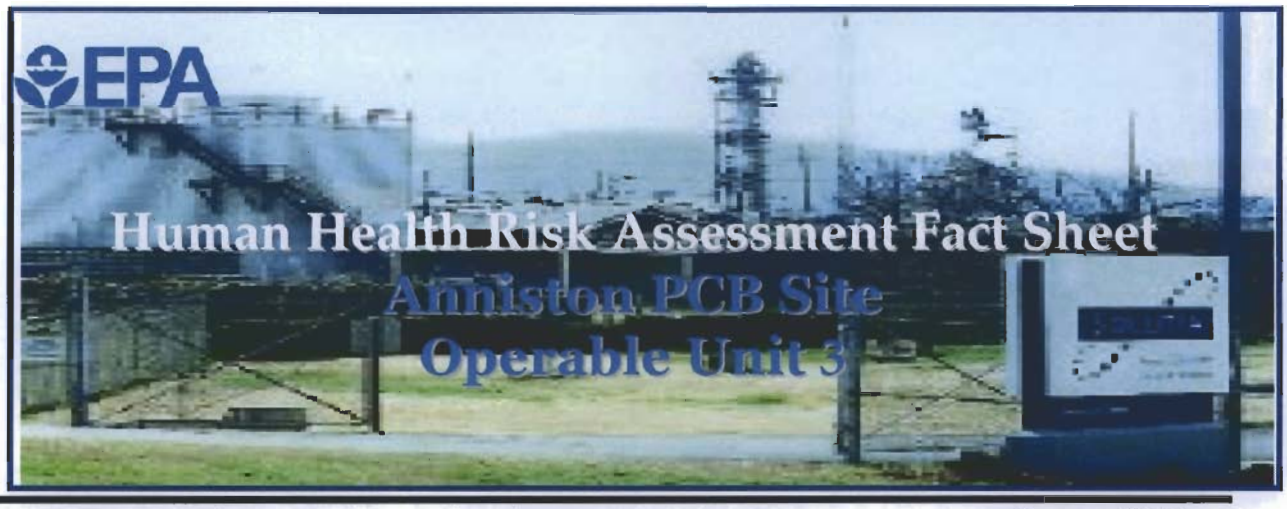


United States Environmental Protection Agency January 2008

The United States Environmental Protection Agency (EPA) Releases the Baseline Human Health Risk Assessment (HHRA) for Operable Unit 3 (the Solutia facility) at the Anniston PCB Site, Anniston, Alabama.

The Baseline Human Health Risk Assessment for Operable Unit 3 (OU3) is one of a series of reports being prepared by EPA to evaluate human health risks under a Consent Decree with Solutia Inc. and Pharmacia Corporation. The Baseline Human Health Risk Assessment characterizes the cancer and non-cancer risks to adults, adolescents, and children who may be exposed to polychlorinated biphenyls (PCBs) and other contaminants at the Solutia facility in Anniston, Alabama, while working at the facility, trespassing at the facility, or living next to the facility. This report was prepared with community input provided on a Pathways Analysis Report in January 2007.

This fact sheet summarizes the conclusions of the Human Health Risk Assessment for OU3. Copies of the full report are available for public review at the repositories listed on the last page, or on EPA's web site at http://www.epa.gov/region4/waste/npl/nplal/annpcbal.htm.

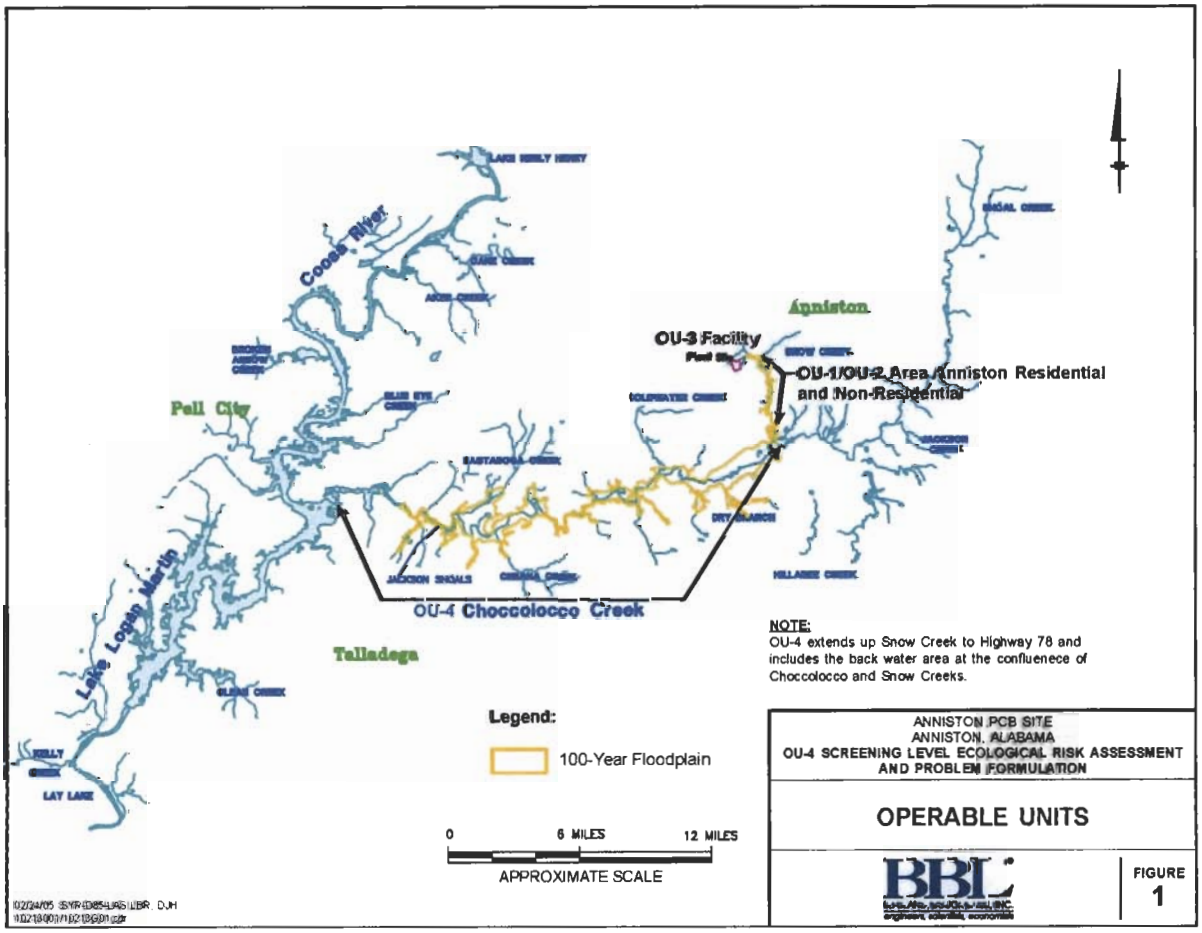
SITE HISTORY

Industrial operation at the present site of the Solutia facility began in 1915, when Theodore Swann began manufacturing explosive shell cases for the Army. He founded the Anniston Ordinance Company, and later, the Southern Manganese Corporation, which began operations at the site in 1917, manufacturing ferromanganese and other steel-making chemicals. Ten years later Southern Manganese began manufacturing organic chemicals at the site.

In 1930, Southern Manganese was renamed the Swann Chemical Company. Five years later, Monsanto Company purchased Swann Chemical Company and manufactured phosphates, chlorine, insecticides and fire-resistant industrial and electrical fluids, including PCBs. In 1997, Monsanto spun off Solutia Inc. as an independent chemical company.

PCBs were produced at the site from 1929 through 1971. As a result of storm water transport, air dispersion, and human movement/relocation of contaminated soils, PCBs have migrated away from the facility, into the surrounding community.

Solutia Inc. and Pharmacia Corporation, the parent company of Monsanto Corporation, agreed to investigate the release of PCBs and other chemicals from the facility in a Partial Consent Decree with the EPA. EPA and Solutia agreed to divide the investigation up into three operable units (OUs), as shown in Figure 1. OU1/OU2 incorporates impacted residential and non-residential properties around the current facility and around the downstream waterway and potentially impacted floodplains of Snow Creek. OU3 incorporates the current facility and two adjacent inactive landfills. OU4 incorporates the downstream waterway and potentially impacted floodplains of Choccolocco Creek. The results of these investigations will be used to determine if additional downstream investigations are required.



RISK ASSESSMENT

A Human Health Risk Assessment is conducted to find out what possibility there is that chemicals from a hazardous waste site or facility will cause current or future health risks to individuals who come into contact with them. The risk assessment provides the community and decision makers with an understanding of the potential health risks posed by contamination in the absence of any cleanup. Risk estimates are conservative, to prevent underestimating the health risks to the public.

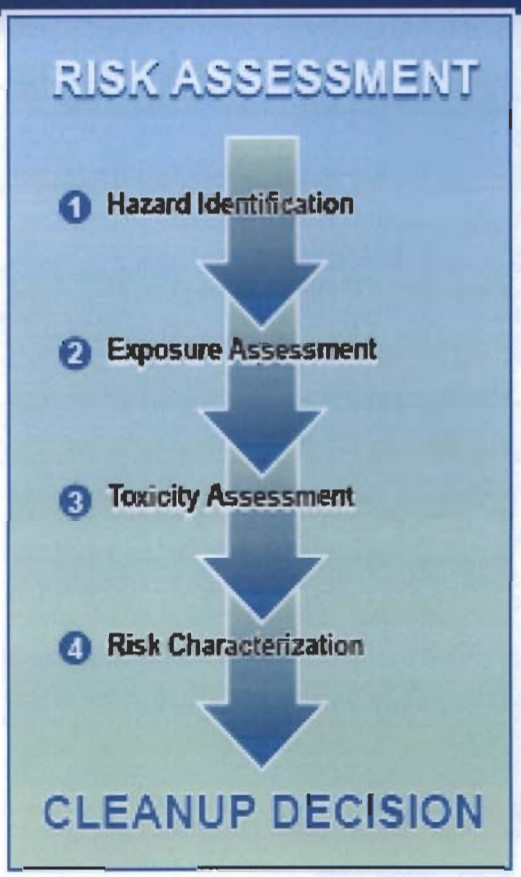
To find out what the current and future health risks are, the risk assessment answers the following questions:

- ***Are toxic compounds present? (Hazard Identification)*** Samples of soil, groundwater, and air were collected to find out what chemicals are present at the facility, West End Landfill, and South Landfill.

- ***Who is exposed? How often? (Exposure Assessment)*** Chemicals may enter the body through breathing (inhalation), eating or drinking (ingestion), or by skin contact (dermal contact). The range of exposures varies from a maximum exposure, which is based on default assumptions, to an average exposure, which is reflective of what is more likely to occur.

- ***How toxic are they? (Toxicity Assessment)*** EPA used information collected from past animal and human studies to assess the potential for chemicals to cause cancer or non-cancer effects.

- ***Are there potential health risks? (Risk Characterization)*** The risk characterization describes the potential health risks and identifies which chemicals are causing the risk.



RISKS ARE PRESENTED AS NUMBERS

Cancer Risk is the increased probability, or chance, of getting cancer as a result of exposure to chemicals at a site. In the report for this site, a 1 in 1,000,000 chance is written 1E-06.

Non-cancer Risk is a comparison of an allowable exposure to the amount of exposure estimated at a site. The comparison is called the Hazard Index (HI). An HI greater that 1 indicates that site exposure exceeds the allowable exposure.

Acceptable Risks for cancer are considered by EPA to be less than 1 in 1,000,000. For risk estimates between a 1 in 1,000,000 and a 1 in 10,000 chance, EPA looks at site-specific factors affecting risk and uncertainties with the estimate. For non-cancer health effects, an HI less than 1 means people are unlikely to be harmed.

Figure 2. Solutia Facility and Adjacent Inactive Landfills

CONTAMINANTS OF POTENTIAL CONCERN

Areas of potential concern were investigated separately, and included the Facility Area, the South Landfill (SL), and the West End Landfill (WEL) (Figure 2). Surface soils, subsurface soils, groundwater and air were sampled. Maximum detected concentrations of chemicals were compared by medium to risk-based screening levels to identify contaminants of potential concern (COPCs) for each medium. The COPCs for OU3 are listed by area and medium in Table 1.

EXPOSURE POINT CONCENTRATIONS

An exposure point concentration (EPC) is an estimate of the concentration of a COPC at points of exposure for different groups of receptors. This concentration is calculated as the lower of the maximum detected concentration or the 95 percent upper confidence limit (UCL) of the arithmetic mean. This approach is a conservative (protective) estimate of average COPC concentrations to account for uncertainties in the risk assessment dataset. EPCs were calculated for all COPCs in surface soil, subsurface soil, groundwater, and air. Separate EPCs were calculated for current and future workers to take into account soil that is under asphalt or other cover and is not currently accessible.

EXPOSURE PATHWAYS

Exposure pathways are identified to estimate risks and hazards to current and future receptors assuming no additional site remediation occurs. The receptors evaluated include operations area workers, O&M workers, trespassers, and construction workers. In addition, off-site residential exposures to air and groundwater from the facility were considered to address community concerns (Figure3).

Area	Table 1. Contaminants of Potential Concern			
	Surface Soil	Subsurface Soil	Ambient Air	Groundwater
	Current/Future	Current/Future	Current/Future	Future
Facility	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene Total PCBs Heptachlor epoxide Dioxin TEQ Aluminum Antimony Arsenic Cadmium Chromium Iron Lead Manganese Mercury Vanadium	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(a,h)anthracene Indeno(1,2,3-cd)pyrene Total PCBs Heptachlor epoxide Dioxin TEQ Aluminum Antimony Arsenic Cadmium Chromium Iron Lead Manganese Mercury Vanadium	Total PCBs	1,2,4-Trichlorobenzene 1,4-Dichlorobenzene Chlorobenzene cis-1,2-Dichloroethene Pentachlorophenol Trichloroethylene 2,4,6-Trichlorophenol Indeno(1,2,3-cd)pyrene Total PCBs gamma-BHC Methyl parathion Parathion Dioxin TEQ Antimony Arsenic Manganese Mercury
WEL	None	Not sampled	Total PCBs	Not Applicable
SL	Total PCBs	Not sampled	Total PCBs	Not Applicable
Off-site	Not part of OU3	Not part of OU3	Total PCBs	Same as Facility GW

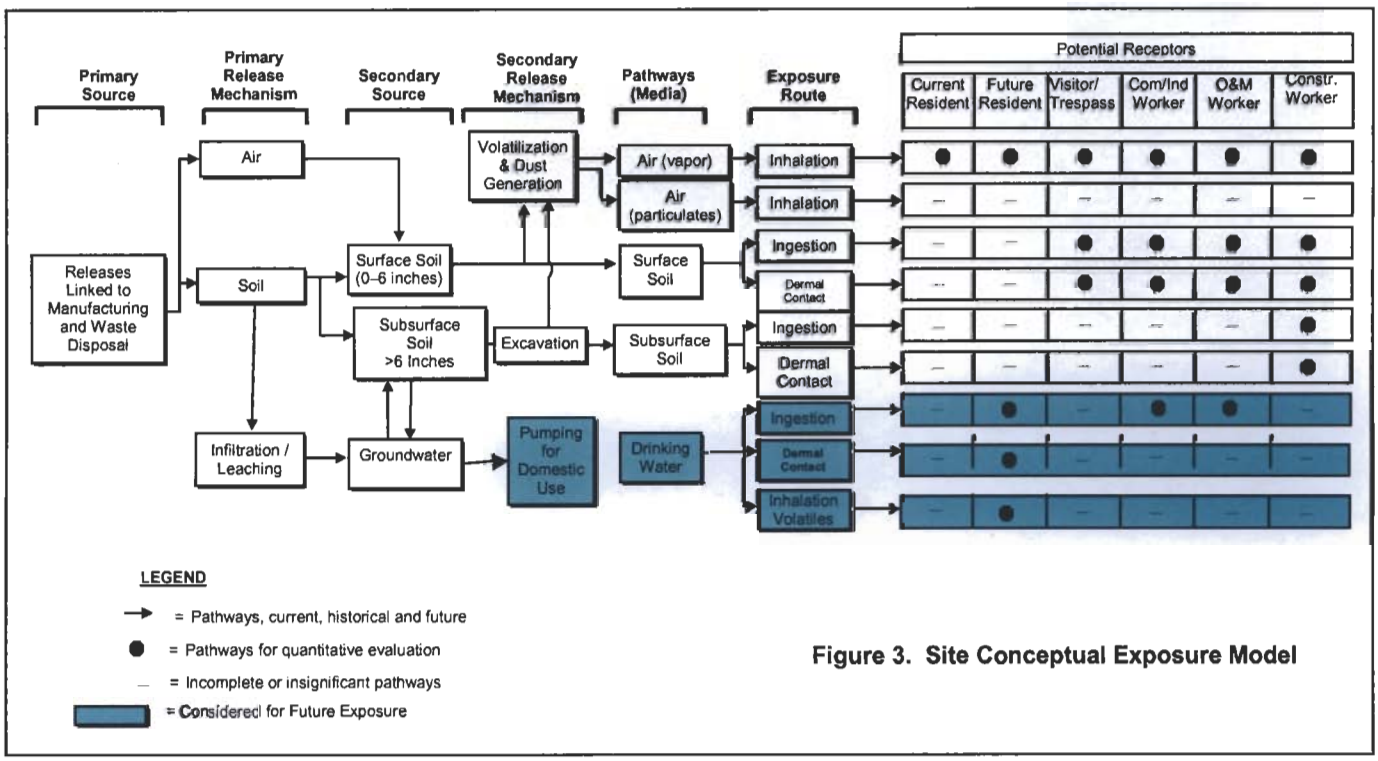


Figure 3. Site Conceptual Exposure Model

SUMMARY OF FINDINGS

- A range of risks are provided for each exposure scenario. The range varies from a maximum exposure, which is based on default assumptions, to an average exposure, based on assumptions which are reflective of what is more likely to occur.

- For current operations area workers, cancer risks range from within EPA's risk range to slightly above EPA's risk range (Figure 5), and non-cancer hazard indices are above 1 (Figure 6). PCBs at one soil location drive both carcinogenic and non-carcinogenic risks. Solutia currently restricts access to the location.

- Cancer risks and non-cancer hazards for future operations area workers at the facility exceed EPA's thresholds (Figures 7 and 8). These estimates suggest unacceptable risks, due primarily to PCBs in soil and to contaminated groundwater. These risks are associated with existing contamination in the facility area assuming Solutia no longer controls access or maintains facility area covers.

- Cancer risks and non-cancer hazards associated with future trespassers to the facility range from within EPA's risk range to above EPA's risk range, and non-cancer hazard indices are above 1, suggesting unacceptable risks and hazards (Figures 7 and 8).

- Cancer risks and non-cancer hazards are within or below EPA limits for current and future O&M workers exposed to the West End Landfill (WEL) and the South Landfill (SL) (Figures 5, 6, 7 and 8). These estimates suggest negligible risks. Note that the risk assessment did not evaluate a scenario where current landfill containment was compromised.

- Cancer risks and non-cancer hazards are within or below EPA limits for trespassers to the WEL and SL (Figures 5, 6, 7 and 8). These estimates suggest negligible risks. Use of these areas by occasional visitors does not appear to be associated with significant health threats from exposure to PCBs and other site-related chemicals.

- Cancer risks associated with off-site residents' exposure to PCB vapors in ambient air are low and may indicate no unacceptable health threat currently exists (Figures 5 and 6). The highest risks for residents, which assumes a worst case ambient air concentration of PCBs, is only slightly higher (2 in one million) than the bottom of the EPA's risk range. This is a conservative estimate. If EPA adjusted air concentrations based on wind speed and direction changes, ambient air concentrations would be lower, and estimated risks would be lower.

- Cancer risks and non-cancer hazards for all future workers and off-site residents are much higher than EPA's thresholds if groundwater is considered accessible, due primarily to PCBs and parathion (Figures 7 and 8).

Figure 5. Summary of the Range of Current Exposure Cancer Risks

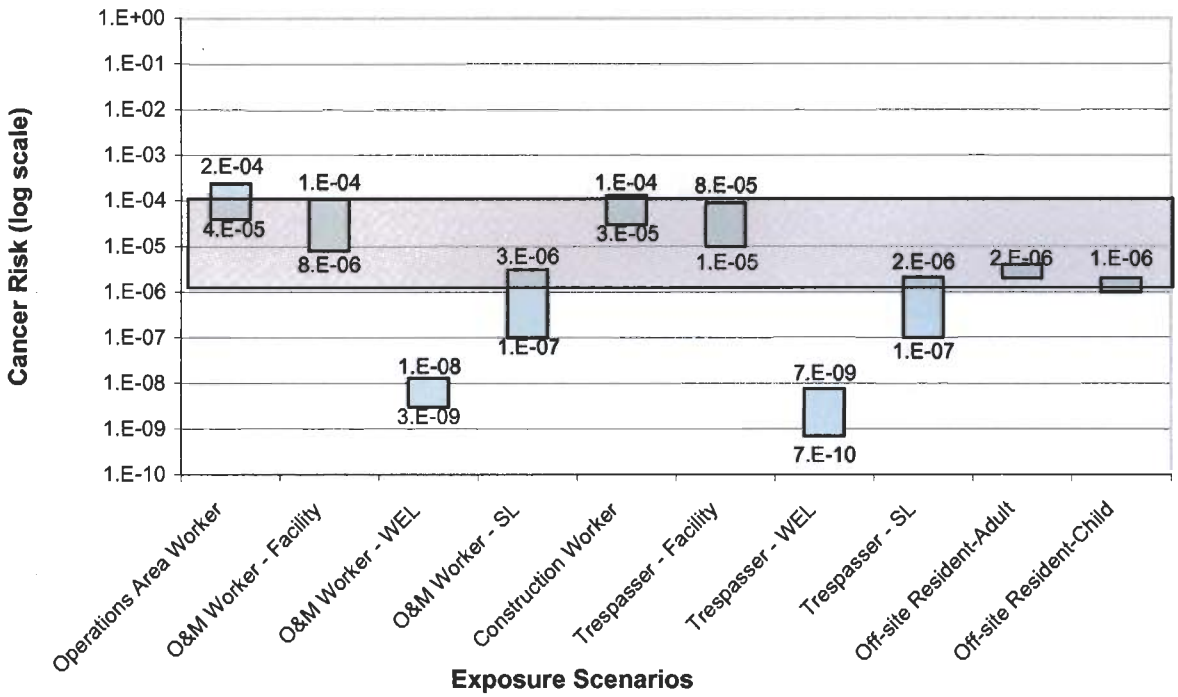


Figure 6. Summary of the Range of Current Exposure Hazard Indices

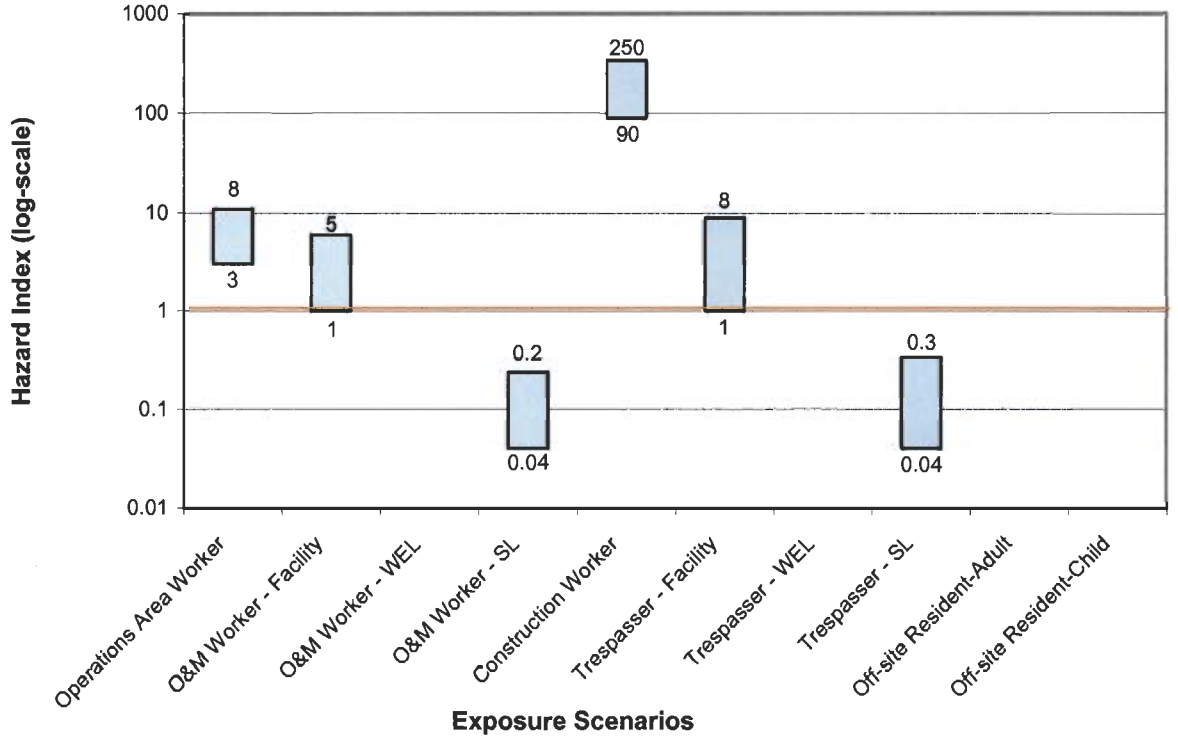


Figure 7. Summary of the Range of Future Exposure Cancer Risks

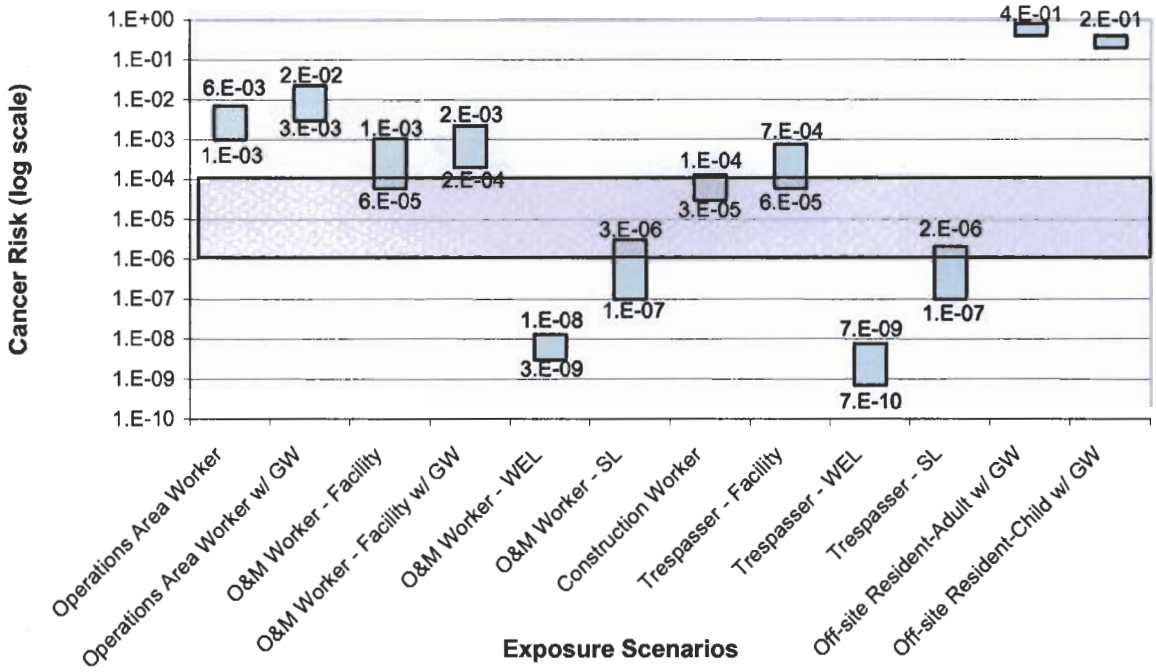
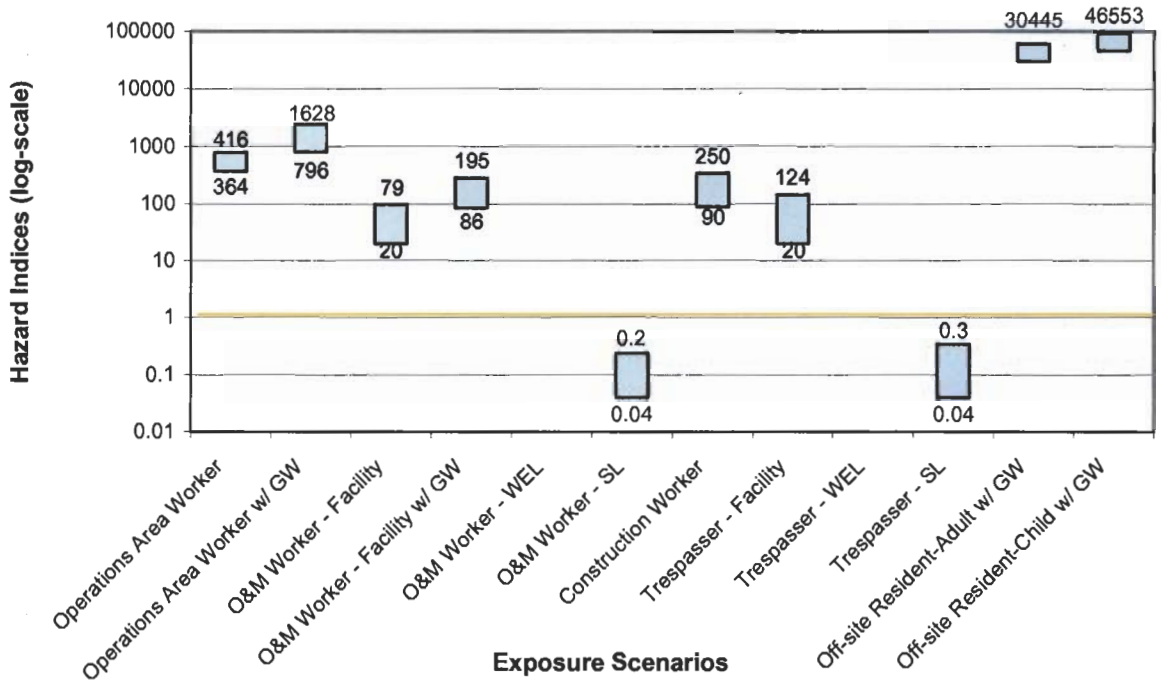


Figure 8. Summary of the Range of Future Exposure Hazard Indices



Remedial Investigation/Feasibility Study OU3

With the Human Health Risk Assessment for OU3 complete, Solutia will now be able to complete the Remedial Investigation and Feasibility Study. All documents will be made available to the community for comment when the Proposed Plan is issued.

Human Health Risk Assessment OU1/2

EPA expects to begin the Baseline Human Health Risk Assessment for Operable Unit 1/2 (OU1/2) this year. As was done with OU3, a Pathways Analysis Report will be provided to the community and community input on exposure assumptions will be solicited prior to preparation of the human health risk assessment.

Community Involvement Opportunity

EPA will hold a meeting with the community at the PCB Project Office on Thursday, February 25, 2008. The meeting will start at 6:00 pm. The office is located at 1514 West 10th Street in Anniston, Alabama. EPA will present information and answer questions about the Baseline Human Health Risk Assessment Report for OU3. The Baseline Human Health Risk Assessment Report is available for review at the information repositories below and at the EPA Project Office.

For More Information

For more information about the meeting, residential sampling and removal activities, ongoing investigations, or any other aspects of the Anniston PCB Site, please contact:

Belenda Randall
EPA Contractor
EPA Project Office
1514 West 10th Street
Anniston, AL 36201
Phone: (256)236-2599
Fax: (256)236-8214
E-mail: annistonprojectoffice@ hotmail.com

Pam Scully
EPA Project Manager
EPA Project Office
1514 West 10th Street
Anniston, AL 36201
Phone: (256)236-2599
Fax: (256)236-8214
E-mail: scully.pam@epa.gov

An Information Repository is a file containing current information, technical reports, and reference documents on a site cleanup. For the Anniston PCB Site, information repositories are located at two locations of the Public Library of Anniston-Calhoun County:

Carver Branch
722 West 14th Street
Anniston, Alabama

Main Branch
108 East 10th Street
Anniston, Alabama.

FACT SHEET

ANNISTON PCB SITE

Baseline Human Health Risk Assessment
Operable Unit 3

U.S. Environmental Protection Agency
Region 4, Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960

Attn: Pam Scully, SRB