E-09	5.58E-10	2.48E-10	7.1E-10	2.2E-10	1.1E-09	5.0E-10	9.25E-08	1.44E-07	6.20E-08	2.76E-08
Ethylene dibromide (I,2-dibromoethane)	2.77E-11	3.82E-11	2.77E-11	3.82E-11	2.15E-11	9.54E-12	1.0E-12	2.9E-13	2.0E-12	8.7E-13	1.33E-09	1.83E-09	1.07E-09	4.77E-10
Freon 11 (trichlorofluoromethane)	4.64E-12	6.57E-12	4.64E-12	6.57E-12	7.55E-13	3.35E-13					1.48E-11	9.00E-12	2.52E-12	4.79E-13
Freon 12 (dichlorodifluoromethane)	1.19E-11	1.66E-11	1.19E-11	1.66E-11	2.36E-12	1.05E-12					5.69E-11	1.77E-11	1.18E-11	1.17E-12
Hexane	3.43E-11	4.60E-11	3.43E-11	4.60E-11	4.53E-12	2.01E-12					2.99E-12	7.35E-11	4.12E-13	3.36E-12
Methyl bromide (bromomethane)	1.81E-08	2.49E-08	1.81E-08	2.49E-08	2.24E-09	9.97E-10					1.24E-05	4.77E-06	1.60E-06	1.99E-07
Methyl chloride (chloromethane)	4.83E-12	6.64E-12	4.83E-12	6.64E-12	5.27E-13	2.34E-13								
Methylene chloride	1.66E-07	2.61E-07	1.66E-07	2.61E-07	5.45E-09	2.42E-09	5.1E-10	1.6E-10	9.0E-12	4.0E-12	2.66E-06	3.13E-06	9.09E-08	3.03E-08
Methyl ethyl ketone (2-butanone)	2.35E-09	3.26E-09	2.35E-09	3.26E-09	2.79E-10	1.24E-10					3.76E-09	5.22E-09	4.65E-10	2.07E-10
Methyl methacrylate	4.47E-09	6.14E-09	4.47E-09	6.14E-09	4.94E-10	2.20E-10					3.06E-09	9.81E-08	3.53E-10	3.66E-09
Methyl tert butyl ether	1.17E-10	1.63E-10	1.17E-10	1.63E-10	1.59E-11	7.06E-12	1.9E-13	5.4E-14						
Styrene	1.52E-09	2.05E-09	1.52E-09	2.05E-09	6.01E-10	2.67E-10					7.28E-09	1.97E-08	3.01E-09	2.67E-09
Tetrachloroethene	3.91E-11	5.35E-11	3.91E-11	5.35E-11	4.08E-12	1.81E-12	8.7E-12	2.4E-12	8.2E-14	3.6E-14	3.75E-09	2.57E-11	4.08E-10	9.07E-13
Toluene	7.34E-10	1.00E-09	7.34E-10	1.00E-09	2.79E-10	1.24E-10					3.52E-09	4.82E-09	1.40E-09	6.20E-10
1,1,1-Trichloroethane	2.28E-09	3.12E-09	2.28E-09	3.12E-09	3.54E-10	1.57E-10					7.82E-09	2.99E-09	1.27E-09	1.57E-10
Vinyl acetate	4.89E-08	7.55E-08	4.89E-08	7.55E-08	5.15E-10	2.29E-10					4.69E-08	7.24E-08	5.15E-10	2.29E-10
Xylenes	3.66E-12	5.52E-12	3.66E-12	5.52E-12	1.07E-10	4.77E-11					1.76E-11	2.65E-11	5.37E-10	2.39E-10
Semi-Volatiles														
Benzo(a)pyrene (equivalents)	7.29E-09	8.04E-09	7.29E-09	8.04E-09	1.55E-12	6.87E-13	2.2E-08	4.8E-09	4.8E-12	2.1E-12				
Bis(2-ethylhexyl)phthalate	2.00E-06	3.43E-06	2.00E-06	3.43E-06	1.02E-09	4.53E-10	1.2E-08	3.9E-09			9.60E-05	1.64E-04	5.10E-08	2.27E-08
Bromoform	5.21E-10	7.28E-10	5.21E-10	7.28E-10	5.48E-10	2.43E-10	1.7E-12	4.7E-13	2.1E-12	9.5E-13	2.50E-08	3.49E-09	2.74E-08	1.22E-09
2,4-Dinitrotoluene	4.03E-10	5.84E-10	4.03E-10	5.84E-10	4.90E-12	2.18E-12					1.93E-07	2.80E-07	2.45E-09	1.09E-09
Formaldehyde	1.57E-06	2.20E-06	1.57E-06	2.20E-06	3.36E-09	1.49E-09			1.5E-10	6.7E-11	7.54E-06	1.06E-05	1.68E-08	7.47E-09
Isophorone	3.44E-10	5.31E-10	3.44E-10	5.31E-10	8.12E-09	3.61E-09	1.3E-13	4.1E-14			1.65E-09	2.55E-10	4.06E-08	1.80E-09
Phenol	5.10E-10	7.17E-10	5.10E-10	7.17E-10	2.25E-10	1.00E-10					1.63E-09	1.15E-09	7.52E-10	1.67E-10
PCBs														
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00								
Inorganics														
Antimony	6.33E-07	5.59E-07	6.34E-07	5.69E-07	1.83E-10	8.12E-11					1.52E-03	2.73E-03	4.57E-07	4.06E-07
Arsenic	8.52E-09	9.06E-09	8.52E-09	9.06E-09	3.98E-12	1.77E-12	5.3E-09	1.1E-09	6.0E-11	2.7E-11	2.72E-05	2.90E-05	1.33E-08	5.89E-09
Beryllium	5.92E-06	4.37E-06	5.92E-06	4.37E-06	2.14E-10	9.53E-11			1.8E-09	8.0E-10	2.84E-03	8.37E-04	1.07E-07	1.91E-08
Cadmium	4.90E-09	3.53E-09	4.91E-09	3.54E-09	1.25E-12	5.54E-13			7.9E-12	3.5E-12	4.70E-06	3.40E-06	1.25E-09	5.54E-10
Chromium VI	1.99E-08	1.76E-08	1.99E-08	1.77E-08	1.37E-11	6.07E-12			5.6E-10	2.5E-10	6.37E-06	8.47E-07	4.55E-09	3.04E-10
Cobalt	2.32E-07	4.37E-07	2.40E-07	5.13E-07	1.03E-09	4.59E-10			1.0E-08	4.5E-09	1.15E-05	2.46E-05	5.16E-08	2.29E-08
Manganese	3.49E-07	7.08E-07	3.60E-07	8.03E-07	5.07E-09	2.26E-09					1.72E-05	5.50E-06	2.54E-07	1.61E-08
Mercury (elemental)	7.55E-10	4.96E-10	7.55E-10	4.96E-10	3.03E-14	1.34E-14								
Nickel	1.16E-05	9.19E-06	1.16E-05	9.19E-06	2.90E-09	1.29E-09					5.56E-04	4.40E-04	1.45E-07	6.44E-08
Selenium	5.28E-05	7.07E-05	5.28E-05	7.07E-05	1.35E-08	5.98E-09					1.01E-02	1.36E-02	2.69E-06	1.20E-06
Acid Gases														
HCl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E-07	6.20E-08								
							5.9E-08	**1.8E-08**	**1.4E-08**	**6.2E-09**	**0.01530**	**0.01789**	**0.000019**	**0.000008**

Appendix I (old tables)

Table 2. Risk Analysis - Subsistence Farmer (Location: F1 (Williamsburg))

Chemical	Total Daily Intake								Total Risk					Total Hazard				
	Carcinogen Total Daily Intake			Noncarcinogen Total Daily Intake			Total Daily Inhalation		Total Risk			Inhalation Risk		Total Hazard			Inhalation Hazard	
	Subsistence Farmer Adult (mg/kg-day) IAF	Subsistence Farmer Child (mg/kg-day) ICF	Infant (pg/kg-day) II	Subsistence Farmer Adult (mg/kg-day) IAFn	Subsistence Farmer Child (mg/kg-day) ICFn	Infant (pg/kg-day) II	Subsistence Farmer Adult (mg/kg-day) ADI_{Fa}	Subsistence Farmer Child (mg/kg-day) ADI_c	Subsistence Farmer Adult	Subsistence Farmer Child	Infant (mg/day)	Subsistence Farmer Adult	Subsistence Farmer Child	Subsistence Farmer Adult	Subsistence Farmer Child	Infant (mg/day)	Subsistence Farmer Adult	Subsistence Farmer Child
PCDD/PCDF																		
2,3,7,8-Tetrachlorodibenzodioxin	9.02E-15	7.08E-15	0.00029	9.02E-15	7.08E-15	0.00029	1.05E-18	3.49E-19	7.4E-10	8.7E-11	0.00029	1.6E-13	5.2E-14			0.00029		
Volatiles																		
Acetaldehyde	1.65E-07	2.26E-07		1.65E-07	2.26E-07		1.86E-09	6.20E-10				1.4E-11	4.8E-12					
Acetone	1.41E-11	1.93E-11		1.41E-11	1.93E-11		2.11E-12	7.02E-13						1.50E-11	1.85E-11		2.34E-12	7.02E-13
Acetophenone	3.69E-10	5.09E-10		3.69E-10	5.09E-10		5.01E-11	1.67E-11						3.54E-09	4.88E-10		5.01E-10	1.67E-11
Acrolein	1.52E-08	2.25E-08		1.52E-08	2.25E-08		9.47E-10	3.16E-10						2.92E-05	4.32E-05		1.89E-06	6.31E-07
Benzene	9.02E-12	1.26E-11		9.02E-12	1.26E-11		9.92E-13	3.31E-13	2.7E-13	5.7E-14		2.7E-14	8.9E-15	2.16E-09	3.01E-09		2.48E-10	8.27E-11
Benzyl chloride	1.97E-08	3.00E-08		1.97E-08	3.00E-08		2.28E-09	7.62E-10	1.8E-09	4.2E-10				9.46E-06	1.44E-05		1.14E-06	3.81E-07
Carbon disulfide	1.53E-11	2.09E-11		1.53E-11	2.09E-11		3.36E-13	1.12E-13						1.47E-10	2.01E-10		3.36E-12	1.12E-12
Chlorobenzene	9.95E-10	1.37E-09		9.95E-10	1.37E-09		7.27E-11	2.42E-11						4.77E-08	6.55E-09		3.63E-09	1.21E-10
Chloroform	4.37E-12	6.46E-12		4.37E-12	6.46E-12		2.10E-13	7.01E-14				1.7E-14	5.7E-15	4.19E-10	6.20E-10		2.10E-11	7.01E-12
Cumene	3.73E-11	4.98E-11		3.73E-11	4.98E-11		1.75E-11	5.85E-12						3.58E-10	1.19E-10		1.75E-10	1.46E-11
Ethylbenzene	4.41E-10	6.68E-10		4.41E-10	6.68E-10		3.08E-10	1.03E-10						4.23E-09	5.82E-09		3.08E-09	9.34E-10
Ethyl Chloride (chloroethane)	1.13E-10	1.58E-10		1.13E-10	1.58E-10		1.38E-10	4.59E-11	1.8E-13	3.8E-14				2.70E-10	3.80E-10		3.44E-10	1.15E-10
Ethylene dichloride (1,2-dichloroethane)	6.07E-10	9.40E-10		6.07E-10	9.40E-10		1.30E-10	4.34E-11	6.7E-10	1.5E-10		2.6E-10	8.7E-11	6.47E-08	1.00E-07		1.45E-08	4.83E-09
Ethylene dibromide (1,2-dibromoethane)	1.93E-11	2.66E-11		1.93E-11	2.66E-11		5.01E-12	1.67E-12	9.6E-13	2.0E-13		4.6E-13	1.5E-13	9.27E-10	1.27E-09		2.51E-10	8.35E-11
Freon 11 (trichlorofluoromethane)	3.22E-12	4.53E-12		3.22E-12	4.53E-12		1.76E-13	5.87E-14						1.03E-11	6.20E-12		5.87E-13	8.39E-14
Freon 12 (dichlorodifluoromethane)	8.28E-12	1.15E-11		8.28E-12	1.15E-11		5.51E-13	1.84E-13						3.97E-11	1.23E-11		2.76E-12	2.04E-13
Hexane	2.26E-11	3.09E-11		2.26E-11	3.09E-11		1.06E-12	3.52E-13						1.97E-12	4.93E-11		9.61E-14	5.87E-13
Methyl bromide (bromomethane)	1.26E-08	1.74E-08		1.26E-08	1.74E-08		5.24E-10	1.75E-10						8.66E-06	3.34E-06		3.74E-07	3.49E-08
Methyl chloride (chloromethane)	3.38E-12	4.64E-12		3.38E-12	4.64E-12		1.23E-13	4.10E-14										
Methylene chloride	1.16E-07	1.83E-07		1.16E-07	1.83E-07		1.27E-09	4.24E-10	4.8E-10	1.1E-10		2.1E-12	7.0E-13	1.86E-06	2.19E-06		2.12E-08	5.30E-09
Methyl ethyl ketone (2-butanone)	1.65E-09	2.28E-09		1.65E-09	2.28E-09		6.51E-11	2.17E-11						2.63E-09	3.64E-09		1.09E-10	3.62E-11
Methyl methacrylate	3.13E-09	4.29E-09		3.13E-09	4.29E-09		1.15E-10	3.84E-11						2.14E-09	6.86E-08		8.23E-11	6.40E-10
Methyl tert butyl ether	8.20E-11	1.14E-10		8.20E-11	1.14E-10		3.71E-12	1.24E-12	1.8E-13	3.7E-14								
Styrene	1.01E-09	1.37E-09		1.01E-09	1.37E-09		1.40E-10	4.68E-11						4.82E-09	1.31E-08		7.01E-10	4.68E-10
Tetrachloroethene	2.72E-11	3.72E-11		2.72E-11	3.72E-11		9.52E-13	3.17E-13	8.0E-12	1.7E-12		1.9E-14	6.3E-15	2.61E-09	1.78E-11		9.52E-11	1.59E-13
Toluene	5.07E-10	6.94E-10		5.07E-10	6.94E-10		6.51E-11	2.17E-11						2.43E-09	3.33E-09		3.26E-10	1.09E-10
1,1,1-Trichloroethane	1.39E-09	1.91E-09		1.39E-09	1.91E-09		8.27E-11	2.76E-11						4.77E-09	1.83E-09		2.95E-10	2.76E-11
Vinyl acetate	3.42E-08	5.28E-08		3.42E-08	5.28E-08		1.20E-10	4.01E-11						3.28E-08	5.06E-08		1.20E-10	4.01E-11
Xylenes	1.52E-12	2.20E-12		1.52E-12	2.20E-12		2.51E-11	8.35E-12						7.28E-12	1.05E-11		1.25E-10	4.18E-11
Semi-Volatiles																		
Benzo(a)pyrene (equivalents)	1.28E-09	1.41E-09		1.28E-09	1.41E-09		3.61E-13	1.20E-13	5.1E-09	8.5E-10		1.1E-12	3.7E-13					
Bis(2-ethylhexyl)phthalate	6.01E-07	9.50E-07		6.01E-07	9.50E-07		2.38E-10	7.93E-11	4.6E-09	1.1E-09				2.88E-05	4.56E-05		1.19E-08	3.97E-09
Bromoform	3.54E-10	4.93E-10		3.54E-10	4.93E-10		1.28E-10	4.26E-11	1.5E-12	3.2E-13		5.0E-13	1.7E-13	1.70E-08	2.36E-09		6.39E-09	2.13E-10
2,4-Dinitrotoluene	2.82E-10	4.08E-10		2.82E-10	4.08E-10		1.14E-12	3.81E-13						1.35E-07	1.96E-07		5.72E-10	1.91E-10
Formaldehyde	1.10E-06	1.54E-06		1.10E-06	1.54E-06		7.84E-10	2.61E-10				3.5E-11	1.2E-11	5.28E-06	7.39E-06		3.92E-09	1.31E-09
Isophorone	3.30E-11	5.34E-11		3.30E-11	5.34E-11		1.89E-09	6.31E-10	1.7E-14	4.2E-15				1.58E-10	2.56E-11		9.47E-09	3.16E-10
Phenol	3.57E-10	5.01E-10		3.57E-10	5.01E-10		5.26E-11	1.75E-11						1.14E-09	8.00E-10		1.75E-10	2.92E-11
PCBs																		
Polychlorinated biphenyls	0.00E+00	0.00E+00		0.00E+00	0.00E+00		0.00E+00	0.00E+00										
Inorganics																		
Antimony	1.21E-08	1.31E-08		1.21E-08	1.33E-08		3.77E-11	1.26E-11						2.89E-05	6.35E-05		9.43E-08	6.29E-08
Arsenic	1.16E-10	1.41E-10		1.16E-10	1.41E-10		8.22E-13	2.74E-13	9.5E-11	1.7E-11		1.2E-11	4.1E-12	3.69E-07	4.50E-07		2.74E-09	9.13E-10
Beryllium	6.57E-08	4.88E-08		6.57E-08	4.88E-08		4.43E-11	1.48E-11				3.7E-10	1.2E-10	3.15E-05	9.36E-06		2.21E-08	2.95E-09
Cadmium	2.73E-10	4.12E-10		2.75E-10	4.30E-10		2.58E-13	8.58E-14				1.6E-12	5.4E-13	2.63E-07	4.12E-07		2.58E-10	8.58E-11
Chromium VI	5.69E-08	7.86E-08		5.69E-08	7.88E-08		2.82E-12	9.40E-13				1.2E-10	3.9E-11	1.82E-05	3.78E-06		9.40E-10	4.70E-11
Cobalt	4.87E-09	7.67E-09		4.89E-09	7.84E-09		2.13E-10	7.11E-11				2.1E-09	7.0E-10	2.34E-07	3.76E-07		1.07E-08	3.55E-09
Manganese	1.40E-08	2.23E-08		1.41E-08	2.34E-08		1.05E-09	3.49E-10						6.76E-07	1.60E-07		5.24E-08	2.50E-09
Mercury (elemental)	8.58E-12	5.63E-12		8.58E-12	5.63E-12		6.25E-15	2.08E-15										
Nickel	1.34E-07	1.11E-07		1.34E-07	1.11E-07		5.99E-10	2.00E-10						6.45E-06	5.31E-06		2.99E-08	9.98E-09
Selenium	9.59E-07	1.58E-06		9.59E-07	1.58E-06		2.78E-09	9.26E-10						1.84E-04	3.03E-04		5.56E-07	1.85E-07
Acid Gases																		
HCl	0.00E+00	0.00E+00		0.00E+00	0.00E+00		3.26E-08	1.09E-08										
									1.6E-08	**3.7E-09**		**2.9E-09**	**9.7E-10**	**0.00036**	**0.00050**		**0.000004**	**0.000001**

Appendix I (old tables)

Table 3. Risk Analysis - Subsistence Fisher (Location:S7 (Brown Creek))

Chemical	Total Daily Intake: Carcinogen Total Daily Intake: Subsistence Fisher Adult [Flowing Water] (mg/kg-day) ISF_FW	Subsistence Fisher Child [Flowing Water] (mg/kg-day) ICSF_FW	Subsistence Fisher Adult [Quiescent Water] (mg/kg-day) ISF_QW	Subsistence Fisher Child [Quiescent Water] (mg/kg-day) ICSF_QW	Noncarcinogen Total Daily Intake: Subsistence Fisher Adult [Flowing Water] (mg/kg-day) ISF_FWn	Subsistence Fisher Child [Flowing Water] (mg/kg-day) ICSF_FWn	Subsistence Fisher Adult [Quiescent Water] (mg/kg-day) ISF_QWn	Subsistence Fisher Child [Quiescent Water] (mg/kg-day) ICSF_QWn	Total Daily Inhalation: Subsistence Fisher Adult (mg/kg-day) ADIa	Subsistence Fisher Child (mg/kg-day) ADIc
PCDD/PCDF										
2,3,7,8-Tetrachlorodibenzodioxin	8.08E-14	6.32E-14	8.08E-14	6.32E-14	8.08E-14	6.32E-14	8.08E-14	6.32E-14	7.05E-18	3.13E-18
Volatiles										
Acetaldehyde	3.69E-07	5.06E-07	3.70E-07	5.06E-07	3.69E-07	5.06E-07	3.70E-07	5.06E-07	1.25E-08	5.56E-09
Acetone	3.15E-11	4.32E-11	3.16E-11	4.32E-11	3.15E-11	4.32E-11	3.16E-11	4.32E-11	1.42E-11	6.30E-12
Acetophenone	8.28E-10	1.15E-09	1.04E-09	1.28E-09	8.28E-10	1.15E-09	1.04E-09	1.28E-09	3.37E-10	1.50E-10
Acrolein	3.41E-08	5.06E-08	3.83E-08	5.33E-08	3.41E-08	5.06E-08	3.83E-08	5.33E-08	6.37E-09	2.83E-09
Benzene	2.03E-11	2.84E-11	2.27E-11	3.00E-11	2.03E-11	2.84E-11	2.27E-11	3.00E-11	6.67E-12	2.96E-12
Benzyl chloride	4.43E-08	6.73E-08	5.13E-08	7.19E-08	4.43E-08	6.73E-08	5.13E-08	7.19E-08	1.54E-08	6.83E-09
Carbon disulfide	3.43E-11	4.70E-11	3.44E-11	4.70E-11	3.43E-11	4.70E-11	3.44E-11	4.70E-11	2.26E-12	1.00E-12
Chlorobenzene	2.27E-09	3.13E-09	2.34E-09	3.17E-09	2.27E-09	3.13E-09	2.34E-09	3.17E-09	4.88E-10	2.17E-10
Chloroform	9.83E-12	1.46E-11	1.15E-11	1.57E-11	9.83E-12	1.46E-11	1.15E-11	1.57E-11	1.41E-12	6.28E-13
Cumene	1.06E-10	1.33E-10	1.06E-10	1.33E-10	1.06E-10	1.33E-10	1.06E-10	1.33E-10	1.18E-10	5.24E-11
Ethylbenzene	1.11E-09	1.64E-09	1.12E-09	1.64E-09	1.11E-09	1.64E-09	1.12E-09	1.64E-09	2.07E-09	9.21E-10
Ethyl Chloride (chloroethane)	3.14E-10	4.26E-10	3.45E-10	4.46E-10	3.14E-10	4.26E-10	3.45E-10	4.46E-10	9.26E-10	4.12E-10
Ethylene dichloride (I,2-dichloroethane)	1.36E-09	2.12E-09	1.54E-09	2.23E-09	1.36E-09	2.12E-09	1.54E-09	2.23E-09	8.76E-10	3.89E-10
Ethylene dibromide (I,2-dibromoethane)	4.35E-11	5.99E-11	4.60E-11	6.15E-11	4.35E-11	5.99E-11	4.60E-11	6.15E-11	3.37E-11	1.50E-11
Freon 11 (trichlorofluoromethane)	7.28E-12	1.03E-11	7.99E-12	1.08E-11	7.28E-12	1.03E-11	7.99E-12	1.08E-11	1.18E-12	5.26E-13
Freon 12 (dichlorodifluoromethane)	1.86E-11	2.61E-11	2.06E-11	2.73E-11	1.86E-11	2.61E-11	2.06E-11	2.73E-11	3.71E-12	1.65E-12
Hexane	5.38E-11	7.22E-11	5.53E-11	7.31E-11	5.38E-11	7.22E-11	5.53E-11	7.31E-11	7.11E-12	3.16E-12
Methyl bromide (bromomethane)	2.83E-08	3.91E-08	3.00E-08	4.01E-08	2.83E-08	3.91E-08	3.00E-08	4.01E-08	3.52E-09	1.56E-09
Methyl chloride (chloromethane)	7.57E-12	1.04E-11	7.88E-12	1.06E-11	7.57E-12	1.04E-11	7.88E-12	1.06E-11	8.27E-13	3.68E-13
Methylene chloride	2.61E-07	4.10E-07	3.25E-07	4.51E-07	2.61E-07	4.10E-07	3.25E-07	4.51E-07	8.56E-09	3.80E-09
Methyl ethyl ketone (2-butanone)	3.69E-09	5.12E-09	3.96E-09	5.29E-09	3.69E-09	5.12E-09	3.96E-09	5.29E-09	4.38E-10	1.95E-10
Methyl methacrylate	7.01E-09	9.63E-09	7.25E-09	9.79E-09	7.01E-09	9.63E-09	7.25E-09	9.79E-09	7.75E-10	3.44E-10
Methyl tert butyl ether	1.84E-10	2.55E-10	2.02E-10	2.67E-10	1.84E-10	2.55E-10	2.02E-10	2.67E-10	2.49E-11	1.11E-11
Styrene	2.38E-09	3.22E-09	2.39E-09	3.23E-09	2.38E-09	3.22E-09	2.39E-09	3.23E-09	9.43E-10	4.19E-10
Tetrachloroethene	6.14E-11	8.40E-11	6.15E-11	8.41E-11	6.14E-11	8.40E-11	6.15E-11	8.41E-11	6.40E-12	2.84E-12
Toluene	1.15E-09	1.58E-09	1.17E-09	1.59E-09	1.15E-09	1.58E-09	1.17E-09	1.59E-09	4.38E-10	1.95E-10
1,1,1-Trichloroethane	3.58E-09	4.90E-09	3.58E-09	4.90E-09	3.58E-09	4.90E-09	3.58E-09	4.90E-09	5.56E-10	2.47E-10
Vinyl acetate	7.67E-08	1.18E-07	8.29E-08	1.22E-07	7.67E-08	1.18E-07	8.29E-08	1.22E-07	8.09E-10	3.59E-10
Xylenes	5.78E-12	8.68E-12	6.23E-12	8.97E-12	5.78E-12	8.68E-12	6.23E-12	8.97E-12	1.68E-10	7.49E-11
Semi-Volatiles										
Benzo(a)pyrene (equivalents)	1.14E-08	1.26E-08	1.14E-08	1.26E-08	1.14E-08	1.26E-08	1.14E-08	1.26E-08	2.43E-12	1.08E-12
Bis(2-ethylhexyl)phthalate	3.14E-06	5.38E-06	3.14E-06	5.38E-06	3.14E-06	5.38E-06	3.14E-06	5.38E-06	1.60E-09	7.11E-10
Bromoform	8.18E-10	1.14E-09	1.30E-09	1.45E-09	8.18E-10	1.14E-09	1.30E-09	1.45E-09	8.59E-10	3.82E-10
2,4-Dinitrotoluene	6.32E-10	9.15E-10	6.34E-10	9.17E-10	6.32E-10	9.15E-10	6.34E-10	9.17E-10	7.69E-12	3.42E-12
Formaldehyde	2.47E-06	3.45E-06	2.47E-06	3.45E-06	2.47E-06	3.45E-06	2.47E-06	3.45E-06	5.27E-09	2.34E-09
Isophorone	5.42E-10	8.34E-10	6.07E-10	8.77E-10	5.42E-10	8.34E-10	6.07E-10	8.77E-10	1.27E-08	5.66E-09
Phenol	8.01E-10	1.13E-09	8.57E-10	1.16E-09	8.01E-10	1.13E-09	8.57E-10	1.16E-09	3.54E-10	1.57E-10
PCBs										
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Inorganics										
Antimony	4.92E-08	4.37E-08	4.92E-08	4.37E-08	4.93E-08	4.44E-08	4.93E-08	4.44E-08	2.88E-10	1.28E-10
Arsenic	7.61E-10	9.20E-10	7.61E-10	9.20E-10	7.61E-10	9.20E-10	7.61E-10	9.20E-10	6.28E-12	2.79E-12
Beryllium	4.55E-07	3.36E-07	4.55E-07	3.36E-07	4.55E-07	3.36E-07	4.55E-07	3.36E-07	3.38E-10	1.50E-10
Cadmium	3.79E-10	2.73E-10	3.79E-10	2.74E-10	3.79E-10	2.74E-10	3.79E-10	2.74E-10	1.97E-12	8.74E-13
Chromium VI	1.55E-09	1.38E-09	1.55E-09	1.38E-09	1.55E-09	1.38E-09	1.55E-09	1.38E-09	2.15E-11	9.58E-12
Cobalt	2.31E-08	4.25E-08	2.34E-08	4.27E-08	2.37E-08	4.83E-08	2.40E-08	4.85E-08	1.63E-09	7.24E-10
Manganese	3.53E-08	6.79E-08	4.22E-08	7.25E-08	3.60E-08	7.52E-08	4.30E-08	7.98E-08	8.00E-09	3.56E-09
Mercury (elemental)	5.96E-11	3.90E-11	5.96E-11	3.90E-11	5.96E-11	3.90E-11	5.96E-11	3.90E-11	4.77E-14	2.12E-14
Nickel	9.03E-07	7.25E-07	9.04E-07	7.25E-07	9.03E-07	7.25E-07	9.04E-07	7.25E-07	4.57E-09	2.03E-09
Selenium	6.54E-06	1.08E-05	6.55E-06	1.08E-05	6.54E-06	1.08E-05	6.55E-06	1.08E-05	2.12E-08	9.43E-09
Acid Gases										
HCl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-07	9.73E-08

Appendix I (old tables)

Table 3. Risk Analysis - Subsistence Fisher (Location:S7 (Brown Creek)) Cont.

Chemical	Total Risk						Total Hazard					
	Total Risk				Inhalation Risk		Total Hazard				Inhalation Hazard	
	Subsistence Fisher Adult [Flowing Water]	Subsistence Fisher Child [Flowing Water]	Subsistence Fisher Adult [Quiescent Water]	Subsistence Fisher Child [Quiescent Water]	Subsistence Fisher Adult	Subsistence Fisher Child	Subsistence Fisher Adult [Flowing Water]	Subsistence Fisher Child [Flowing Water]	Subsistence Fisher Adult [Quiescent Water]	Subsistence Fisher Child [Quiescent Water]	Subsistence Fisher Adult	Subsistence Fisher Child
PCDD/PCDF												
2,3,7,8-Tetrachlorodibenzodioxin	5.0E-09	7.8E-10	5.0E-09	7.8E-10	1.1E-12	4.7E-13						
Volatiles												
Acetaldehyde					9.6E-11	4.3E-11						
Acetone							3.36E-11	4.14E-11	3.37E-11	4.14E-11	1.57E-11	6.30E-12
Acetophenone							7.94E-09	1.10E-09	9.94E-09	1.23E-09	3.37E-09	1.50E-10
Acrolein							6.55E-05	9.70E-05	7.34E-05	1.02E-04	1.27E-05	5.66E-06
Benzene	4.6E-13	1.3E-13	5.1E-13	1.4E-13	1.8E-13	8.0E-14	4.87E-09	6.81E-09	5.43E-09	7.18E-09	1.67E-09	7.41E-10
Benzyl chloride	3.1E-09	9.4E-10	3.6E-09	1.0E-09			2.12E-05	3.23E-05	2.46E-05	3.45E-05	7.68E-06	3.41E-06
Carbon disulfide							3.29E-10	4.50E-10	3.30E-10	4.51E-10	2.26E-11	1.00E-11
Chlorobenzene							1.09E-07	1.50E-08	1.12E-07	1.52E-08	2.44E-08	1.09E-09
Chloroform					1.1E-13	5.1E-14	9.42E-10	1.40E-09	1.10E-09	1.51E-09	1.41E-10	6.28E-11
Cumene							1.01E-09	3.19E-10	1.01E-09	3.19E-10	1.18E-09	1.31E-10
Ethylbenzene							1.06E-08	1.43E-08	1.07E-08	1.43E-08	2.07E-08	8.37E-09
Ethyl Chloride (chloroethane)	3.7E-13	1.0E-13	4.1E-13	1.1E-13			7.53E-10	1.02E-09	8.27E-10	1.07E-09	2.32E-09	1.03E-09
Ethylene dichloride (I,2-dichloroethane)	1.1E-09	3.5E-10	1.3E-09	3.7E-10	1.8E-09	7.8E-10	1.45E-07	2.25E-07	1.64E-07	2.38E-07	9.73E-08	4.33E-08
Ethylene dibromide (I,2-dibromoethane)	1.6E-12	4.5E-13	1.7E-12	4.6E-13	3.1E-12	1.4E-12	2.08E-09	2.87E-09	2.20E-09	2.95E-09	1.68E-09	7.49E-10
Freon 11 (trichlorofluoromethane)							2.33E-11	1.41E-11	2.55E-11	1.47E-11	3.95E-12	7.52E-13
Freon 12 (dichlorodifluoromethane)							8.93E-11	2.78E-11	9.88E-11	2.91E-11	1.85E-11	1.83E-12
Hexane							4.69E-12	1.15E-10	4.82E-12	1.17E-10	6.46E-13	5.27E-12
Methyl bromide (bromomethane)							1.94E-05	7.49E-06	2.05E-05	7.69E-06	2.51E-06	3.13E-07
Methyl chloride (chloromethane)												
Methylene chloride	8.0E-10	2.5E-10	1.0E-09	2.8E-10	1.4E-11	6.3E-12	4.17E-06	4.91E-06	5.19E-06	5.41E-06	1.43E-07	4.75E-08
Methyl ethyl ketone (2-butanone)							5.90E-09	8.18E-09	6.33E-09	8.46E-09	7.30E-10	3.24E-10
Methyl methacrylate							4.80E-09	1.54E-07	4.97E-09	1.56E-07	5.53E-10	5.74E-09
Methyl tert butyl ether	3.0E-13	8.4E-14	3.3E-13	8.8E-14								
Styrene							1.14E-08	3.09E-08	1.15E-08	3.09E-08	4.72E-09	4.19E-09
Tetrachloroethene	1.4E-11	3.7E-12	1.4E-11	3.7E-12	1.3E-13	5.7E-14	5.89E-09	4.03E-11	5.90E-09	4.03E-11	6.40E-10	1.42E-12
Toluene							5.52E-09	7.56E-09	5.61E-09	7.61E-09	2.19E-09	9.73E-10
1,1,1-Trichloroethane							1.23E-08	4.70E-09	1.23E-08	4.70E-09	1.99E-09	2.47E-10
Vinyl acetate							7.36E-08	1.14E-07	7.95E-08	1.17E-07	8.09E-10	3.59E-10
Xylenes							2.77E-11	4.16E-11	2.99E-11	4.30E-11	8.42E-10	3.74E-10
Semi-Volatiles												
Benzo(a)pyrene (equivalents)	3.4E-08	7.6E-09	3.4E-08	7.6E-09	7.5E-12	3.3E-12						
Bis(2-ethylhexyl)phthalate	1.8E-08	6.2E-09	1.8E-08	6.2E-09			1.51E-04	2.58E-04	1.51E-04	2.58E-04	8.00E-08	3.56E-08
Bromoform	2.7E-12	7.4E-13	4.2E-12	9.4E-13	3.4E-12	1.5E-12	3.92E-08	5.48E-09	6.23E-08	6.98E-09	4.30E-08	1.91E-09
2,4-Dinitrotoluene							3.03E-07	4.39E-07	3.04E-07	4.40E-07	3.84E-09	1.71E-09
Formaldehyde					2.4E-10	1.1E-10	1.18E-05	1.66E-05	1.18E-05	1.66E-05	2.64E-08	1.17E-08
Isophorone	2.1E-13	6.5E-14	2.4E-13	6.8E-14			2.60E-09	4.00E-10	2.91E-09	4.20E-10	6.37E-08	2.83E-09
Phenol							2.56E-09	1.80E-09	2.74E-09	1.86E-09	1.18E-09	2.62E-10
PCBs												
Polychlorinated biphenyls												
Inorganics												
Antimony							1.18E-04	2.13E-04	1.18E-04	2.13E-04	7.20E-07	6.40E-07
Arsenic	4.7E-10	1.1E-10	4.7E-10	1.1E-10	9.5E-11	4.2E-11	2.43E-06	2.94E-06	2.43E-06	2.94E-06	2.09E-08	9.30E-09
Beryllium					2.8E-09	1.3E-09	2.18E-04	6.45E-05	2.18E-04	6.45E-05	1.69E-07	3.01E-08
Cadmium					1.2E-11	5.5E-12	3.63E-07	2.63E-07	3.63E-07	2.63E-07	1.97E-09	8.74E-10
Chromium VI					8.8E-10	3.9E-10	4.95E-07	6.64E-08	4.95E-07	6.64E-08	7.18E-09	4.79E-10
Cobalt					1.6E-08	7.1E-09	1.14E-06	2.31E-06	1.15E-06	2.33E-06	8.14E-08	3.62E-08
Manganese							1.73E-06	5.15E-07	2.06E-06	5.46E-07	4.00E-07	2.54E-08
Mercury (elemental)												
Nickel							4.33E-05	3.47E-05	4.33E-05	3.48E-05	2.29E-07	1.02E-07
Selenium							1.25E-03	2.07E-03	1.26E-03	2.08E-03	4.24E-06	1.89E-06
Acid Gases												
HCl												
	8.5E-08	**2.6E-08**	**8.6E-08**	**2.6E-08**	**2.2E-08**	**9.7E-09**	**0.00194**	**0.00282**	**0.00196**	**0.00283**	**0.000029**	**0.000012**

Appendix I (old tables)

Table 4. Risk Analysis - School/Day Care (Location: L7 (Rainelle School))

Chemical	Total Daily Intake			Total Risk		Total Hazards	
	Total Daily Soil Ingestion		Total Daily Inhalation	Total Risk	Inhalation Risk	Total Hazard	Inhalation Hazard
	Carcinogen Contaminant Intake From Soil (mg/kg-day) I_{CDC}	Noncarcinogen Contaminant Intake From Soil (mg/kg-day) I_{CDCn}	Day Care Student (mg/kg-day) ADIc	Day Care Student	Day Care Student	Day Care Student	Day Care Student
PCDD/PCDF							
2,3,7,8-Tetrachlorodibenzodioxin	4.87E-19	4.99E-19	4.02E-19	6.0E-15	6.0E-14		
Volatiles							
Acetaldehyde	2.78E-11	2.78E-11	7.13E-10		5.5E-12		
Acetone	2.37E-15	2.37E-15	8.07E-13			2.27E-15	8.07E-13
Acetophenone	6.97E-13	6.98E-13	1.92E-11			6.69E-13	1.92E-11
Acrolein	1.39E-11	1.39E-11	3.63E-10			2.67E-08	7.25E-07
Benzene	3.12E-14	3.12E-14	3.80E-13	1.4E-16	1.0E-14	7.49E-12	9.50E-11
Benzyl chloride	1.98E-11	1.98E-11	8.75E-10	2.8E-13		9.52E-09	4.37E-07
Carbon disulfide	5.62E-15	5.62E-15	1.29E-13			5.39E-14	1.29E-12
Chlorobenzene	3.14E-12	3.15E-12	2.78E-11			1.51E-11	1.39E-10
Chloroform	1.91E-14	1.92E-14	8.05E-14		6.5E-15	1.84E-12	8.05E-12
Cumene	1.04E-13	1.04E-13	6.72E-12			2.48E-13	1.68E-11
Ethylbenzene	2.48E-12	2.48E-12	1.18E-10			2.16E-11	1.07E-09
Ethyl Chloride (chloroethane)	1.03E-12	1.03E-12	5.28E-11	2.5E-16		2.48E-12	1.32E-10
Ethylene dichloride (I,2-dichloroethane)	9.56E-13	9.56E-13	4.99E-11	1.6E-13	1.0E-10	1.02E-10	5.54E-09
Ethylene dibromide (I,2-dibromoethane)	2.99E-14	2.99E-14	1.92E-12	2.2E-16	1.7E-13	1.43E-12	9.59E-11
Freon 11 (trichlorofluoromethane)	1.76E-14	1.77E-14	6.74E-14			2.43E-14	9.63E-14
Freon 12 (dichlorodifluoromethane)	2.95E-14	2.96E-14	2.11E-13			3.16E-14	2.35E-13
Hexane	5.08E-14	5.09E-14	4.05E-13			8.14E-14	6.75E-13
Methyl bromide (bromomethane)	1.22E-11	1.22E-11	2.01E-10			2.34E-09	4.01E-08
Methyl chloride (chloromethane)	2.48E-15	2.48E-15	4.71E-14				
Methylene chloride	2.54E-11	2.54E-11	4.87E-10	1.6E-14	8.0E-13	3.04E-10	6.09E-09
Methyl ethyl ketone (2-butanone)	1.52E-12	1.52E-12	2.49E-11			2.43E-12	4.16E-11
Methyl methacrylate	2.32E-12	2.33E-12	4.41E-11			3.72E-11	7.36E-10
Methyl tert butyl ether	9.02E-14	9.04E-14	1.42E-12	3.0E-17			
Styrene	1.40E-12	1.40E-12	5.37E-11			1.34E-11	5.37E-10
Tetrachloroethene	2.15E-14	2.15E-14	3.65E-13	9.5E-16	7.3E-15	1.03E-14	1.82E-13
Toluene	6.04E-13	6.04E-13	2.49E-11			2.90E-12	1.25E-10
1,1,1-Trichloroethane	1.47E-11	1.48E-11	3.17E-11			1.42E-11	3.17E-11
Vinyl acetate	3.45E-11	3.50E-11	4.61E-11			3.35E-11	4.61E-11
Xylenes	7.59E-15	7.59E-15	9.59E-12			3.64E-14	4.80E-11
Semi-Volatiles							
Benzo(a)pyrene (equivalents)	5.18E-14	5.22E-14	1.38E-13	3.1E-14	4.3E-13		
Bis(2-ethylhexyl)phthalate	8.60E-14	8.60E-14	9.11E-11	9.9E-17		4.12E-12	4.56E-09
Bromoform	1.62E-12	1.62E-12	4.89E-11	1.1E-15	1.9E-13	7.78E-12	2.45E-10
2,4-Dinitrotoluene	1.64E-13	1.65E-13	4.38E-13			7.93E-11	2.19E-10
Formaldehyde	2.38E-13	2.38E-13	3.00E-10		1.4E-11	1.14E-12	1.50E-09
Isophorone	5.74E-13	5.74E-13	7.25E-10	4.5E-17		2.75E-13	3.63E-10
Phenol	3.79E-13	3.79E-13	2.01E-11			6.06E-13	3.36E-11
PCBs							
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00				
Inorganics							
Antimony	1.70E-08	2.98E-08	1.71E-11			1.43E-04	8.57E-08
Arsenic	6.55E-13	6.56E-13	3.74E-13	8.1E-14	5.6E-12	2.10E-09	1.25E-09
Beryllium	3.53E-11	3.53E-11	2.01E-11		1.7E-10	6.78E-09	4.03E-09
Cadmium	5.37E-11	6.86E-11	1.17E-13		7.4E-13	6.58E-08	1.17E-10
Chromium VI	4.19E-10	4.91E-10	1.28E-12		5.3E-11	2.36E-08	6.41E-11
Cobalt	1.15E-07	2.21E-07	9.69E-11		9.5E-10	1.06E-05	4.85E-09
Manganese	3.03E-07	4.36E-07	4.76E-10			2.99E-06	3.40E-09
Mercury (elemental)	3.10E-13	3.43E-13	2.84E-15				
Nickel	4.77E-10	4.78E-10	2.72E-10			2.29E-08	1.36E-08
Selenium	2.22E-09	2.22E-09	1.26E-09			4.25E-07	2.53E-07
Acid Gases							
HCl	0.00E+00	0.00E+00	1.25E-08				
				1.3E-09	**1.3E-09**	**0.00016**	**0.000002**

Appendix I (old tables)

Table 5. Risk Analysis - Nursing Home/Hospital Patient Extended Care Resident (Location: L2 - Rainelle Nursing Home)

Chemical	Total Daily Inhalation Nursing Home Patient (mg/kg-day) ADIa	Total Risk Nursing Home Patient	Inhalation Hazard Nursing Home Patient
PCDD/PCDF			
2,3,7,8-Tetrachlorodibenzodioxin	1.40E-20	2.1E-15	
Volatiles			
Acetaldehyde	2.49E-11	1.9E-13	
Acetone	2.82E-14		3.14E-14
Acetophenone	6.71E-13		6.71E-12
Acrolein	1.27E-11		2.54E-08
Benzene	1.33E-14	3.6E-16	3.32E-12
Benzyl chloride	3.06E-11		1.53E-08
Carbon disulfide	4.50E-15		4.50E-14
Chlorobenzene	9.73E-13		4.87E-11
Chloroform	2.82E-15	2.3E-16	2.82E-13
Cumene	2.35E-13		2.35E-12
Ethylbenzene	4.13E-12		4.13E-11
Ethyl Chloride (chloroethane)	1.85E-12		4.61E-12
Ethylene dichloride (I,2-dichloroethane)	1.74E-12	3.5E-12	1.94E-10
Ethylene dibromide (I,2-dibromoethane)	6.71E-14	6.1E-15	3.36E-12
Freon 11 (trichlorofluoromethane)	2.36E-15		7.86E-15
Freon 12 (dichlorodifluoromethane)	7.38E-15		3.69E-14
Hexane	1.42E-14		1.29E-15
Methyl bromide (bromomethane)	7.01E-12		5.01E-09
Methyl chloride (chloromethane)	1.65E-15		
Methylene chloride	1.70E-11	2.8E-14	2.84E-10
Methyl ethyl ketone (2-butanone)	8.72E-13		1.45E-12
Methyl methacrylate	1.54E-12		1.10E-12
Methyl tert butyl ether	4.97E-14		
Styrene	1.88E-12		9.39E-12
Tetrachloroethene	1.28E-14	2.6E-16	1.28E-12
Toluene	8.72E-13		4.36E-12
1,1,1-Trichloroethane	1.11E-12		3.95E-12
Vinyl acetate	1.61E-12		1.61E-12
Xylenes	3.36E-13		1.68E-12
Semi-Volatiles			
Benzo(a)pyrene (equivalents)	4.83E-15	1.5E-14	
Bis(2-ethylhexyl)phthalate	3.19E-12		1.59E-10
Bromoform	1.71E-12	6.7E-15	8.56E-11
2,4-Dinitrotoluene	1.53E-14		7.66E-12
Formaldehyde	1.05E-11	4.7E-13	5.25E-11
Isophorone	2.54E-11		1.27E-10
Phenol	7.05E-13		2.35E-12
PCBs			
Polychlorinated biphenyls	0.00E+00		
Inorganics			
Antimony	7.72E-13		1.93E-09
Arsenic	1.68E-14	2.5E-13	5.60E-11
Beryllium	9.06E-13	7.6E-12	4.53E-10
Cadmium	5.27E-15	3.3E-14	5.27E-12
Chromium VI	5.77E-14	2.4E-12	1.92E-11
Cobalt	4.36E-12	4.3E-11	2.18E-10
Manganese	2.14E-11		1.07E-09
Mercury (elemental)	1.28E-16		
Nickel	1.22E-11		6.12E-10
Selenium	5.68E-11		1.14E-08
Acid Gases			
HCl	4.36E-10		
		5.7E-11	**0.00000006**

Table 1 (Revised, March 2007) . Risk Analysis - Resident Home Gardener (Location: L4 (Rainelle Downtown))

Chemical	Total Daily Intake						Total Risk				Total Hazard			
	Carcinogen Total Daily Intake		Noncarcinogen Total Daily Intake		Total Daily Inhalation		Total Risk		Inhalation Risk		Total Hazard		Inhalation Hazard	
	Resident/Home Gardener Adult (mg/kg-day) IAR	Resident/Home Gardener Child (mg/kg-day) ICR	Resident/Home Gardener Adult (mg/kg-day) IARn	Resident/Home Gardener Child (mg/kg-day) ICRn	Resident/Home Gardener Adult (mg/kg-day) ADIa	Resident/Home Gardener Child (mg/kg-day) ADIc	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child	Resident/Home Gardener Adult	Resident/Home Gardener Child
PCDD/PCDF														
2,3,7,8-Tetrachlorodibenzodioxin	6.14E-14	4.81E-14	6.14E-14	4.81E-14	5.36E-18	2.38E-18	3.8E-09	5.9E-10	8.0E-13	3.6E-13				
Volatiles														
Acetaldehyde	3.42E-07	4.68E-07	3.42E-07	4.68E-07	1.16E-08	5.15E-09			8.9E-11	4.0E-11				
Acetone	2.40E-11	3.29E-11	2.40E-11	3.29E-11	1.08E-11	4.79E-12					2.56E-11	3.15E-11	1.20E-11	4.79E-12
Acetophenone	7.55E-10	1.05E-09	7.55E-10	1.05E-09	3.07E-10	1.37E-10					7.24E-09	1.00E-09	3.07E-09	1.37E-10
Acrolein	3.16E-08	4.69E-08	3.16E-08	4.69E-08	5.90E-09	2.62E-09					6.07E-05	8.99E-05	1.18E-05	5.24E-06
Benzene	1.54E-11	2.16E-11	1.54E-11	2.16E-11	5.08E-12	2.26E-12	3.5E-13	9.8E-14	1.4E-13	6.1E-14	3.70E-09	5.18E-09	1.27E-09	5.64E-10
Benzyl chloride	4.10E-08	6.24E-08	4.10E-08	6.24E-08	1.42E-08	6.33E-09	2.9E-09	8.7E-10			1.97E-05	2.99E-05	7.12E-06	3.16E-06
Carbon disulfide	2.61E-11	3.58E-11	2.61E-11	3.58E-11	1.72E-12	7.64E-13					2.51E-10	3.43E-10	1.72E-11	7.64E-12
Chlorobenzene	2.09E-09	2.87E-09	2.09E-09	2.87E-09	4.49E-10	1.99E-10					1.00E-07	1.38E-08	2.24E-08	9.97E-10
Chloroform	7.49E-12	1.12E-11	7.49E-12	1.12E-11	1.08E-12	4.79E-13			8.7E-14	3.9E-14	7.19E-10	1.07E-09	1.08E-10	4.79E-11
Cumene	9.21E-11	1.16E-10	9.21E-11	1.16E-10	1.03E-10	4.57E-11					8.83E-10	2.78E-10	1.03E-09	1.14E-10
Ethylbenzene	1.03E-09	1.51E-09	1.03E-09	1.51E-09	1.91E-09	8.50E-10					9.83E-09	1.32E-08	1.91E-08	7.73E-09
Ethyl Chloride (chloroethane)	2.91E-10	3.94E-10	2.91E-10	3.94E-10	8.59E-10	3.82E-10	3.5E-13	9.4E-14			6.98E-10	9.46E-10	2.15E-09	9.54E-10
Ethylene dichloride (I,2-dichloroethane)	1.26E-09	1.95E-09	1.26E-09	1.95E-09	8.08E-10	3.59E-10	1.0E-09	3.2E-10	1.6E-09	7.2E-10	1.34E-07	2.08E-07	8.97E-08	3.99E-08
Ethylene dibromide (I,2-dibromoethane)	3.31E-11	4.56E-11	3.31E-11	4.56E-11	2.56E-11	1.14E-11	1.2E-12	3.4E-13	2.3E-12	1.0E-12	1.59E-09	2.18E-09	1.28E-09	5.70E-10
Freon 11 (trichlorofluoromethane)	5.54E-12	7.84E-12	5.54E-12	7.84E-12	9.01E-13	4.01E-13					1.77E-11	1.07E-11	3.00E-12	5.72E-13
Freon 12 (dichlorodifluoromethane)	1.42E-11	1.98E-11	1.42E-11	1.98E-11	2.82E-12	1.25E-12					6.79E-11	2.11E-11	1.41E-11	1.39E-12
Hexane	4.10E-11	5.50E-11	4.10E-11	5.50E-11	5.41E-12	2.41E-12					3.57E-12	8.78E-11	4.92E-13	4.01E-12
Methyl bromide (bromomethane)	2.62E-08	3.61E-08	2.62E-08	3.61E-08	3.26E-09	1.45E-09					1.80E-05	6.93E-06	2.33E-06	2.89E-07
Methyl chloride (chloromethane)	5.77E-12	7.93E-12	5.77E-12	7.93E-12	6.30E-13	2.80E-13								
Methylene chloride	1.80E-07	2.82E-07	1.80E-07	2.82E-07	5.90E-09	2.62E-09	5.5E-10	1.7E-10	9.7E-12	4.3E-12	2.87E-06	3.38E-06	9.83E-08	3.28E-08
Methyl ethyl ketone (2-butanone)	6.68E-08	9.27E-08	6.68E-08	9.27E-08	7.92E-09	3.52E-09					1.07E-07	1.48E-07	1.32E-08	5.87E-09
Methyl methacrylate	3.71E-09	5.10E-09	3.71E-09	5.10E-09	4.10E-10	1.82E-10					2.54E-09	8.15E-08	2.93E-10	3.04E-09
Methyl tert butyl ether	1.40E-10	1.94E-10	1.40E-10	1.94E-10	1.89E-11	8.41E-12	2.3E-13	6.4E-14						
Styrene	1.29E-09	1.75E-09	1.29E-09	1.75E-09	5.13E-10	2.28E-10					6.21E-09	1.68E-08	2.56E-09	2.28E-09
Tetrachloroethene	4.67E-11	6.39E-11	4.67E-11	6.39E-11	4.87E-12	2.17E-12	1.0E-11	2.8E-12	9.7E-14	4.3E-14	4.48E-09	3.07E-11	4.87E-10	1.08E-12
Toluene	1.28E-08	1.75E-08	1.28E-08	1.75E-08	4.87E-09	2.17E-09					6.14E-08	8.41E-08	2.44E-08	1.08E-08
1,1,1-Trichloroethane	2.64E-09	3.61E-09	2.64E-09	3.61E-09	4.10E-10	1.82E-10					9.04E-09	3.46E-09	1.46E-09	1.82E-10
Vinyl acetate	1.46E-08	2.25E-08	1.46E-08	2.25E-08	1.54E-10	6.83E-11					1.40E-08	2.16E-08	1.54E-10	6.83E-11
Xylenes	2.58E-11	3.89E-11	2.58E-11	3.89E-11	7.56E-10	3.36E-10					1.24E-10	1.86E-10	3.78E-09	1.68E-09
Semi-Volatiles														
Benzo(a)pyrene (equivalents)	8.68E-09	9.58E-09	8.68E-09	9.58E-09	1.84E-12	8.18E-13	2.6E-08	5.7E-09	5.7E-12	2.5E-12				
Bis(2-ethylhexyl)phthalate	2.92E-06	4.99E-06	2.92E-06	4.99E-06	1.49E-09	6.60E-10	1.7E-08	5.7E-09			1.40E-04	2.39E-04	7.43E-08	3.30E-08
Bromoform	7.56E-10	1.06E-09	7.56E-10	1.06E-09	7.94E-10	3.53E-10	2.5E-12	6.9E-13	3.1E-12	1.4E-12	3.63E-08	5.06E-09	3.97E-08	1.77E-09
2,4-Dinitrotoluene	4.81E-10	6.97E-10	4.81E-10	6.97E-10	5.85E-12	2.60E-12					2.31E-07	3.34E-07	2.92E-09	1.30E-09
Formaldehyde	2.28E-06	3.19E-06	2.28E-06	3.19E-06	4.87E-09	2.17E-09			2.2E-10	9.7E-11	1.09E-05	1.53E-05	2.44E-08	1.08E-08
Isophorone	5.00E-10	7.72E-10	5.00E-10	7.72E-10	1.18E-08	5.24E-09	2.0E-13	6.0E-14			2.40E-09	3.70E-10	5.90E-08	2.62E-09
Phenol	7.25E-10	1.02E-09	7.25E-10	1.02E-09	3.20E-10	1.42E-10					2.32E-09	1.63E-09	1.07E-09	2.37E-10
PCBs														
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00								
Inorganics														
Antimony	8.24E-07	7.28E-07	8.25E-07	7.40E-07	2.72E-10	1.21E-10					1.98E-03	3.55E-03	6.80E-07	6.05E-07
Arsenic	8.86E-09	9.50E-09	8.86E-09	9.50E-09	4.71E-12	2.09E-12	5.5E-09	1.2E-09	7.1E-11	3.2E-11	2.83E-05	3.04E-05	1.57E-08	6.97E-09
Beryllium	7.48E-06	5.52E-06	7.48E-06	5.52E-06	3.10E-10	1.38E-10			2.6E-09	1.2E-09	3.58E-03	1.06E-03	1.55E-07	2.76E-08
Cadmium	5.07E-09	3.65E-09	5.07E-09	3.66E-09	1.48E-12	6.56E-13			9.3E-12	4.1E-12	4.86E-06	3.51E-06	1.48E-09	6.56E-10
Chromium VI	2.06E-08	1.82E-08	2.06E-08	1.83E-08	1.62E-11	7.19E-12			6.6E-10	2.9E-10	6.59E-06	8.77E-07	5.39E-09	3.60E-10
Cobalt	2.95E-07	5.55E-07	3.05E-07	6.50E-07	1.48E-09	6.59E-10			1.5E-08	6.5E-09	1.46E-05	3.12E-05	7.42E-08	3.30E-08
Manganese	4.45E-07	9.00E-07	4.58E-07	1.02E-06	7.30E-09	3.24E-09					2.20E-05	6.98E-06	3.65E-07	2.32E-08
Mercury (elemental)	7.81E-10	5.13E-10	7.81E-10	5.13E-10	3.58E-14	1.59E-14								
Nickel	1.46E-05	1.15E-05	1.46E-05	1.15E-05	4.17E-09	1.85E-09					6.98E-04	5.54E-04	2.08E-07	9.26E-08
Selenium	6.83E-05	9.30E-05	6.83E-05	9.30E-05	1.94E-08	8.62E-09					1.31E-02	1.78E-02	3.88E-06	1.72E-06
Acid Gases														
HCl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-07	9.00E-08								
							7.6E-08	**2.3E-08**	**2.0E-08**	**8.8E-09**	**0.01972**	**0.02347**	**0.000027**	**0.000011**

Table 2 (Revised, March 2007). Risk Analysis - Subsistence Farmer (Location: F1 (Williamsburg))

Chemical	Total Daily Intake: Carcinogen Total Daily Intake: Subsistence Farmer Adult (mg/kg-day) IAF	Carcinogen Total Daily Intake: Subsistence Farmer Child (mg/kg-day) ICF	Carcinogen Total Daily Intake: Infant (pg/kg-day) II	Noncarcinogen Total Daily Intake: Subsistence Farmer Adult (mg/kg-day) IAFn	Noncarcinogen Total Daily Intake: Subsistence Farmer Child (mg/kg-day) ICFn	Noncarcinogen Total Daily Intake: Infant (pg/kg-day) II	Total Daily Inhalation: Subsistence Farmer Adult (mg/kg-day) ADI_{Fa}	Total Daily Inhalation: Subsistence Farmer Child (mg/kg-day) ADI_c	Total Risk: Total Risk: Subsistence Farmer Adult	Total Risk: Subsistence Farmer Child	Total Risk: Infant (mg/day)	Inhalation Risk: Subsistence Farmer Adult	Inhalation Risk: Subsistence Farmer Child	Total Hazard: Total Hazard: Subsistence Farmer Adult	Total Hazard: Subsistence Farmer Child	Total Hazard: Infant (mg/day)	Inhalation Hazard: Subsistence Farmer Adult	Inhalation Hazard: Subsistence Farmer Child
PCDD/PCDF																		
2,3,7,8-Tetrachlorodibenzodioxin	9.49E-15	7.44E-15	0.00030	9.49E-15	7.44E-15	0.00030	1.10E-18	3.68E-19	7.8E-10	9.2E-11	0.00030	1.7E-13	5.5E-14			0.00030		
Volatiles																		
Acetaldehyde	2.11E-07	2.89E-07		2.11E-07	2.89E-07		2.39E-09	7.96E-10				1.8E-11	6.1E-12					
Acetone	1.48E-11	2.03E-11		1.48E-11	2.03E-11		2.22E-12	7.40E-13						1.58E-11	1.95E-11		2.47E-12	7.40E-13
Acetophenone	4.66E-10	6.43E-10		4.66E-10	6.43E-10		6.33E-11	2.11E-11						4.46E-09	6.17E-10		6.33E-10	2.11E-11
Acrolein	1.95E-08	2.89E-08		1.95E-08	2.89E-08		1.22E-09	4.05E-10						3.75E-05	5.54E-05		2.43E-06	8.10E-07
Benzene	9.50E-12	1.32E-11		9.50E-12	1.32E-11		1.05E-12	3.48E-13	2.9E-13	6.0E-14		2.8E-14	9.4E-15	2.28E-09	3.17E-09		2.61E-10	8.71E-11
Benzyl chloride	2.53E-08	3.85E-08		2.53E-08	3.85E-08		2.93E-09	9.78E-10	2.4E-09	5.4E-10				1.21E-05	1.85E-05		1.47E-06	4.89E-07
Carbon disulfide	1.61E-11	2.21E-11		1.61E-11	2.21E-11		3.54E-13	1.18E-13						1.55E-10	2.12E-10		3.54E-12	1.18E-12
Chlorobenzene	1.27E-09	1.74E-09		1.27E-09	1.74E-09		9.24E-11	3.08E-11						6.07E-08	8.33E-09		4.62E-09	1.54E-10
Chloroform	4.62E-12	6.83E-12		4.62E-12	6.83E-12		2.22E-13	7.40E-14				1.8E-14	6.0E-15	4.43E-10	6.55E-10		2.22E-11	7.40E-12
Cumene	4.50E-11	6.00E-11		4.50E-11	6.00E-11		2.12E-11	7.05E-12						4.32E-10	1.44E-10		2.12E-10	1.76E-11
Ethylbenzene	5.64E-10	8.54E-10		5.64E-10	8.54E-10		3.94E-10	1.31E-10						5.41E-09	7.44E-09		3.94E-09	1.19E-09
Ethyl Chloride (chloroethane)	1.44E-10	2.03E-10		1.44E-10	2.03E-10		1.77E-10	5.89E-11	2.3E-13	4.8E-14				3.46E-10	4.87E-10		4.42E-10	1.47E-10
Ethylene dichloride (I,2-dichloroethane)	7.75E-10	1.20E-09		7.75E-10	1.20E-09		1.66E-10	5.54E-11	8.5E-10	2.0E-10		3.3E-10	1.1E-10	8.26E-08	1.28E-07		1.85E-08	6.16E-09
Ethylene dibromide (I,2-dibromoethane)	2.04E-11	2.80E-11		2.04E-11	2.80E-11		5.28E-12	1.76E-12	1.0E-12	2.1E-13		4.8E-13	1.6E-13	9.77E-10	1.34E-09		2.64E-10	8.80E-11
Freon 11 (trichlorofluoromethane)	3.40E-12	4.77E-12		3.40E-12	4.77E-12		1.86E-13	6.19E-14						1.09E-11	6.54E-12		6.19E-13	8.84E-14
Freon 12 (dichlorodifluoromethane)	8.71E-12	1.21E-11		8.71E-12	1.21E-11		5.80E-13	1.93E-13						4.18E-11	1.29E-11		2.90E-12	2.15E-13
Hexane	2.39E-11	3.25E-11		2.39E-11	3.25E-11		1.11E-12	3.71E-13						2.08E-12	5.20E-11		1.01E-13	6.19E-13
Methyl bromide (bromomethane)	1.62E-08	2.23E-08		1.62E-08	2.23E-08		6.70E-10	2.23E-10						1.11E-05	4.27E-06		4.79E-07	4.47E-08
Methyl chloride (chloromethane)	3.56E-12	4.89E-12		3.56E-12	4.89E-12		1.30E-13	4.32E-14										
Methylene chloride	1.11E-07	1.74E-07		1.11E-07	1.74E-07		1.22E-09	4.05E-10	4.6E-10	1.1E-10		2.0E-12	6.7E-13	1.77E-06	2.09E-06		2.03E-08	5.06E-09
Methyl ethyl ketone (2-butanone)	4.13E-08	5.71E-08		4.13E-08	5.71E-08		1.63E-09	5.44E-10						6.60E-08	9.13E-08		2.72E-09	9.07E-10
Methyl methacrylate	2.29E-09	3.14E-09		2.29E-09	3.14E-09		8.44E-11	2.81E-11						1.57E-09	5.03E-08		6.03E-11	4.69E-10
Methyl tert butyl ether	8.62E-11	1.19E-10		8.62E-11	1.19E-10		3.90E-12	1.30E-12	1.9E-13	3.9E-14								
Styrene	7.56E-10	1.03E-09		7.56E-10	1.03E-09		1.06E-10	3.52E-11						3.63E-09	9.89E-09		5.28E-10	3.52E-10
Tetrachloroethene	2.87E-11	3.92E-11		2.87E-11	3.92E-11		1.00E-12	3.34E-13	8.5E-12	1.7E-12		2.0E-14	6.7E-15	2.75E-09	1.88E-11		1.00E-10	1.67E-13
Toluene	7.82E-09	1.07E-08		7.82E-09	1.07E-08		1.00E-09	3.34E-10						3.75E-08	5.13E-08		5.02E-09	1.67E-09
1,1,1-Trichloroethane	1.42E-09	1.95E-09		1.42E-09	1.95E-09		8.44E-11	2.81E-11						4.87E-09	1.87E-09		3.02E-10	2.81E-11
Vinyl acetate	9.00E-09	1.39E-08		9.00E-09	1.39E-08		3.16E-11	1.05E-11						8.63E-09	1.33E-08		3.16E-11	1.05E-11
Xylenes	9.44E-12	1.37E-11		9.44E-12	1.37E-11		1.56E-10	5.19E-11						4.53E-11	6.55E-11		7.78E-10	2.59E-10
Semi-Volatiles																		
Benzo(a)pyrene (equivalents)	1.34E-09	1.48E-09		1.34E-09	1.48E-09		3.79E-13	1.26E-13	5.4E-09	8.9E-10		1.2E-12	3.9E-13					
Bis(2-ethylhexyl)phthalate	7.72E-07	1.22E-06		7.72E-07	1.22E-06		3.06E-10	1.02E-10	5.9E-09	1.4E-09				3.70E-05	5.85E-05		1.53E-08	5.10E-09
Bromoform	4.54E-10	6.31E-10		4.54E-10	6.31E-10		1.64E-10	5.45E-11	2.0E-12	4.1E-13		6.4E-13	2.1E-13	2.17E-08	3.03E-09		8.18E-09	2.73E-10
2,4-Dinitrotoluene	2.97E-10	4.30E-10		2.97E-10	4.30E-10		1.20E-12	4.02E-13						1.42E-07	2.06E-07		6.02E-10	2.01E-10
Formaldehyde	1.41E-06	1.97E-06		1.41E-06	1.97E-06		1.00E-09	3.34E-10				4.5E-11	1.5E-11	6.75E-06	9.45E-06		5.02E-09	1.67E-09
Isophorone	2.42E-10	3.55E-10		2.42E-10	3.55E-10		2.43E-09	8.10E-10	1.3E-13	2.8E-14				1.16E-09	1.70E-10		1.22E-08	4.05E-10
Phenol	4.48E-10	6.28E-10		4.48E-10	6.28E-10		6.60E-11	2.20E-11						1.43E-09	1.00E-09		2.20E-10	3.67E-11
PCBs																		
Polychlorinated biphenyls	0.00E+00	0.00E+00		0.00E+00	0.00E+00		0.00E+00	0.00E+00										
Inorganics																		
Antimony	1.55E-08	1.69E-08		1.55E-08	1.70E-08		7.65E-11	2.55E-11						3.71E-05	8.15E-05		1.91E-07	1.27E-07
Arsenic	1.18E-10	1.43E-10		1.18E-10	1.43E-10		1.32E-12	4.41E-13	9.7E-11	1.8E-11		2.0E-11	6.7E-12	3.76E-07	4.58E-07		4.41E-09	1.47E-09
Beryllium	8.19E-08	6.08E-08		8.19E-08	6.08E-08		8.71E-11	2.90E-11				7.3E-10	2.4E-10	3.93E-05	1.17E-05		4.36E-08	5.81E-09
Cadmium	5.86E-11	4.46E-11		5.86E-11	4.47E-11		4.15E-13	1.38E-13				2.6E-12	8.7E-13	5.62E-08	4.29E-08		4.15E-10	1.38E-10
Chromium VI	3.90E-10	4.26E-10		3.90E-10	4.26E-10		4.55E-12	1.52E-12				1.9E-10	6.2E-11	1.25E-07	2.04E-08		1.52E-09	7.58E-11
Cobalt	7.96E-09	1.29E-08		8.07E-09	1.40E-08		4.17E-10	1.39E-10				4.1E-09	1.4E-09	3.87E-07	6.69E-07		2.08E-08	6.95E-09
Manganese	1.73E-08	2.77E-08		1.75E-08	2.90E-08		2.05E-09	6.84E-10						8.38E-07	1.99E-07		1.03E-07	4.88E-09
Mercury (elemental)	8.74E-12	5.73E-12		8.74E-12	5.73E-12		1.01E-14	3.35E-15										
Nickel	1.67E-07	1.37E-07		1.67E-07	1.37E-07		1.17E-09	3.90E-10						7.98E-06	6.58E-06		5.86E-08	1.95E-08
Selenium	1.19E-06	1.96E-06		1.19E-06	1.96E-06		5.45E-09	1.82E-09						2.29E-04	3.77E-04		1.09E-06	3.63E-07
Acid Gases																		
HCl	0.00E+00	0.00E+00		0.00E+00	0.00E+00		4.17E-08	1.39E-08										
									2.0E-08	**5.1E-09**		**5.4E-09**	**1.8E-09**	**0.00043**	**0.00063**		**0.000006**	**0.000002**

Table 3 (Revised, March 2007). Risk Analysis - Subsistence Fisher (Location: S7 (Brown Creek))

	Total Daily Intake									
	Carcinogen Total Daily Intake				Noncarcinogen Total Daily Intake				Total Daily Inhalation	
Chemical	Subsistence Fisher Adult [Flowing Water] (mg/kg-day) ISF_FW	Subsistence Fisher Child [Flowing Water] (mg/kg-day) ICSF_FW	Subsistence Fisher Adult [Quiescent Water] (mg/kg-day) ISF_QW	Subsistence Fisher Child [Quiescent Water] (mg/kg-day) ICSF_QW	Subsistence Fisher Adult [Flowing Water] (mg/kg-day) ISF_FWn	Subsistence Fisher Child [Flowing Water] (mg/kg-day) ICSF_FWn	Subsistence Fisher Adult [Quiescent Water] (mg/kg-day) ISF_QWn	Subsistence Fisher Child [Quiescent Water] (mg/kg-day) ICSF_QWn	Subsistence Fisher Adult (mg/kg-day) ADIa	Subsistence Fisher Child (mg/kg-day) ADIc
PCDD/PCDF										
2,3,7,8-Tetrachlorodibenzodioxin	8.12E-14	6.36E-14	8.12E-14	6.36E-14	8.12E-14	6.36E-14	8.12E-14	6.36E-14	7.09E-18	3.15E-18
Volatiles										
Acetaldehyde	4.53E-07	6.20E-07	4.53E-07	6.20E-07	4.53E-07	6.20E-07	4.53E-07	6.20E-07	1.53E-08	6.82E-09
Acetone	2.61E-10	3.58E-10	2.61E-10	3.58E-10	2.61E-10	3.58E-10	2.61E-10	3.58E-10	1.43E-11	6.34E-12
Acetophenone	3.00E-09	4.16E-09	3.10E-09	4.22E-09	3.00E-09	4.16E-09	3.10E-09	4.22E-09	4.06E-10	1.81E-10
Acrolein	1.73E-07	2.38E-07	1.74E-07	2.38E-07	1.73E-07	2.38E-07	1.74E-07	2.38E-07	7.81E-09	3.47E-09
Benzene	4.73E-11	6.63E-11	4.93E-11	6.75E-11	4.73E-11	6.63E-11	4.93E-11	6.75E-11	6.72E-12	2.98E-12
Benzyl chloride	2.67E-07	3.65E-07	2.68E-07	3.66E-07	2.67E-07	3.65E-07	2.68E-07	3.66E-07	1.88E-08	8.37E-09
Carbon disulfide	1.73E-11	2.42E-11	1.80E-11	2.46E-11	1.73E-11	2.42E-11	1.80E-11	2.46E-11	2.27E-12	1.01E-12
Chlorobenzene	6.09E-09	8.70E-09	6.26E-09	8.81E-09	6.09E-09	8.70E-09	6.26E-09	8.81E-09	5.93E-10	2.64E-10
Chloroform	1.15E-11	1.59E-11	1.18E-11	1.62E-11	1.15E-11	1.59E-11	1.18E-11	1.62E-11	1.43E-12	6.34E-13
Cumene	2.60E-10	3.61E-10	2.60E-10	3.61E-10	2.60E-10	3.61E-10	2.60E-10	3.61E-10	1.36E-10	6.04E-11
Ethylbenzene	1.02E-08	1.50E-08	1.08E-08	1.54E-08	1.02E-08	1.50E-08	1.08E-08	1.54E-08	2.53E-09	1.12E-09
Ethyl Chloride (chloroethane)	4.37E-09	6.33E-09	4.48E-09	6.40E-09	4.37E-09	6.33E-09	4.48E-09	6.40E-09	1.14E-09	5.05E-10
Ethylene dichloride (I,2-dichloroethane)	6.57E-09	9.07E-09	6.75E-09	9.19E-09	6.57E-09	9.07E-09	6.75E-09	9.19E-09	1.07E-09	4.75E-10
Ethylene dibromide (I,2-dibromoethane)	1.88E-10	2.60E-10	1.94E-10	2.65E-10	1.88E-10	2.60E-10	1.94E-10	2.65E-10	3.39E-11	1.51E-11
Freon 11 (trichlorofluoromethane)	1.09E-11	1.54E-11	1.12E-11	1.56E-11	1.09E-11	1.54E-11	1.12E-11	1.56E-11	1.19E-12	5.30E-13
Freon 12 (dichlorodifluoromethane)	2.88E-11	4.04E-11	2.99E-11	4.11E-11	2.88E-11	4.04E-11	2.99E-11	4.11E-11	3.73E-12	1.66E-12
Hexane	1.37E-10	2.12E-10	1.60E-10	2.27E-10	1.37E-10	2.12E-10	1.60E-10	2.27E-10	7.16E-12	3.18E-12
Methyl bromide (bromomethane)	3.47E-08	4.78E-08	3.54E-08	4.82E-08	3.47E-08	4.78E-08	3.54E-08	4.82E-08	4.31E-09	1.91E-09
Methyl chloride (chloromethane)	7.63E-12	1.05E-11	7.73E-12	1.06E-11	7.63E-12	1.05E-11	7.73E-12	1.06E-11	8.33E-13	3.70E-13
Methylene chloride	5.23E-08	7.23E-08	5.38E-08	7.32E-08	5.23E-08	7.23E-08	5.38E-08	7.32E-08	7.81E-09	3.47E-09
Methyl ethyl ketone (2-butanone)	5.25E-08	7.38E-08	5.61E-08	7.61E-08	5.25E-08	7.38E-08	5.61E-08	7.61E-08	1.05E-08	4.66E-09
Methyl methacrylate	5.69E-09	7.81E-09	5.75E-09	7.85E-09	5.69E-09	7.81E-09	5.75E-09	7.85E-09	5.42E-10	2.41E-10
Methyl tert butyl ether	1.48E-10	2.05E-10	1.54E-10	2.09E-10	1.48E-10	2.05E-10	1.54E-10	2.09E-10	2.50E-11	1.11E-11
Styrene	6.93E-09	9.77E-09	6.95E-09	9.79E-09	6.93E-09	9.77E-09	6.95E-09	9.79E-09	6.78E-10	3.01E-10
Tetrachloroethene	9.78E-11	1.37E-10	9.89E-11	1.38E-10	9.78E-11	1.37E-10	9.89E-11	1.38E-10	6.45E-12	2.86E-12
Toluene	3.89E-08	5.56E-08	4.07E-08	5.68E-08	3.89E-08	5.56E-08	4.07E-08	5.68E-08	6.45E-09	2.86E-09
1,1,1-Trichloroethane	1.23E-07	1.70E-07	1.23E-07	1.70E-07	1.23E-07	1.70E-07	1.23E-07	1.70E-07	5.42E-10	2.41E-10
Vinyl acetate	2.29E-09	3.14E-09	2.31E-09	3.15E-09	2.29E-09	3.14E-09	2.31E-09	3.15E-09	2.03E-10	9.03E-11
Xylenes	6.83E-10	9.85E-10	7.04E-10	9.98E-10	6.83E-10	9.85E-10	7.04E-10	9.98E-10	1.00E-09	4.44E-10
Semi-Volatiles										
Benzo(a)pyrene (equivalents)	1.16E-08	1.29E-08	1.16E-08	1.29E-08	1.16E-08	1.29E-08	1.16E-08	1.29E-08	2.44E-12	1.08E-12
Bis(2-ethylhexyl)phthalate	3.86E-06	6.60E-06	3.86E-06	6.60E-06	3.86E-06	6.60E-06	3.86E-06	6.60E-06	1.96E-09	8.73E-10
Bromoform	1.05E-08	1.47E-08	1.07E-08	1.49E-08	1.05E-08	1.47E-08	1.07E-08	1.49E-08	1.05E-09	4.67E-10
2,4-Dinitrotoluene	6.80E-11	9.49E-11	7.02E-11	9.63E-11	6.80E-11	9.49E-11	7.02E-11	9.63E-11	7.74E-12	3.44E-12
Formaldehyde	2.70E-08	3.70E-08	2.71E-08	3.71E-08	2.70E-08	3.70E-08	2.71E-08	3.71E-08	6.45E-09	2.86E-09
Isophorone	1.96E-07	2.74E-07	1.97E-07	2.75E-07	1.96E-07	2.74E-07	1.97E-07	2.75E-07	1.56E-08	6.94E-09
Phenol	2.77E-09	3.83E-09	2.85E-09	3.88E-09	2.77E-09	3.83E-09	2.85E-09	3.88E-09	4.24E-10	1.88E-10
PCBs										
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Inorganics										
Antimony	5.19E-08	4.13E-08	5.19E-08	4.13E-08	5.19E-08	4.13E-08	5.19E-08	4.13E-08	3.65E-10	1.62E-10
Arsenic	7.66E-10	9.34E-10	7.66E-10	9.34E-10	7.66E-10	9.34E-10	7.66E-10	9.34E-10	6.32E-12	2.81E-12
Beryllium	5.90E-07	4.68E-07	5.90E-07	4.68E-07	5.90E-07	4.68E-07	5.90E-07	4.68E-07	4.17E-10	1.85E-10
Cadmium	3.75E-10	2.75E-10	3.75E-10	2.75E-10	3.75E-10	2.75E-10	3.75E-10	2.75E-10	1.98E-12	8.81E-13
Chromium VI	1.29E-09	1.03E-09	1.29E-09	1.03E-09	1.29E-09	1.03E-09	1.29E-09	1.03E-09	2.17E-11	9.66E-12
Cobalt	2.26E-08	3.75E-08	2.28E-08	3.76E-08	2.26E-08	3.75E-08	2.28E-08	3.76E-08	1.99E-09	8.86E-10
Manganese	3.72E-08	5.73E-08	3.79E-08	5.77E-08	3.72E-08	5.73E-08	3.79E-08	5.77E-08	9.80E-09	4.36E-09
Mercury (elemental)	5.89E-11	3.89E-11	5.89E-11	3.89E-11	5.89E-11	3.89E-11	5.89E-11	3.89E-11	4.81E-14	2.14E-14
Nickel	1.14E-06	9.54E-07	1.14E-06	9.54E-07	1.14E-06	9.54E-07	1.14E-06	9.55E-07	5.60E-09	2.49E-09
Selenium	7.86E-06	1.30E-05	7.87E-06	1.30E-05	7.86E-06	1.30E-05	7.87E-06	1.30E-05	2.60E-08	1.16E-08
Acid Gases										
HCl	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.68E-07	1.19E-07

Table 3 (Revised, March 2007). Risk Analysis - Subsistence Fisher (Location: S7 (Brown Creek)) Cont.

Chemical	Total Risk						Total Hazard					
	Total Risk				Inhalation Risk		Total Hazard				Inhalation Hazard	
	Subsistence Fisher Adult [Flowing Water]	Subsistence Fisher Child [Flowing Water]	Subsistence Fisher Adult [Quiescent Water]	Subsistence Fisher Child [Quiescent Water]	Subsistence Fisher Adult	Subsistence Fisher Child	Subsistence Fisher Adult [Flowing Water]	Subsistence Fisher Child [Flowing Water]	Subsistence Fisher Adult [Quiescent Water]	Subsistence Fisher Child [Quiescent Water]	Subsistence Fisher Adult	Subsistence Fisher Child
PCDD/PCDF												
2,3,7,8-Tetrachlorodibenzodioxin	5.0E-09	7.8E-10	5.0E-09	7.8E-10	1.1E-12	4.7E-13						
Volatiles												
Acetaldehyde					1.2E-10	5.3E-11						
Acetone							2.78E-10	3.43E-10	2.78E-10	3.43E-10	1.58E-11	6.34E-12
Acetophenone							2.88E-08	3.99E-09	2.97E-08	4.05E-09	4.06E-09	1.81E-10
Acrolein							3.33E-04	4.56E-04	3.33E-04	4.56E-04	1.56E-05	6.94E-06
Benzene	1.1E-12	3.0E-13	1.1E-12	3.1E-13	1.8E-13	8.1E-14	1.13E-08	1.59E-08	1.18E-08	1.62E-08	1.68E-09	7.46E-10
Benzyl chloride	1.9E-08	5.1E-09	1.9E-08	5.1E-09			1.28E-04	1.75E-04	1.28E-04	1.76E-04	9.42E-06	4.19E-06
Carbon disulfide							1.66E-10	2.32E-10	1.72E-10	2.36E-10	2.27E-11	1.01E-11
Chlorobenzene							2.92E-07	4.17E-08	3.00E-07	4.22E-08	2.97E-08	1.32E-09
Chloroform					1.2E-13	5.1E-14	1.10E-09	1.53E-09	1.13E-09	1.55E-09	1.43E-10	6.34E-11
Cumene							2.49E-09	8.66E-10	2.49E-09	8.67E-10	1.36E-09	1.51E-10
Ethylbenzene							9.75E-08	1.31E-07	1.04E-07	1.34E-07	2.53E-08	1.02E-08
Ethyl Chloride (chloroethane)	5.2E-12	1.5E-12	5.3E-12	1.5E-12			1.05E-08	1.52E-08	1.07E-08	1.54E-08	2.84E-09	1.26E-09
Ethylene dichloride (I,2-dichloroethane)	5.4E-09	1.5E-09	5.5E-09	1.5E-09	2.1E-09	9.5E-10	7.00E-07	9.67E-07	7.19E-07	9.80E-07	1.19E-07	5.28E-08
Ethylene dibromide (I,2-dibromoethane)	7.0E-12	1.9E-12	7.3E-12	2.0E-12	3.1E-12	1.4E-12	9.00E-09	1.25E-08	9.31E-09	1.27E-08	1.70E-09	7.54E-10
Freon 11 (trichlorofluoromethane)							3.47E-11	2.11E-11	3.59E-11	2.14E-11	3.97E-12	7.57E-13
Freon 12 (dichlorodifluoromethane)							1.38E-10	4.30E-11	1.43E-10	4.38E-11	1.86E-11	1.84E-12
Hexane							1.20E-11	3.39E-10	1.40E-11	3.63E-10	6.51E-13	5.30E-12
Methyl bromide (bromomethane)							2.37E-05	9.16E-06	2.42E-05	9.25E-06	3.08E-06	3.83E-07
Methyl chloride (chloromethane)												
Methylene chloride	1.6E-10	4.5E-11	1.7E-10	4.5E-11	1.3E-11	5.7E-12	8.36E-07	8.66E-07	8.60E-07	8.78E-07	1.30E-07	4.34E-08
Methyl ethyl ketone (2-butanone)							8.40E-08	1.18E-07	8.96E-08	1.22E-07	1.75E-08	7.77E-09
Methyl methacrylate							3.89E-09	1.25E-07	3.94E-09	1.25E-07	3.87E-10	4.02E-09
Methyl tert butyl ether	2.4E-13	6.8E-14	2.5E-13	6.9E-14								
Styrene							3.32E-08	9.37E-08	3.33E-08	9.39E-08	3.39E-09	3.01E-09
Tetrachloroethene	2.2E-11	6.1E-12	2.2E-11	6.1E-12	1.3E-13	5.7E-14	9.38E-09	6.58E-11	9.48E-09	6.62E-11	6.45E-10	1.43E-12
Toluene							1.87E-07	2.67E-07	1.95E-07	2.72E-07	3.22E-08	1.43E-08
1,1,1-Trichloroethane							4.20E-07	1.63E-07	4.20E-07	1.63E-07	1.94E-09	2.41E-10
Vinyl acetate							2.19E-09	3.01E-09	2.21E-09	3.02E-09	2.03E-10	9.03E-11
Xylenes							3.28E-09	4.72E-09	3.38E-09	4.78E-09	5.00E-09	2.22E-09
Semi-Volatiles												
Benzo(a)pyrene (equivalents)	3.5E-08	7.7E-09	3.5E-08	7.7E-09	7.6E-12	3.4E-12						
Bis(2-ethylhexyl)phthalate	2.2E-08	7.6E-09	2.2E-08	7.6E-09			1.85E-04	3.16E-04	1.85E-04	3.16E-04	9.82E-08	4.37E-08
Bromoform	3.4E-11	9.6E-12	3.5E-11	9.7E-12	4.1E-12	1.8E-12	5.03E-07	7.06E-08	5.15E-07	7.14E-08	5.25E-08	2.34E-09
2,4-Dinitrotoluene							3.26E-08	4.55E-08	3.36E-08	4.62E-08	3.87E-09	1.72E-09
Formaldehyde					2.9E-10	1.3E-10	1.29E-07	1.77E-07	1.30E-07	1.78E-07	3.22E-08	1.43E-08
Isophorone	7.7E-11	2.1E-11	7.7E-11	2.1E-11			9.40E-07	1.32E-07	9.42E-07	1.32E-07	7.81E-08	3.47E-09
Phenol							8.87E-09	6.13E-09	9.09E-09	6.20E-09	1.41E-09	3.14E-10
PCBs												
Polychlorinated biphenyls												
Inorganics												
Antimony							1.24E-04	1.98E-04	1.24E-04	1.98E-04	9.14E-07	8.12E-07
Arsenic	4.7E-10	1.2E-10	4.7E-10	1.2E-10	9.5E-11	4.2E-11	2.45E-06	2.99E-06	2.45E-06	2.99E-06	2.11E-08	9.36E-09
Beryllium					3.5E-09	1.6E-09	2.83E-04	8.98E-05	2.83E-04	8.98E-05	2.08E-07	3.70E-08
Cadmium					1.2E-11	5.6E-12	3.60E-07	2.63E-07	3.60E-07	2.63E-07	1.98E-09	8.81E-10
Chromium VI					8.9E-10	4.0E-10	4.13E-07	4.95E-08	4.13E-07	4.95E-08	7.24E-09	4.83E-10
Cobalt					2.0E-08	8.7E-09	1.09E-06	1.80E-06	1.09E-06	1.80E-06	9.96E-08	4.43E-08
Manganese							1.78E-06	3.92E-07	1.82E-06	3.95E-07	4.90E-07	3.11E-08
Mercury (elemental)												
Nickel							5.45E-05	4.58E-05	5.45E-05	4.58E-05	2.80E-07	1.24E-07
Selenium							1.51E-03	2.49E-03	1.51E-03	2.50E-03	5.21E-06	2.31E-06
Acid Gases												
HCl												
	1.1E-07	**3.5E-08**	**1.1E-07**	**3.5E-08**	**2.7E-08**	**1.2E-08**	**0.00269**	**0.00381**	**0.00269**	**0.00381**	**0.000036**	**0.000015**

Table 4 (Revised, March 2007). Risk Analysis - School/Day Care (Location: L7 (Rainelle School))

	Total Daily Intake			Total Risk		Total Hazard	
	Total Daily Soil Ingestion		Total Daily Inhalation	Total Risk	Inhalation Risk	Total Hazard	Inhalation Hazard
Chemical	Carcinogen Contaminant Intake From Soil (mg/kg-day) I_{CDC}	Noncarcinogen Contaminant Intake From Soil (mg/kg-day) I_{CDCn}	Day Care Student (mg/kg-day) ADIc	Day Care Student	Day Care Student	Day Care Student	Day Care Student
PCDD/PCDF							
2,3,7,8-Tetrachlorodibenzodioxin	6.00E-19	6.14E-19	4.94E-19	7.4E-15	7.4E-14		
Volatiles							
Acetaldehyde	4.17E-11	4.17E-11	1.07E-09		8.2E-12		
Acetone	2.92E-15	2.92E-15	9.95E-13			2.80E-15	9.95E-13
Acetophenone	1.03E-12	1.03E-12	2.84E-11			9.89E-13	2.84E-11
Acrolein	2.09E-11	2.09E-11	5.45E-10			4.01E-08	1.09E-06
Benzene	3.84E-14	3.85E-14	4.69E-13	1.7E-16	1.3E-14	9.23E-12	1.17E-10
Benzyl chloride	2.98E-11	2.98E-11	1.31E-09	4.2E-13		1.43E-08	6.57E-07
Carbon disulfide	6.94E-15	6.94E-15	1.59E-13			6.66E-14	1.59E-12
Chlorobenzene	4.68E-12	4.69E-12	4.14E-11			2.25E-11	2.07E-10
Chloroform	2.36E-14	2.37E-14	9.95E-14		8.1E-15	2.28E-12	9.95E-12
Cumene	1.46E-13	1.46E-13	9.48E-12			3.51E-13	2.37E-11
Ethylbenzene	3.71E-12	3.72E-12	1.77E-10			3.24E-11	1.60E-09
Ethyl Chloride (chloroethane)	1.55E-12	1.55E-12	7.92E-11	3.7E-16		3.72E-12	1.98E-10
Ethylene dichloride (I,2-dichloroethane)	1.43E-12	1.43E-12	7.46E-11	2.3E-13	1.5E-10	1.52E-10	8.28E-09
Ethylene dibromide (I,2-dibromoethane)	3.68E-14	3.68E-14	2.37E-12	2.8E-16	2.2E-13	1.77E-12	1.18E-10
Freon 11 (trichlorofluoromethane)	2.17E-14	2.18E-14	8.32E-14			2.99E-14	1.19E-13
Freon 12 (dichlorodifluoromethane)	3.64E-14	3.65E-14	2.60E-13			3.89E-14	2.89E-13
Hexane	6.27E-14	6.28E-14	5.00E-13			1.00E-13	8.33E-13
Methyl bromide (bromomethane)	1.83E-11	1.83E-11	3.00E-10			3.51E-09	6.01E-08
Methyl chloride (chloromethane)	3.06E-15	3.06E-15	5.81E-14				
Methylene chloride	2.83E-11	2.84E-11	5.45E-10	1.7E-14	9.0E-13	3.40E-10	6.81E-09
Methyl ethyl ketone (2-butanone)	4.45E-11	4.46E-11	7.31E-10			7.12E-11	1.22E-09
Methyl methacrylate	1.99E-12	2.00E-12	3.78E-11			3.19E-11	6.31E-10
Methyl tert butyl ether	1.11E-13	1.11E-13	1.75E-12	3.6E-17			
Styrene	1.23E-12	1.24E-12	4.73E-11			1.18E-11	4.73E-10
Tetrachloroethene	2.65E-14	2.66E-14	4.50E-13	1.2E-15	9.0E-15	1.27E-14	2.25E-13
Toluene	1.09E-11	1.09E-11	4.50E-10			5.22E-11	2.25E-09
1,1,1-Trichloroethane	1.76E-11	1.77E-11	3.78E-11			1.70E-11	3.78E-11
Vinyl acetate	1.06E-11	1.08E-11	1.42E-11			1.03E-11	1.42E-11
Xylenes	5.52E-14	5.52E-14	6.98E-11			2.65E-13	3.49E-10
Semi-Volatiles							
Benzo(a)pyrene (equivalents)	6.38E-14	6.42E-14	1.70E-13	3.8E-14	5.3E-13		
Bis(2-ethylhexyl)phthalate	1.29E-13	1.29E-13	1.37E-10	1.5E-16		6.20E-12	6.85E-09
Bromoform	2.43E-12	2.43E-12	7.33E-11	1.6E-15	2.9E-13	1.17E-11	3.67E-10
2,4-Dinitrotoluene	2.03E-13	2.04E-13	5.40E-13			9.78E-11	2.70E-10
Formaldehyde	3.57E-13	3.57E-13	4.50E-10		2.0E-11	1.71E-12	2.25E-09
Isophorone	8.62E-13	8.62E-13	1.09E-09	6.7E-17		4.13E-13	5.45E-10
Phenol	5.56E-13	5.56E-13	2.96E-11			8.89E-13	4.93E-11
PCBs							
Polychlorinated biphenyls	0.00E+00	0.00E+00	0.00E+00				
Inorganics							
Antimony	2.18E-08	3.83E-08	2.61E-11			1.83E-04	1.30E-07
Arsenic	6.67E-13	6.68E-13	4.51E-13	8.2E-14	6.8E-12	2.13E-09	1.50E-09
Beryllium	4.40E-11	4.40E-11	2.97E-11		2.5E-10	8.44E-09	5.94E-09
Cadmium	5.47E-11	7.00E-11	1.41E-13		8.9E-13	6.71E-08	1.41E-10
Chromium VI	4.27E-10	5.01E-10	1.55E-12		6.4E-11	2.40E-08	7.75E-11
Cobalt	1.42E-07	2.73E-07	1.42E-10		1.4E-09	1.31E-05	7.11E-09
Manganese	3.76E-07	5.40E-07	6.99E-10			3.70E-06	4.99E-09
Mercury (elemental)	3.16E-13	3.50E-13	3.43E-15				
Nickel	5.91E-10	5.91E-10	3.99E-10			2.84E-08	2.00E-08
Selenium	2.75E-09	2.75E-09	1.86E-09			5.28E-07	3.71E-07
Acid Gases							
HCl	0.00E+00	0.00E+00	1.87E-08				
				1.9E-09	**1.9E-09**	**0.00020**	**0.000002**

Appendix I (revised tables)

Table 5 (Revised, March 2007). Risk Analysis - Nursing Home/Hospital Patient Extended Care Resident (Location: L2 (Rainelle Nursing Home))

	Total Daily Inhalation	Total Inhalation Risk	Total Inhalation Hazard
Chemical	Nursing Home Patient (mg/kg-day) ADIa	Nursing Home Patient	Nursing Home Patient
PCDD/PCDF			
2,3,7,8-Tetrachlorodibenzodioxin	3.74E-20	5.6E-15	
Volatiles			
Acetaldehyde	8.08E-11	6.2E-13	
Acetone	7.52E-14		8.36E-14
Acetophenone	2.15E-12		2.15E-11
Acrolein	4.12E-11		8.23E-08
Benzene	3.54E-14	9.6E-16	8.86E-12
Benzyl chloride	9.92E-11		4.96E-08
Carbon disulfide	1.20E-14		1.20E-13
Chlorobenzene	3.13E-12		1.57E-10
Chloroform	7.51E-15	6.1E-16	7.51E-13
Cumene	7.16E-13		7.16E-12
Ethylbenzene	1.33E-11		1.33E-10
Ethyl Chloride (chloroethane)	5.99E-12		1.50E-11
Ethylene dichloride (I,2-dichloroethane)	5.64E-12	1.1E-11	6.26E-10
Ethylene dibromide (I,2-dibromoethane)	1.79E-13	1.6E-14	8.95E-12
Freon 11 (trichlorofluoromethane)	6.29E-15		2.10E-14
Freon 12 (dichlorodifluoromethane)	1.97E-14		9.84E-14
Hexane	3.78E-14		3.43E-15
Methyl bromide (bromomethane)	2.27E-11		1.62E-08
Methyl chloride (chloromethane)	4.39E-15		
Methylene chloride	4.12E-11	6.8E-14	6.86E-10
Methyl ethyl ketone (2-butanone)	5.53E-11		9.22E-11
Methyl methacrylate	2.86E-12		2.05E-12
Methyl tert butyl ether	1.32E-13		
Styrene	3.58E-12		1.79E-11
Tetrachloroethene	3.40E-14	6.8E-16	3.40E-12
Toluene	3.40E-11		1.70E-10
1,1,1-Trichloroethane	2.86E-12		1.02E-11
Vinyl acetate	1.07E-12		1.07E-12
Xylenes	5.28E-12		2.64E-11
Semi-Volatiles			
Benzo(a)pyrene (equivalents)	1.29E-14	4.0E-14	
Bis(2-ethylhexyl)phthalate	1.04E-11		5.19E-10
Bromoform	5.55E-12	2.2E-14	2.77E-10
2,4-Dinitrotoluene	4.08E-14		2.04E-11
Formaldehyde	3.40E-11	1.5E-12	1.70E-10
Isophorone	8.22E-11		4.11E-10
Phenol	2.24E-12		7.46E-12
PCBs			
Polychlorinated biphenyls	0.00E+00		
Inorganics			
Antimony	2.27E-12		5.68E-09
Arsenic	3.92E-14	5.9E-13	1.31E-10
Beryllium	2.58E-12	2.2E-11	1.29E-09
Cadmium	1.23E-14	7.7E-14	1.23E-11
Chromium VI	1.35E-13	5.5E-12	4.49E-11
Cobalt	1.24E-11	1.2E-10	6.19E-10
Manganese	6.08E-11		3.04E-09
Mercury (elemental)	2.98E-16		
Nickel	3.48E-11		1.74E-09
Selenium	1.61E-10		3.23E-08
Acid Gases			
HCl	1.41E-09		
		1.6E-10	**0.00000020**