

TOXICS REPORT
for Bloomington, Indiana:
RELEASES, REMEDIATION,
INVENTORY AND RECOMMENDATIONS

*A Report to the Bloomington City Council
by the City of Bloomington Environmental Commission*

According to Resolution 09-21,
passed unanimously by City Council on December 2, 2009

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PREPARED BY

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I. Introduction

This report is meant to achieve four primary goals: (1) present a broad historical overview of toxic chemical releases that have occurred in Bloomington, Indiana; (2) provide an update on the current state of remediation at release sites; (3) compile a record of locations where notable toxic chemicals remain in the environment; and (4) complete a current inventory of chemicals stored in Bloomington, Indiana. It is not exhaustive, but a preliminary assessment. We believe the recommendations provided would help improve the environment, and we look forward to working with others invested in reducing toxics in the Bloomington area.

A. Background

Learning from the Bhopal Disaster

December 3, 2009 marked the 25th anniversary of what has become known as “the Bhopal Disaster,” in which the leaking of toxic methyl isocyanate (MIC) gases from the Union Carbide India Limited pesticide plant in the Indian city of Bhopal led to thousands of human deaths and lingering public health concerns. Estimates vary widely for the number of people affected by the disaster, with death tolls ranging from 4,000 to 20,000 individuals.¹ Given incomplete medical records and an uncounted number of mass burials and cremations,² the precise human toll of the Bhopal gas tragedy is difficult to calculate. Regardless of the exact numbers, Bhopal is agreed to be one of most devastating industrial disasters in history. Contributing factors included not only poor facility maintenance, inadequate safety measures, and negligence on the part of Union Carbide employees, but also the proximity of low-income communities living near the plant, a lack of adequate public services, non-existent catastrophe plans, and the failure of the government to make relevant data publicly accessible.³

Resolution 09-21

In remembrance of this tragedy, on December 2, 2009 the City of Bloomington Common Council unanimously passed Resolution 09-21 declaring December 3, 2009 as Bhopal Day. (See Appendix A for a copy of the resolution.) In the spirit of bringing home lessons gained from this tragedy, Resolution 09-21 called for a report to be compiled by the City of Bloomington’s Environmental Commission describing toxic chemical releases in Bloomington. This report is meant to fulfill that mandate. The locations of chemicals and hazardous substances released and stored in Bloomington have been determined as they are documented by federal, state, or local agencies, and are publicly available. This document is intended to provide information useful to both policy-makers and the public in Bloomington by providing a relatively concise and accessible record of toxic chemical releases and storage sites, as well as recommendations for future actions.

¹ Eckerman, Ingrid. *The Bhopal Saga: Causes and Consequences of the World’s Largest Industrial Disaster*. India: Universities Press, 2005. 94 – 97.

² Rao, P. S. S. Sundar. “Statistical Issues in Assessing the Toxic Effects of Bhopal Gas Disaster.” *International Statistical Review / Revue Internationale de Statistique*. 61: 2. August 1993. 223-229.

³ This information is widely accepted. For one source, see: Ingrid Eckerman, “The Bhopal gas leak: Analyses of causes and consequences by three difference models,” *Journal of Loss Prevention in the Process Industries*, 18.4-6 (July-November 2005), 213-217.

B. Emergency Planning Community Right to Know Act (EPCRA)

Part of the legacy of the Bhopal Disaster has been the introduction of legislation globally to address emergency planning and public access to information. In the U.S., the Emergency Planning Community Right to Know Act (EPCRA; 42 U.S.C. 11001 - 11050 (1986)) is the governing national legislation concerning emergency planning and hazardous chemical inventorying. EPCRA, also known as the Superfund Amendment and Reauthorization Act (SARA (1986)) Title III, provides requirements concerning municipality emergency planning (EPCRA Section 301-303), notification of toxic releases (EPCRA Section 304), hazardous chemical inventory reporting (also called “Tier II” reporting; EPCRA Section 311-312) and toxic chemical release (also called toxic release inventory, or TRI) reporting (EPCRA Section 313). Tier II reporting requires facilities to submit detailed information regarding hazardous chemicals stored over a specific threshold amount in a Material Data Safety Sheet to the local and state emergency planning committees (e.g., the Indiana Department of Environmental Management (IDEM)) and the local fire department.⁴

For the purposes of this initial report, Bloomington sites subject to chemical reporting laws were examined using publicly available chemical reporting data to investigate whether or not hazardous substances were being emitted or stored, and if so, how much. Data from Bloomington Hospital and Indiana University-Bloomington, therefore, are not included in this report. (To clarify: Bloomington Hospital is not required to report under Tier II as materials used in a hospital are exempted under EPCRA Section 311(e). Furthermore hospitals are not required to report under TRI as the Standard Industrial Classification (SIC) codes used for hospitals are not included in the reporting requirements. Likewise, much of the information on Indiana University was not included.)

II. Methodology

The data presented in this report is compiled from *existing public records*. We did not create new definitions for “toxic” or “hazardous chemical” or “hazardous substances;” rather, we amassed data from existing databases, which can vary in their definitions.

Despite variations, the records this report draws upon generally cite the Toxic Substances Control Act for a definition of toxic chemicals warranting inventory; that law does not offer a definition of “toxic” in its list of definitions, but a list of chemicals that are tracked (15 U.S.C. 2602). According to EPCRA:

Hazardous chemicals are any substances for which a facility must maintain a Material Safety Data Sheet (MSDS) under the OSHA Hazard Communication Standard, which lists the criteria used to identify a hazardous chemical. MSDSs are detailed information sheets that provide data on health hazards and physical hazards of chemicals along with associated protective measures. Over 500,000 products have MSDSs which are normally obtained from the chemical manufacturer.⁵

⁴ EPCRA is available at: U.S. Environmental Protection Agency, “EPCRA Overview.” <http://www.epa.gov/ceppo/web/content/lawsregs/epcraover.htm>.

⁵ OSHA (the U.S. Occupational Safety and Health Administration), in turn, defines “toxic” as:
A chemical falling within any of the following categories:

A full list of agencies and databases consulted for this report (including the main web addresses for these sources and explanations of the data therein) appear in Appendix B. Agencies responsible for records relevant to hazardous substances tracking include: the Environmental Protection Agency (EPA), the Indiana Department of Environmental Management (IDEM), and the Monroe County Emergency Planning Department. Information regarding chemical hazards in Bloomington was obtained from the EPA's Tier II Chemical Inventory Reports, Toxic Release Inventory (TRI) reports, and National Priorities Fact Sheets as well as the Indiana Department of Environmental Management's (IDEM) Virtual Filing Cabinet (VFC) and 2010 List of Impaired Waters. Tier II data was obtained from the Monroe County Emergency Management Agency.⁶

Due to the scattered nature of information relevant to this report and limitations in the search functions of IDEM's Virtual File Cabinet, it is possible that applicable information has been overlooked. We have written this report as an initial attempt to begin to respond to the aforementioned goals. The report, therefore, is not exhaustive, but we hope it is useful nonetheless.

III. Summary of Toxic Releases

A. Toxic Release Inventory (TRI) air and water emissions

The following section outlines the most recent data available on two extant toxic release inventory (TRI) sites in Bloomington, historic TRI emissions sites, as well as releases documented according to 326 I.A.C. 2-6. The TRI records contain information about chemical releases to air, water, and land by manufacturing facilities that meet the following criteria: (1) the facilities are governed under the Standard Industrial Classification Code; (2) they emit quantities of certain chemicals above and below certain thresholds; and, (3) they employ more than ten individuals. Materials treated on-site by the manufacturer or sent off-site for disposal or recycling are not included in TRI reports.

-
- (a) A chemical that has a median lethal dose (LD(50)) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
 - (b) A chemical that has a median lethal dose (LD(50)) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
 - (c) A chemical that has a median lethal concentration (LC(50)) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

United States Department of Labor, Occupational Safety and Health Administration, "Health Hazards Definitions," 1910.1200 App. Available at:

http://www.osha.gov/pls/oshaweb/owadis.show_document?p_table=STANDARDS&p_id=10100.

⁶ Contact for the Monroe County Emergency Management Agency: Monroe County LEPC John Hooker, Chair c/o Emergency Mgt. Agency 2800 S. Kirby Road Bloomington, IN 47403 812-349-2546 (office) 812-349 2780 (24 hrs) 812-349-2052 (fax) emjhooker@yahoo.com.

Extant TRI sites

There are three sites in Bloomington for which 2009 TRI data is available⁷: General Electric (301 N. Curry Pike), Dave O'Mara Contractor, Inc. (110 N Oard Rd), and Circle-Prosc0, Inc (401 N. Gates Drive). In 2009 General Electric emitted 12 different compounds to the air totaling approximately 80,025 pounds, O'Mara emitted 91 lbs of polycyclic aromatic hydrocarbons (PAHs) and Circle Prosc0, Inc emitted five pounds of hydrogen fluoride (HF) to the air. TRI data for 2009 can be found in Table F.

Historic TRI sites

Select TRI data exists for Bloomington facilities that are either closed, no longer a manufacturing site, or which have changed ownership.⁸ The three Bloomington area sites mentioned in this section should be taken as a representative snapshot of historical emissions activity rather than a comprehensive list of past contributors to Bloomington's record of chemical releases (see Table D). Once again, this section omits data regarding volumes of chemicals treated on-site or sent off-site for disposal or treatment.

IDEM's 326 IAC2-6 air emissions

In IDEM's 2008 326 IAC 2-6 emission summary, two Bloomington sites meet the requirements for mandatory 326 IAC 2-6 emissions reporting: General Electric and Indiana University.⁹ Detailed emission data for these sites by chemical compound can be seen in Table E. The 2008 data for these two Bloomington sites indicate emission levels below 326 IAC 2-6 thresholds for all chemicals of concern.¹⁰ Of the emission quantities surveyed, Indiana University's sulfur dioxide output of 2306.96 tons/year comes closest to reaching threshold emission levels.

B. PCB Remediation Sites

The Comprehensive Environmental Response, Compensation and Liability Act (or CERCLA) was passed by the U.S. Congress in 1980.¹¹ It created a federal fund – also known as the “Superfund” – to pay for the cleanup of hazardous waste sites. Under this program, sites were first listed during the investigatory phase called “CERCLIS,” Comprehensive Environmental Response, Compensation, and Liability Information System. The most highly ranked sites in the EPA risk ranking system are classified as National Priorities List (NPL) sites.

⁷ Environmental Protection Agency. “Envirofacts.” Available at: <http://www.epa.gov/enviro/>. July 2010.

⁸ United States Environmental Protection Agency. “Toxic Release Inventory (TRI) Query Results: Bloomington, IN.” Available at

http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=bloomington&county_name=&state_code=in&epa_region_code=&sic_code=&all_programs=NO&sic_code_desc=&naics_code=&all_programs_naics=NO&naics_code_desc=&chem_name=&chem_search=Beginning+With&cas_num=&program_search=2&page_no=1&output_sql_switch=TRUE&report=1&database_type=TRIS. Accessed 21 October 2010.

⁹ Indiana Department of Environmental Management. “Emissions Summary Data.” Accessed 6 October 2010. Available at <http://www.in.gov/idem/4629.htm#1>.

¹⁰ The criteria pollutants identified by 326 IAC 2-6 are carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter less than 10 micrometers in diameter (PM-10), sulfur dioxide (SO₂), and volatile organic compounds (VOC). The respective 326 IAC 2-6 reporting threshold emission levels for each of these pollutants, in tons per year, are as follows: CO: 2,500; NO_x: 2,500; PM-10: 250; SO₂: 2,500; and VOC: 250. Emission reports are also required for sites emitting of having the potential to emit a quantity of lead (Pb) above 5 tons per year.

¹¹ Environmental Protection Agency. “CERCLA Overview.” Accessed 11 February 2011. Available at: <http://www.epa.gov/superfund/policy/cercla.htm>.

In the Bloomington area, there were originally 7 PCB (polychlorinated biphenyl) sites investigated for NPL sites through CECLIS (8, if you include the Indiana Woodtreating Corporation that we have listed under the Voluntary Remediation Program in this report). All 7 sites (plus the Indiana Woodtreating Corp.) have undergone some form of remediation for PCB contamination. Three are still undergoing active remediation action (Bennett's Stone Quarry, Lemon Lane Landfill, and Neal's Landfill). One is off the EPA's list now and considered "closed" (Winston Thomas Treatment Plant).

Note that the Westinghouse Electric Corporation (Westinghouse) opened a plant in Bloomington in 1957, which was the company that originally introduced PCBs to Bloomington. The plant changed owners at different times.¹² This report does not summarize the legal cases associated with the sites. The information below is based on the most up to date reports available, but additional remediation or government action may since have occurred at the sites listed since clean up is ongoing. A more detailed account of remediation, cleanup levels and ongoing actions can be found in Table II of the Oversize Tables File accompanying this report. Also, please refer to Appendix C, which is the most recent Environmental Protection Agency (EPA) Region 5 PCB Report.

Outside of those sites noted, there are additional sites. An example is the wetland across Clear Creek from Winston-Thomas that was cleaned up by an EPA emergency action once Tom Alcamo became the EPA project manager. Relatedly, there were many additional sites that received contaminated compost from the Winston-Thomas sewage treatment plant: some were actively cleaned, tested, and found to be below current (at that time current) action levels. The below sites, therefore, are significant PCB sites, but this report does not include all places within the Bloomington area where PCBs have been or could be detected.

ABB Manufacturing Plant

The now demolished Asea Brown Broveri (ABB) Manufacturing Plant is the former Westinghouse facility where PCBs were used in the production of capacitors. During the operation of the facility, PCBs were released to the floor drains in the concrete floor of the plant. This practice resulted in PCB contamination of the concrete itself, the soils beneath the facility, and the Winston-Thomas Sewage Treatment Plant due to deliverance of the PCBs through the sewers running under the plant. Clean up of the plant and the environs occurred in two phases. During the first phase of the clean up, which occurred in the mid-1990s, 22,500 cubic yards were removed from the soils around the plant, and disposed of in licensed facilities, primarily in a hazardous waste landfill in Utah. By 2006, the ABB plant had ceased operations and the demolition of the plant itself began. In 2009, the company excavated 3,916 tons of contaminated concrete and 40,500 tons of contaminated soil from the site. Around 1,000,000 gallons of water have been extracted and treated. Water was treated to a standard of 0.3 micrograms of PCBs per kilogram of contaminated medium (or parts per billion (ppb)). The site also implemented a 5-year ground and surface water-monitoring program in 2008.¹³

¹² In 1995, Westinghouse bought CBS Corporation, but by 1997, it renamed itself as CBS Corporation with Westinghouse as one brand managed by the CBS media conglomerate. In 1999, Viacom, Inc., purchased CBS Corporation and then, in 2005, Viacom also renamed itself CBS Corporation. A more detailed timeline of Westinghouse's history is available at: Westinghouse, "Timeline," 2009. Accessed: February 13, 2011. On-line at: http://www.westinghousenuclear.com/Our_Company/history/Timeline/index.shtm .

¹³ United States Environmental Protection Agency. "Floor Removal and Soil Cleanup Planned at Site." Source: Citizens Opposed to PCB Ash. Accessed 7 October 2010 at http://www.copa.org/2009/ABB_Fact_Sheet_June_09.pdf . 2009.

Anderson Road Landfill

In 1987, 4,847 tons of PCB contaminated materials were removed from the landfill property, and removed off site, initially to be stored (for about a decade) at the interim storage facility on the Winston-Thomas Sewage Treatment Plant property, after which it was removed to a licensed hazardous waste handling facility. The Anderson Road Landfill was still used as the Monroe County Landfill for well over a decade longer.¹⁴

Bennett Stone Quarry (Superfund)

The site is a former limestone quarry that was used as a dump site for electrical parts and capacitors from the Westinghouse factory sometime in the 1960s.¹⁵ A 1997 Record of Decision agreed to by CBS agreed to remove all materials contaminated with greater than 25 ppm (parts per million) PCBs. A total of 55,000 tons of material were removed from the quarries and disposed offsite. The removal action failed to adequately reduce the concentration of PCBs in ground water flowing from the site to Stout Creek. CBS, who owns all the liability for the site, agreed to a revised Consent Decree (with Amendments) that required installation of a drain system to lower water levels in the remaining quarries on site, and thus reduce flow of contaminated ground water offsite. The company also installed a ground water collection trench and water treatment plant onsite. Treatment is required until the ground water concentration in onsite seeps and springs is less than 0.3 ppm PCBs.¹⁶ Stout Creek is currently under a Category 3 impairment level and fish consumption advisory for PCBs (children and women of childbearing age should not eat the fish, one meal/month for the rest of the population). A deed restriction has also been placed on the property to prevent use for residential development. See Table B.

Fell Iron & Metal

Fell Iron & Metal (now Bloomington Iron and Metal) is an active scrap yard that received trash and scrap metal including PCB filled capacitors from the Westinghouse Plant from 1958 to 1966. Many of the scrap capacitors remained on the property until the U.S. EPA conducted an emergency removal action in 1984-85. In order to prepare the capacitors for being scraped, Fell employees cut the capacitors open and drained the oil out onto the soil at the site. PCBs also entered the environment from leaks in the capacitors.¹⁷

The U.S. EPA investigated the site in 1984, and found PCB levels in the soil ranging from 753 ppm to 71,700 ppm. EPA ordered an emergency removal action of the scrap capacitors from the site in 1985, and a total of 365 capacitors were removed. In 1989, PCB contaminated soils were excavated and placed

¹⁴ COPA. "Declaration of Dorothy M. Alke." Available at <http://copa.org/2003/frey/alke.html>. Accessed 11 February 2011; ATSDR Agency for Toxic Substances & Disease Registry, "Public Health Assessments & Health Consultations: Bloomington PCB Sites," Accessed: February 14, 2011, Available at: <http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=876&pg=0>.

¹⁵ United States Environmental Protection Agency. "Declaration for the Bennett's Dump Record of Decision" EPA Region 5 Records Ctr. 259525. Source: Citizens Opposed to PCB Ash. Available 10/30/10 at http://copa.org/2006/bennetts/Benn_Rod_06.pdf. 2006.

¹⁶ USA et al vs. CBS Corporation. "Entry On The United States' Motion To Enter The Agreed Amendment To The Consent Decree Providing For Remedial Actions At Landfill, Lemon Lane Landfill And Bennett's Dump." Source: Citizens Opposed to PCB Ash. Available 30 August 2010 at http://copa.org/2009/CD_Amend_Judgement.pdf. 2009.

¹⁷ United States Environmental Protection Agency. "Fell Iron & Metal, Bloomington, Indiana, Unilateral Administrative Order." Source: IDEM VFC, document number 49729741. Accessed 16 November 2010. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=49729741>. 1995.

onsite beneath a synthetic cap with the intent of burning the soils in the planned incinerator. The cleanup standard applied to the soils was 10 ppm PCBs. The contaminated soils remained onsite until shipped to an approved landfill in 1995.¹⁸

Lemon Lane Landfill (Superfund)

This site was an unlined municipal landfill that accepted capacitors from Westinghouse from 1958 through 1964. Ground water beneath the site flows to nearby springs that form the headwaters of Clear Creek.¹⁹ Materials found to contain over 50 ppm PCBs were removed and disposed offsite. Capacitors and soil showing visible signs of PCB contamination were also removed. Materials containing less than 50 ppm were consolidated onsite under a low permeability cap.

A water treatment plan was also constructed to treat PCB contamination flowing from Illinois Central Spring. The 2009 Consent Decree Amendment required that the treatment plant be expanded, and that the plant begin treating flow from two other springs. Sediment around the springs is also to be cleaned up to a standard of 1 ppm PCBs, and the water will be treated until the groundwater that surfaces at Illinois Central Springs averages no more than 0.3 ppb, in compliance with the NPDES permits.²⁰ Clear Creek remains a category impaired water body with a Group 5 consumption advisory for all fish species. See Table B.

Neal's Landfill (Superfund)

The site is a former landfill that accepted PCB wastes from Westinghouse in 1966 and 1967. PCB contaminated sediments were removed from the beds of Conrad Branch and Richland Creek. Materials containing over 50 ppm of PCBs were removed and shipped offsite, and materials containing less than 50 ppm of PCBs were consolidated under a low permeability cap. A low capacity water treatment facility was constructed onsite to treat water from three springs that flow into Richland Creek to a standard of 1 ppb at low flow (that is, when the rainfall is low).²¹ In 2007, the remediation plan was revised to expand the collection and treatment of contaminated ground water, and implement a new treatment standard of 0.3 ppb. CBS also agreed to removed PCB contaminated sediments from the stream banks and floodplain of Conrad Branch. Implementation has not yet begun.

Winston Thomas Treatment Plant

The plant was the sole wastewater treatment plant for the city of Bloomington until the 1980s. The site received wastewater from the Westinghouse factory, and extensive contamination occurred throughout the facility as a result. The treatment plant was closed, and all materials containing more than 25 ppm of PCBs were removed from the site. Water from the digesters and lagoons was drained and treated to a

¹⁸ Ibid.

¹⁹ United States Environmental Protection Agency. "Remedial Design/Remedial Action Work Plan, Lemon Lane Landfill Site" Source: Citizens Opposed to PCB Ash. Accessed 7 October 2010 at http://www.copa.org/2010/Fnl_LL_RD-RA_Work_Plan.pdf. 2010.

²⁰ Ibid.

²¹ United States Environmental Protection Agency. "Declaration for the Neal's Landfill Record Of Decision Amendment." Source: EPA Region 5 Records Ctr. 237773. Citizens Opposed to PCB Ash. Available 7 October 2010 at http://copa.org/2007/Neals_Oct_07/237773.pdf. 2007.

standard of 0.01 milligrams per liter. Ground and surface water monitoring determined that PCBs were not leaving the site in detectable levels, and the EPA completed site remediation.²²

C. IDEM Voluntary Remediation Program sites

The Indiana Department of Environmental Management (IDEM) Voluntary Remediation Program (VRP) is a toxic site remediation program with the aim of promoting cleanup of contaminated sites for sale or redevelopment.²³ The types of sites included in this program include active or abandoned industrial sites, petroleum storage sites, commercial properties, manufactured gas plants, and dry cleaners. Owners of sites participating in this program must compose a remediation plan, which then must be approved by IDEM prior to cleanup action. Upon completion of satisfactory cleanup, the site owners receive a Covenant Not to Sue from IDEM, which protects the site owner from any future enforcement action. If IDEM determines that the site poses an “an imminent and substantial threat to human health or the environment,” the site cannot be enrolled in the VRP.

There are six sites that have or are enrolled in the VRP, and at least one site for which remediation has been declared completed under this program. Summaries of these sites appear below; for more detailed information about each VRP site, see Table I in Oversize Tables.

Bank One Indiana

The site is currently a banking center owned by Bank One. The contamination at the property is believed to have come from several gas stations that operated on the site prior to 1968, when it was purchased for use as a bank. Bank One removed 2,588 tons of petroleum-contaminated soils from the site. Two old 1,000 gallon underground storage tanks, one containing waste oil and the other containing gasoline, as well as 1725 gallons of storm runoff/groundwater were also removed from the excavation area and treated.²⁴ Subsequent ground water monitoring determined that the remaining contamination did not exceed the voluntary remediation program Tier II Cleanup Goals for Non-Residential Groundwater but did exceed the residential standards.²⁵ The monitoring also determined that the contamination was not migrating offsite. The site was restricted from use for residential purposes, and IDEM declared remedial action completed for the site. Covenant Not to Sue was received in December 2001.²⁶

Indiana Creosoting

The property, currently owned by CSX Transportation, is the former site of a wood treatment facility. CSX plans to redevelop part of the facility for industrial use. Contamination on the property includes semi volatile organic compounds (SVOC), benzene, toluene, ethylbenzene, xylenes (BTEX), arsenic,

²² Citizens Opposed to PCB Ash (COPA). “A Summary of the Remediation of PCB Contamination at the Winston Thomas Treatment Plant, Bloomington, Indiana.” Accessed 15 July, 2010 at <http://www.copa.org/2000/wt/summary.html>. 2002.

²³ Indiana Department of Environmental Management, House Enrolled Act 1162, Voluntary Remediation. Accessed January 29, 2011 at <http://www.in.gov/idem/4127.htm>. 2009.

²⁴ Keramida Environmental. “Groundwater Remediation Completion Report: Bank One.” Source IDEM VFC, document 47037350. Accessed 19 November 2010. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=47037350>. 2000.

²⁵ VRP Tier II Cleanup Goals are derived from standard equations used in Superfund and the EPA hazardous waste program. They are not associated with the EPCRA program.

²⁶ Keramida Environmental. “Groundwater Remediation Completion Report: Bank One.” Source IDEM VFC, document 47037350. Accessed 19 November 2010. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=47037350>. 2000.

and lead. Approximately 11,500 cubic yards of contaminated materials have been removed from the site. Two underground storage tanks, one containing gasoline and one containing creosote, were removed from the site. A creek liner and interceptor trench were installed along a 170 ft. stretch of Clear Creek in order to mitigate the flow of creosote into the creek. CSX is in the process of developing a final remediation work plan aimed at reducing concentrations of the contaminants of concern to levels that comply with the VRP Tier II Industrial standards.²⁷

Indiana Gas- Bloomington MGP

The site is the former location of the Bloomington Manufactured Gas Plant (MGP), where coal was used to produce a gaseous fuel. The property is currently used as the Vectren Operations Center. The contaminants of concern identified at the site are benzene and polyaromatic hydrocarbons (PAHs).²⁸ Monitoring at the site has determined that concentrations of the contaminants of concern exceed the voluntary remediation program Tier II Nonresidential cleanup goal, and concentrations of benzene and naphthalene are increasing over time in some monitoring wells. Vectren is in the process of developing a remediation plan based on ecological and risk assessment reports completed on the site.²⁹

Indiana University Range Road Site

The site was used as a dump for coal ash generated at IU's Physical Plant. Disposal at the site ceased in 1979. Early testing found levels of arsenic, lead, and chromium that exceeded maximum contaminant levels and IDEM water quality criteria, but these levels dropped in the 3 subsequent rounds of testing. Acid drainage could be observed flowing from the site. The ash was re-graded and capped. A series of limestone drains and collection ponds were installed on site to passively treat the acidic drainage.³⁰

Johnson Oil- Bulk Plant

The site is the former location of the Johnson Oil Bulk Plant. IU plans to use the property for a parking lot. Contaminants of concern at the site were total petroleum hydrocarbons (TPH) and benzene. Sampling found benzene levels in excess of VRP Tier II Nonresidential cleanup goals. Five hundred and thirty-nine tons of contaminated soil were excavated. Subsequent testing found concentrations for the contaminants of concern were below the Tier II Nonresidential cleanup goals. IDEM declared that remediation was complete, but the site must not be used for residential purposes.³¹

²⁷ Arcadis. "CSX Transportation, Inc: Remediation Work Plan: Former ICC Facility, Bloomington, Indiana." IDEM VRP Site #6970403

IDEM document number 53397683. Available at <http://12.186.81.89/FNCache/2010110515293600001/DEEAF75B-8FD7-4E1B-A3C2-8FE079605890.PDF>. 30 December 2009.

²⁸ EarthTech. "Preliminary Risk Evaluation Report, Former Manufactured Gas Plant." Accessed 19 November 2010. Source: IDEM VFC, document number 30378450. Accessed 16 November 2010. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=30378450>. 2005.

²⁹ EarthTech. "Preliminary Risk Evaluation Report, Former Manufactured Gas Plant." Accessed 19 November 2010. Source: IDEM VFC, document number 30378450. Accessed 16 November 2010. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=30378450>. 2005.

³⁰ August Mack. "Range Road Site Information." Accessed 19 November 2010. Available at <http://12.186.81.89/Pages/Public/SearchResults.aspx?RegId=45917&DBSource=TEMPO>.

Source: IDEM VFC, document number 48886461. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=48886461>. 37. 2004.

³¹ VRP Project Summary for Johnson Oil Bulk Plant. Available at <http://www.in.gov/idem/4487.htm>. Accessed July 2010.

Reclamation Contractors, Inc. (RCI) Facility

The site was formerly a recycling center operated by Reclamation Contractors, Inc. (RCI). The facility was closed in 1984 after repeatedly violating local, state, and federal regulations. Sampling found lead concentrations in excess of the voluntary remediation program Tier II cleanup goals. The site also still contained solid waste and scrap tires. The waste materials and 768 cubic yards of lead contaminated soils were removed from the site. The site is currently used for commercial purposes, and is restricted from any use for residential purposes.³²

Indiana Woodtreating Corporation

At the Indiana Woodtreating Corporation, liquid residue from the production of creosote-treated railroad ties containing high levels of PAHs (polycyclic aromatic hydrocarbons) was discharged into local waterways. Although initially investigated with the cooperation of the EPA Superfund program, an IDEM investigation of the site found soil and water contamination from creosote as well as levels of BTEX (benzene, toluene, ethylbenzene, and xylenes, volatile organic compounds found in petroleum products) up to 300 ppm and semi-volatile compounds up to 4500 ppm in surrounding soil. A remediation plan was implemented under the voluntary remediation program in which impoundments were drained, soils were excavated, and bioremediation was used to address remaining ground water contamination. Final concentrations of total PAHs in soil was below 100 mg/kg after two years of composting and land farming bioremediation.³³

D. Contaminated Dry Cleaner Sites

Chemicals commonly used by dry cleaning businesses, particularly perchloroethene (PCE), can create significant environmental and public health issues. To date, three properties in Bloomington have been required by IDEM to clean up contamination from PERC and its associated breakdown components: Bloomington Dry Cleaners, Courtesy Cleaners, and Modern Cleaners. Detailed information on these sites can be found in Table IV of Oversize Tables.

After completing soil remediation processes, Bloomington Dry Cleaners reopened as a PERC-free dry cleaner.³⁴ The now-closed Courtesy Cleaners site exhibits both soil and water contamination that is currently being addressed. The abandoned site, Modern Cleaners, has been found to have soil and ground water contamination from both dry cleaning solvents and petroleum hydrocarbons. IDEM has required further study of the site's level of groundwater contamination and of possible vapor intrusion, leading to the development of a remediation plan.³⁵

³² VRP Project Summary for RCI Facility. Available at http://www.in.gov/idem/files/vrp_sitesummary_rciformer.pdf. Accessed July 2010.

³³ Indiana Department of Environmental Management. 1990. Field Investigation Report for Indiana Woodtreating Corporation. IDEM Virtual File Cabinet. Available at http://www.in.gov/idem/files/vfc/vfc_h1.html. Accessed July 2010; U.S. EPA, "Seminars: Bioremediation of Hazardous Waste Sites: Practical Approaches to Implementation," EPA/625/K-96/001. May 1996. Accessed: February 14, 2011. Available at: <http://www.scribd.com/doc/1705016/Environmental-Protection-Agency-625k96001>. See also: *Federal Register*, vol. 61, no. 119, June 19, 1996. Notices.

³⁴ Enviroforensics. "Soil Excavation Report: Bloomington Cleaners" IDEM Virtual Filing Cabinet document 45797454. Available at <http://12.186.81.89/fnjavaview.aspx?DocId=45797454>. 2009.

³⁵ Indiana Department of Environmental Management. 2009. Further Site Investigation Report, Fleener Building (Source: IDEM VFC).

E. Additional Historical Emissions Sites

Two contaminated Bloomington sites do not fit into any of the site categories listed above. This list includes the McDoel Rail Site, and ST Semiconductors of Indiana. Summary accounts are presented below; for more detailed information, including contamination and remediation status, see Table III in the Oversized Table file accompanying this report.

Bloomington's McDoel Rail Site, a former rail switchyard, was found to have soil contamination from various petroleum hydrocarbons and metals including arsenic and lead. These contaminants leached into the soil when the rail switchyard was active.³⁶ Following a combination of contaminated soil removal and bioremediation projects in 2010, part of the trail portion of the Site was declared to satisfy conditions for compliance with IDEM's non-default recreational closure levels. Complete and final compliance declarations for the trail are pending and expected. A larger portion of the property will become part of the Bloomington park system along the Clear Creek Trail and will undergo remediation as part of and prior to complete development or recreational use by the public.³⁷

ST Semiconductors of Indiana Incorporated, a former electrical component production facility, was in 2003 found to have high levels of soil and water contamination from metals (including arsenic, lead, and chromium), semivolatile and volatile organic compounds. The site was remediated to IDEM residential default closure levels by removal of 247 tons of contaminated soil and 150 gallons of water,³⁸ and is now used for mixed residential and commercial purposes.

IV. Summary of Stored Toxics

A. Inventory of Stored Chemicals (Tier II sites)

In addition to monitoring chemical emissions, the EPA also documents the volumes of hazardous chemicals stored by facilities covered by the Emergency Planning and Community Right-to-Know Act (EPCRA; 40 C.F.R. 370). Such facilities are required to annually submit an Emergency and Hazardous Chemical Inventory Form (called Tier II reporting), to local and state emergency agencies, state environmental agencies, and local fire departments. Substances to be reported on Tier II forms include hazardous chemicals stored in excess of 10,000 lbs or extremely hazardous substances (defined as chemical substances that could cause serious irreversible health effects from accidental releases and listed in the appendix to 40 C.F.R. 355) stored in quantities over 500 lbs or above established threshold planning quantities (TPQs).

³⁶ VATC Associates. "Additional Phase II Subsurface Investigation: Former CSX Rail Corridor. Source: IDEM VFC, document number 54200173. Available at <http://12.186.81.89/FNCache/2010111914544900001/6D84DB57-A118-4789-9561-40C3BDCE4FE8.PDF>. 2010.

³⁷ Indiana Finance Authority Environmental Programs /Kim Bongiovanni. "Environmental Restrictive Covenant." Source: IDEM VFC, document number 59381276. Available at <http://12.186.81.89/FNCache/2010111914542500001/FACF172C-225C-4407-900C-B863C547C1A6.PDF>. 2010.

³⁸ Indiana Department of Environmental Management. Environmental Services Associates. 2003. Soil Remediation Investigation Report, 2003-03-04. IDEM Virtual File Cabinet. Available at http://www.in.gov/idem/files/vfc/vfc_h1.html. Accessed July 2010.

Tier II data plays a key role in emergency preparedness measures at all levels of government. In the event of a facility accident or a natural disaster such as an earthquake, fire, flood, or tornado, stores of hazardous materials can be released into the environment. Tier II data makes it possible to prepare for such incidents as effectively as possible.

The 2009 Tier II reports for the City of Bloomington described in this section were accessed through files available at the office of Monroe County Emergency Management.³⁹ Tier II data was submitted most recently in 2009 for 40 facilities in Bloomington. The top three stored chemicals in Bloomington are gasoline, propane and lead.⁴⁰ Locations in Bloomington with the highest volume of Tier II chemicals include: Amerigas Propane LP, AT&T, Baxter, Dillman and Monroe Water Treatment Plants, Indiana University, Ferrellgas, General Electric, and Vectren. Specific data about these facilities, including the name, address, chemical stored and additional information about the potential hazards they may present are presented in Table C.

The Monroe County Emergency Management's Comprehensive Emergency Management Report (CEMP), which identifies "extremely hazardous substance" (EHS) critical exposure zones in the event of a sudden release of EHSs stored in Bloomington facilities is also included in Appendix D. The report provides a summary of locations that store EHSs and the vulnerability zones for worst-case scenarios involving extremely hazardous substances.

B. Underground Storage Tanks (USTs) and Leaking Underground Storage Tanks (LUSTs)

Underground storage tanks (USTs) are large subterranean containers used for the storage of liquid and gaseous chemicals. For a system of storage tanks to qualify as an UST, the tanks and any connected piping must have at least 10% of the combined volume located underground.⁴¹ Federal UST regulations apply only to USTs storing either petroleum or certain other hazardous substances. Approximately 95% of underground storage containers contain petroleum products in the U.S.⁴² As of September 2009, Bloomington contained 790 underground storage tanks distributed across a total of 235 UST facility sites.⁴³ Of these UST facilities, 112 sites in Bloomington are also leaking (LUST) sites. The total capacity of chemicals that can be stored in Bloomington USTs of known volume (for 20 of the 790 USTs documented, no volume information was provided) is 4,138,658 gallons. Of Bloomington's 790 USTs at the time the data was collected, 206 were currently in use, 555 were permanently out of service, eight were temporarily closed due to complaints, two were temporarily out of use, five were under investigation, and 14 were classified as unregulated. The contents of the 790 USTs was divided into 131 diesel storage tanks, 469 gasoline storage tanks, 31 kerosene storage tanks, 72 used oil storage tanks, 49 tanks of unknown contents, and 38 tanks listed as having a contents classification of 'other.' The

³⁹ Monroe County Emergency Management is located at 2800 S. Kirby Road, Bloomington IN 47403; open 8:00 am - 4:00 pm, Monday – Friday; telephone: (812) 349-2546. Their website is <http://www.co.monroe.in.us/tsd/Community/EmergencyManagement.aspx>.

⁴⁰ This does not include Bloomington Hospital, as they do not report under Tier II.

⁴¹ United States Environmental Protection Agency. "Basic Information About the Underground Storage Tank Program." Available 12 October 2010 at <http://www.epa.gov/oust/aboutust.htm> . Last updated 19 November, 2009.

⁴² Indiana Department of Environmental Management. "About Leaking Underground Storage Tanks." Available 12 October 2010 at <http://www.in.gov/idem/5067.htm> .

⁴³ Ibid.

limitations of existing databases on USTs is noted in Appendix E; nevertheless, we also have included a summary of the data in Table G, Figure G, and Table H.

Leaking underground storage tanks (LUSTs) are a matter of particular concern because their underground location means that even small spills are capable of contaminating groundwater. The issue of ground water contamination means that LUSTs not only cause harm to the general environment but also pose a health risk in areas where groundwater supplies are used as a source of public drinking water.⁴⁴ The Indiana Department of Environmental Management calculates that a leak of only three gallons of gasoline can spoil drinking water for a small town.⁴⁵ Other potential negative impacts from LUSTs include soil contamination, increased risk of fire, damage to underground infrastructure such as sewer lines and telephone cables, expenses from liability claims and site cleanups, and the reduction of local property values.⁴⁶

Most LUSTs are caused by a breakdown of the materials of which USTs are constructed. Prior to regulations introduced in 1998 requiring tanks to be lined with rust-resistant substances, most underground storage tanks were made out of unprotected steel.⁴⁷ This choice of material led to rusting and leaking in USTs after approximately ten years.⁴⁸ Improper installation of UST components, infrequent UST maintenance, and severe weather conditions can contribute to leaking. Human error during deliveries of chemicals to UST sites, including overfilling USTs, can also result in hazardous materials spills.⁴⁹

According to IDEM's LUST database, 11 of Bloomington's 112 documented LUST sites have active LUST incidents and are currently undergoing either study or remediation. The remaining 101 Bloomington LUST sites have been assigned other IDEM designations such as closed, indicating that no-further-action status has been granted, or MNA, indicating that monitored natural attenuation has been approved as a method of corrective action.⁵⁰ The limitations of existing databases on LUSTs also is noted in Appendix E; nevertheless, we also have included a summary of the data shared in Table V of the Oversized Table file accompanying this report in Figure G. We also have three GIS maps accompanying this report, which provide visual identification of the locations within Bloomington of: the Underground Storage Tanks (USTs), the Leaking Underground Storage Tanks (LUSTs), and the two data sets combined. They are available in a single PDF file.

V. Impaired Waterways

Releases of toxic chemicals inevitably affect Bloomington's waterways. The Indiana Department of Environmental Management (IDEM) rates waterways in categories of 1 through 5 based on water

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ United States Environmental Protection Agency. "Preventing Underground Storage Tank Releases." Available 12 October 2010 at <http://www.epa.gov/oust/fsprevnt.htm>. Last updated 21 July 2009.

⁵⁰ Indiana Department of Environmental Management. "LUST Data Cover." Available 12 October 2010 at <http://www.in.gov/idem/5065.htm>.

quality standards defined by the Clean Water Act and 327 IAC 2-1. The following information is sourced from the Indiana Department of Environmental Management's 2008 List of Bloomington Area Impaired Waters and the Monroe County Planning Department's Unincorporated Monroe County Stormwater Quality Management Plan. Not all of the waterways mentioned in this section are within the city limits of Bloomington. However, the capacity of many waterborne pollutants to travel between connected bodies of water means water contamination in Bloomington should be understood in the context of the watershed in which it the city is located. Contaminated waterways adjacent to Bloomington can play an important role in the health of waterways within the city itself and effluent from Bloomington can impact the health of the waterways into which it drains.

Watershed Description

Bloomington, Indiana, is situated between the Lower East and West Fork basins of the White River watershed. The southern two-thirds of Bloomington drain into Clear Creek, which, as it cuts across the Indiana University campus, is known as the Jordan River. South of Bloomington, Clear Creek and its tributary Jackson Creek merge, and drain into the East Fork of the White River. Northern Bloomington drains into Bean Blossom Creek and its associated tributaries, which most significantly include Griffy Creek and Stout Creek. Beyond Bloomington, Bean Blossom Creek flows northwest and discharges into the West Fork of the White River. The East and West Forks of the White River merge approximately 75 miles southwest of Bloomington.⁵¹

In addition to this drainage system of creeks, three manmade reservoirs are also a relevant component of Bloomington's hydrology. Drinking water for Bloomington is supplied by Lake Monroe, which is located southeast of Bloomington and is the largest lake in Monroe County. Ten miles northeast of town is Lake Lemon, which is maintained as a recreational destination and wildlife habitat. The only sizable lake within Bloomington city limits is Griffy Lake, a reservoir on the north side of the city. Like Lake Lemon, Griffy Lake is used primarily as a recreational and conservation zone; however, it also serves as an emergency water supply for the city of Bloomington.⁵²

Water Quality and Health Assessments

As mentioned above, bodies of water are ranked in categories 1 through 5 by IDEM according to the Clean Water Act and 327 IAC 2-1. Health assessments for Bloomington area waterways are compiled every two years as a part of the Indiana 303(d) List of Impaired Waters project conducted by IDEM's Office of Water Quality.⁵³ IDEM assigns water impairment levels (1 through 5), with a category 5 rating indicating water quality is below standards due to the presence of contaminants, especially mercury or PCBs, in the water or the harvested edible tissue of fish at levels exceeding Indiana's human health criteria.⁵⁴ The results for category 5 entries in the Monroe County portion of the 2010 Indiana 303(d) List of Impaired Waters are outlined in Table A. In 2008, all Monroe County water bodies that appear in the 303(d) list attained a category 5 impairment designation.

⁵¹ "Water Basics: Bloomington/Monroe County Surface Waters." Monroe County Planning Department. Accessed 6 October 2010 at http://bloomington.in.gov/documents/viewDocument.php?document_id=3011.

⁵² Ibid.

⁵³ Indiana Department of Environmental Management. "Section 303(d) Frequently Asked Questions." Available at <http://www.in.gov/idem/6457.htm>. Accessed 6 October 2010.

⁵⁴ Ibid.

In addition to this 303(d) List of Impaired Waters, which describes the condition of waterways as a whole, IDEM also works in collaboration with the Indiana State Department of Health (ISDH), Indiana Department of Natural Resources (DNR), and Purdue University to publish an annual Indiana Fish Consumption Advisory. Fish consumption advisories are assigned to a particular fish species living within a particular water body. Due to differing contamination levels it is possible for different fish species within the same water body to be assigned to different consumption advisory groups. A group 1 consumption advisory implies that a fish species from a given waterway is safe for unrestricted consumption by the general population and for up to one meal per week for women who are breast-feeding, pregnant, or plan to have children. A group 5 consumption advisory signals that no fish of the species in question should be consumed from a given waterway.⁵⁵ For all consumption advisory levels above group 1, women and children are advised to eat less fish than men. This is due to potential reproductive and developmental health concerns relating to mercury and PCBs, the two main chemicals that trigger the fish consumption advisories.

Within Bloomington, Clear Creek is the stream that receives the highest volume of nonpoint source pollution.⁵⁶ Much of the Bloomington course of Clear Creek is enclosed by storm sewers and it is likely that contaminated discharges enter the creek in these areas.⁵⁷ Additionally, runoff from the PCB-contaminated Lemon Lane Landfill is known to drain into Clear Creek after it surfaces at Lemon Lane Landfill.⁵⁸ The water released from the Illinois Central Seeps water treatment plant should be cleaner after the water treatment plant expansion is completed. South of Bloomington, Clear Creek also receives effluent from the Dillman Road Wastewater Treatment Plan, as well as septic infiltration. The 2008 Indiana 303(d) List of Impaired Waters indicates that Clear Creek was found to contain a number of contaminants including PCBs, mercury, and *E. coli*.

PCB contamination of local waterways has also been documented at Bloomington's other two Superfund sites: Bennett's Dump/Bennett Stone Quarry and Neal's Landfill.⁵⁹ During times of high flow, Richland Creek picks up PCBs seeping from Neal's Landfill before proceeding into Owen County. One of Bean Blossom Creek's tributaries, Stout Creek, has its headwaters located within the watershed of the Bennett's Dump site. The results of the 2008 Indiana 303(d) List of Impaired Waters indicate that Bloomington, and Monroe County, waterways are still being impacted by historical PCB contamination.

⁵⁵ Indiana State Department of Health. "2010 Indiana Fish Consumption Advisory Complete Report." Available at http://www.in.gov/isdh/files/2010_FCA_May28.pdf. Accessed 4 November 2010. 6.

⁵⁶ Monroe County Planning Department. "Unincorporated Monroe County Storm Water Quality Management Plan: Part B." Available at http://www.co.monroe.in.us/TSD/DesktopModules/Bring2mind/DMX/Download.aspx?TabID=140&Command=Core_Download&EntryId=5865&PortalId=0&TabId=140. April 2004. p. 5.

⁵⁷ Ibid.

⁵⁸ U.S. Environmental Protection Agency. Lemon Land Landfill Record of Decision Amendment. September 29, 2006. Summary of this decision available at: <http://www.epa.gov/R5Super/npl/indiana/IND980794341.htm>. See also: CBS Corporation, "Quality Assurance Project Plan Vol XXXVII: Sampling and Analysis Plan for Delineation of Contaminated Soils and Sediments at Illinois Central Spring Emergence Area Associated with the Lemon Lane Landfill Bloomington, Indiana." December 2009. Available at: http://www.copa.org/2010/ICS_EmergenceFinal_Samp_Analysis_Plan.pdf.

⁵⁹ Ibid, p. 6.

The introduction of pollutants to Bloomington's waterways has led to the contamination not only of water but also of organisms that live in aquatic habitats. Contamination levels for local fish can be seen in Table B, which summarizes the Indiana State Department of Health's (ISDH) 2010 Indiana Fish Consumption Advisory Complete report.⁶⁰ An important finding of this study is that Clear Creek, Bloomington's primary source of drainage, has maintained the level of contamination necessary for a group 5 fish consumption advisory, indicating that no fish from Clear Creek should be consumed.⁶¹ A level three consumption advisory designation was reached by most other Bloomington area bodies of water for many fish, indicating that fish from these systems should be consumed no more than once a month by general population and never by children or women of childbearing age. These consumption advisory designations have remained stable from 2008 levels. While the impairment levels of Bloomington's waterways have not worsened, they are such that water contamination remains a matter of concern in terms of both environmental and public health.

VI. Conclusions and Recommendations

A. Preliminary Conclusions

In summary, historical releases of chemicals in Bloomington are being addressed at present, but not all sites have been completely remediated. Information sources about these chemical releases is abundant and a matter of public record, but data are located in scattered places across the internet, with different types of chemicals or different types of releases being regulated by different government agencies. Additionally, information available is highly technical at present and thus not fully accessible to the general public.

We applaud the City Council's leadership in attempting to learn from the legacy of the Bhopal Disaster by improving access to information about toxics in our community. As we also have learned, preventative strategies are vital to avoiding releases of hazardous substances. If Bloomington facilities using hazardous substances maintain their pattern of ensuring careful maintenance of chemical storage facilities and of keeping orderly records regarding the locations, properties, and quantities of stored chemicals, the risk of future accidental releases of hazardous substances in Bloomington can be minimized.

The subsequent recommendations are suggestions regarding how we can improve our community's awareness of toxics in our every day lives and how we might avoid future accidental releases.

B. Recommendations for Additional Action

The Environmental Commission, based on the information in and the process of creating this report, would like to make the following recommendations for future action:

⁶⁰ Indiana State Department of Health. "2010 Indiana Fish Consumption Advisory Complete Report." Available at http://www.in.gov/isdh/files/2010_FCA_May28.pdf. Accessed 4 November 2010.

⁶¹ Indiana State Department of Health. "2008 Indiana Fish Consumption Advisory." Accessed 7 October 2010 at http://www.in.gov/isdh/files/2008_FCA_Booklet.pdf.

- (1) An analysis of the potential, probable, and existing human health risks from historical toxic releases should be undertaken. Drawing from existing scholarly and government agency research to pull together in a document accessible to the Bloomington public the risks associated with historical releases in our city would promote transparency and encourage caution. If the City of Bloomington could partner with researchers to apply for grants to help fund this study, it would increase the chances that this work would be completed.

In particular, GIS analysis statistically comparing geo-referenced health data to chemical exposure zones in the City of Bloomington would be informative. As a benchmark, it may prove useful to compare statistics on environmental releases and associated human health impacts in Bloomington to those of other cities of comparable size, population, and local industry types. A partnership between the City of Bloomington Department of Information and Technology Services (ITS) and experts at Indiana University-Bloomington would seem productive.

- (2) Develop a locally focused, online toxics database for residents to access, with recommended updates occurring every 5 years. This database, like the human health risks document, should present information in a non-technical format, so that it is accessible to all citizens. In order for this to happen, we recommend City Council place money for an internship or small stipend to be placed in the budget. This work is incredibly labor-intensive and requires expertise. In addition, the city could host a toxics summit for increased dialogue among city employees and volunteers who have expertise in the various facilities mentioned in this report; this summit could become a forum to review the database and publicize its significance to local media.
- (3) Analyze the effectiveness of diversion of household hazardous wastes (including lawn chemicals) and conditionally exempt small quantity generators from landfills. The City Council could request a report from the relevant municipal and county offices and then sponsor and intern to create a survey for this research. One possibility would be to partner with the Office for Sustainability on Indiana University's campus for an intern to coordinate volunteers on this project.
- (4) Increase already existing public education regarding impaired waterways, including fish consumption advisories and recreation-related hazards. We believe a discussion of additional signage is warranted, as well as a press release to the local media about precautions residents should take. These steps would be relatively easy for the city to take. Public access to information on how this relates to the water supply also should continue to be emphasized.
- (5) City Council should encourage the community to once again become more informed about the PCB cleanup process. Although some long-term residents know a great deal about this history, the city has quite regular turnover in its population; so, in addition to the outreach the EPA has done, it is important for the city to regularly inform the public in a variety of forums about the cleanup process. We encourage City Council, the Office of the Mayor, and other interested parties who serve the city to join the Environmental Commission on a tour of the PCB cleanup sites. We also encourage City Council to have an update from EPA on the clean up process at one of their meetings in 2011, since much activity has happened recently.

(cont'd)

(6) Additional research also could be conducted on: (a) local facilities with chemical hazards stored onsite and (b) related infrastructure, such as roads identified as major pathways for the transport of hazardous substances between facilities or gas lines that run proximate to laboratories and other facilities that use hazardous chemicals.

Appendix A. City of Bloomington Common Council Resolution 09-21

Revised 9-1

RESOLUTION 09-21

RECOGNIZING THE TWENTY-FIFTH ANNIVERSARY OF THE BHOPAL DISASTER AND CALLING FOR A REPORT ON EXTREMELY HAZARDOUS SUBSTANCES PREVIOUSLY RELEASED INTO THE LOCAL ENVIRONMENT

- WHEREAS, twenty five years ago this week, on December 3, 1984, the most lethal industrial accident in history occurred at the Union Carbide India, Limited pesticide factory in Bhopal, Madhya Pradesh, India; and
- WHEREAS, the accident began when, sometime during the evening of December 2, 1984, the reaction of a large quantity of water with 42 tons of methyl isocyanate (MIC) in Tank 610 of the factory led to an emergency venting of MIC gas; and
- WHEREAS, as a result of this release, over 500,000 people were exposed to the MIC gas and 3,787 people were confirmed to have died, with other estimates placing the immediate and long-term deaths due to the gas at between 8,000 and 25,000 people; and
- WHEREAS, in 1986, in response to this disaster, the U.S. Congress enacted the Emergency Planning and Community Right to Know Act (EPCRA);
- WHEREAS, among other things, EPCRA requires local governments to prepare and annually review chemical emergency response plans in coordination with the State and requires facilities to:
- immediately notify State and local governments in the event of accidental releases of Extremely Hazardous Substances (EHS) over certain thresholds set forth in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
 - make Material Safety Data Sheets (MSDS), which describe the properties and health effects of these chemicals, available to state and local officials along with information about where they are located; and
 - complete and submit a Toxic Chemical Release Inventory Form annually for any of more than 600 Toxic Release Inventory (TRI) chemicals manufactured or used above certain threshold quantities; and
- WHEREAS, since Bloomington has a history of release of extremely hazardous substances into the local environment, it would be beneficial for the public and policy-makers to have access to a summary of where they are located, what risks they pose to human life and health, and the state of their remediation; and
- WHEREAS, such a summary should begin with those extremely hazardous substances appearing on the Environmental Protection Agency's "List of Lists – Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112 (r) of the Clear Air Act";

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE COMMON COUNCIL OF THE CITY OF BLOOMINGTON, MONROE COUNTY, INDIANA, THAT:

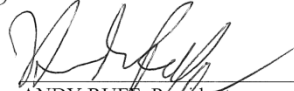
SECTION 1. December 3, 2009 shall be declared Bhopal Day.

SECTION 2. The Common Council requests that by the next anniversary of the Bhopal Disaster, the Environmental Commission compile and present an inventory of those places where extremely hazardous substances have been released into and remain in the local environment as determined by federal, State, or local agencies and describe what risk they pose to human life and health as well as options for, and the state of, their remediation.

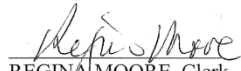
SECTION 3. If any sections, sentence or provision of this ordinance, or the application thereof to any person or circumstances shall be declared invalid, such invalidity shall not affect any of the other sections, sentences, provisions, or applications of this ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this ordinance are declared to be severable.

SECTION 4. This resolution shall be in full force and effect from and after its passage by the Common Council and approval by the Mayor.


PASSED AND ADOPTED by the Common Council of the City of Bloomington, Monroe County, Indiana, upon this 2nd day of DECEMBER, 2009


ANDY RUFF, President
Bloomington Common Council

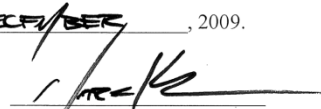
ATTEST:


REGINA MOORE, Clerk
City of Bloomington

PRESENTED by me to the Mayor of the City of Bloomington, Monroe County, Indiana, upon this 3rd day of DECEMBER, 2009


REGINA MOORE, Clerk
City of Bloomington

SIGNED and APPROVED by me upon this 4TH day of DECEMBER, 2009.


MARK KRUZAN, Mayor

SYNOPSIS

This resolution is sponsored by Councilmembers Volan and Rollo, declares December 3, 2009 as Bhopal Day, and calls for the preparation of a report for the benefit of policy-makers and the public on where extremely hazardous substances have been released into the local environment, what risk they pose to human life and health, as well as options for, and the state of, their remediation.

Send Copies To:
ENVIRONMENTAL COMMISSION
Mayor
Planning
Legal (10)

CA/CA (2)
Clerk (2)

Appendix B. List of Agencies and Databases Consulted for This Report

Official title of database (alternative titles, abbreviations): web address	Federal, state or local agency responsible
Toxic Release Inventory (TRI): www.epa.gov/tri	Environmental Protection Agency (EPA)
EPA Region 5 PCB Reports/Communications: http://www.epa.gov/osw/hazard/tsd/pcbs/pubs/region5.pdf	Environmental Protection Agency (EPA), Region 5
IDEM Voluntary Remediation Program (VPR): www.in.gov/idem/4127.htm	Indiana Department of Environmental Management (IDEM)
List of Impaired Waters: http://www.in.gov/idem/4680.htm	Indiana Department of Environmental Management (IDEM)
Tier II Chemical Inventory: www.in.gov/idem/5290.htm	Indiana Department of Environmental Management (IDEM)
Underground Storage Tanks (USTs) and Leaking UST (LUSTs): www.in.gov/idem/5081.htm and www.in.gov/idem/5065.htm	Indiana Department of Environmental Management (IDEM)
Indiana National Priority Fact Sheets: http://www.epa.gov/R5Super/npl/indiana/index.html	
IDEM Virtual Filing Cabinet: www.in.gov/idem/files/vfc/vfc_h1.html	Indiana Department of Environmental Management (IDEM)
Deed Restriction Search	Not applicable
Phone survey of dry cleaners	Not applicable
	Monroe County Emergency Planning Department

Appendix C. EPA PCB 2010 Update

**BLOOMINGTON INDIANA PCB CLEANUP PROJECT
PCB CAPACITOR REMOVALS AND OTHER RELATED ACTIVITIES**

PREPARER: Dennis E. Williamson/Monroe County Health Department
 [NOTE: Westinghouse name was changed to CBS on December 1, 1997.]
 [NOTE: CBS became Viacom on May 5, 2000]
 [NOTE: Viacom became CBS AGAIN in, 2006]
 Update 11-30-2010 (Information is based upon public record documents)

Location	Contractor	Surface	Subsurface	Other
1. BENNETT'S QUARRY	USEPA (June 1983)	252	0	NPL SITE/CLAY COVER [Remediation scheduled to start August 1999, see #23 below]
2. NEAL'S LANDFILL	WESTINGHOUSE (Dec. 1983)	122	0	NPL SITE/CLAY CAP AND 80 CAPACITORS REINTERRED ON SITE/1983-84 CONRAD'S BRANCH/STREAM BANK AND STREAM SEDIMENT REMOVAL PROJECT/OCT.1988 AND SPRING TREATMENT SYSTEM OPERATION/FEB.1990 OU2 & OU3/RODA/SOW 2007 &2008.
3. NEAL'S DUMP	WESTINGHOUSE (Dec. 1983)	46	68	NPL SITE/CLAY COVER [Remediation completed November 1998] Site Delisted from NPL
4. WEST LOST MAN'S LANE	USEPA (1984)	18	0	NO FURTHER ACTION REQUIRED (NFAR)INACTIVE LISTING
5. NORTH LINDBERGH	USEPA (1984)	0	0	NO CAPACITORS FOUND INACTIVE LISTING
6. FELL IRON & METAL	USEPA (1984)	346	7	CLAY CAP/TEMPORARY ENFORCEMENT ACTION
7. FELL IRON & METAL	USEPA (1984)	7	14	1 TRANSFORMER FROM OLD PRINCESS THEATER
8. MAXWELL ST.	USEPA (1984)	3	0	ADDITIONAL SAMPLING CONFIRMED NO OTHER CONTAMINATION ON SITE/INACTIVE LISTING
9. NORTH LINDBERGH	USEPA (1984)	0	0	SOIL AND WRAPPINGS REMOVED NO CAPACITORS FOUND INACTIVE LISTING

Location	Contractor	Surface	Subsurface	Other
10. BENNETT'S QUARRY	WESTINGHOUSE (Dec. 1983)	2	0	NPL SITE [see #23 below]
11. LEMON LANE LANDFILL	WESTINGHOUSE (1987)	404	0	NPL SITE/PLASTIC LINER AND CLAY COVER INSTALLED
12. ANDERSON RD LANDFILL	WESTINGHOUSE (1987)	202	0	CD SITE/CONTAMINATED SOIL, TRASH AND POND SEDIMENT SENT TO ISF FOR STORAGE - (SEE #24 BELOW)/CLAY CAP/SITE CONSIDERED REMEDIATED/CD CLEAN/NFAR
13. BENNETT'S QUARRY	WESTINGHOUSE (1987)	1	0	PLUS STREAM SEDIMENTS
14. ABB PLANT	WESTINGHOUSE (1995-96)	0	0	36,717 TONS OF PCB-CONTAMINATED SOILS REMOVED/NOTE: INCLUDES THE 11,300 CUBIC YARDS OF SOIL STOCKPILED BETWEEN AUG. 1992 AND DEC. 1993 Plant demolition in 2006 Soil sampling in January 2008/Soil & concrete removal 2008-2009
15. FELL IRON & METAL	WESTINGHOUSE (1995-96)	0	151 (in 1989)	27,098.48 TONS OF PCB-CONTAMINATED SOILS REMOVED/NOTE: INCLUDES THE 16,000 CUBIC YARDS OF SOIL STOCKPILED IN APRIL 1989
16. WINSTON THOMAS Sewage Treatment Plant(STP)	WESTINGHOUSE /CBS (1992)	0	0	CD SITE/WATER TREATMENT Post-remediation activities as required.
OTHER ACTIVITIES:				1997-1998-1999-2000→ 2020
17. WINSTON THOMAS STP	CBS			TERTIARY LAGOON remediation began 1998 and completed in 1999. WATER, SLUDGE AND PART OF CLAY LINER.

Location	Contractor	Surface	Subsurface	Other
				As of September 1999, a total of 25,880.78 tons of filter cake have been shipped to the TSCA Landfill. A total of 48,032,580 gallons of water have been treated. A total of 19,727.92 tons TSCA lagoon bottom soil has been transported and disposed. A total of 708.87 tons of non-TSCA soils have been transported and disposed. A total of 167.76 tons of TSCA soil from Outfall 6A has been transported and disposed. A total of 11,811.47 tons of material from the South Berm has been transported and disposed.
18. WINSTON THOMAS STP	CBS			ABANDONED LAGOON completed August 1998. TSCA - 9,450 tons of sludge/soil removed and 81,000 gallons of water treated and discharged.
19. WINSTON THOMAS STP	CBS			TRICKLING FILTER completed in July 1998. 23,851 tons of stone processed. 1020.55 tons of debris and soil removed as non-TSCA. 363,000 gallons of water treated and discharged. 108.58 tons of piping system removed as TSCA
20. LEMON LANE LANDFILL	CBS/Viacom		4,402 capacitors removed. (456,200 pounds)	Illinois Central Spring Water Treatment Plant operational on May 10, 2000. "HOT SPOT" Removal and consolidation operations began May 15, 2000. As of December 1, 2000 a total of 80,096 tons of TSCA material has been shipped to TSCA Landfill. A total of 4,402 capacitors have been recovered. An additional 37,200 tons of low level contaminated soil was consolidated under the RCRA cap. A total of 959,872 gallons of water has been treated. OU2 & OU3/RODA/SOW/2008
21. NEAL'S LANDFILL	CBS		4,119 capacitors removed. (484,264 pounds total)	"HOT SPOT" Removal and Consolidation completed in 1999. As of September 17, 1999 a total of 41,772.65 tons of TSCA Waste has been transported and disposed of off-site. A total of 4119 capacitors have been removed and shipped to incinerator for treatment and disposal. A total of 28,881 waste tires were shredded and consolidated on-site. An additional 108,000 tons of consolidation material

Location	Contractor	Surface	Subsurface	Other
				was placed under the on-site RCRA cap. A total of 30,080 gallons of wastewater treated. Residential well water user's survey completed and all well water and spring water results were "BDL". Upgrade and Continue Spring Treatment System Operation. OU2 & OU3/RODA/SOW/2008
22. NEAL'S DUMP	CBS		140 Tons of capacitors removed to TSCA Incinerator [2,500 capacitors]	Remediation/removal work completed November 1998. Approximately 7,250 tons of soil removed to the TSCA Landfill. A total of 18,000 gallons of water treated. Post-remediation activities have started. Site NPL delisting process began August 26, 1999 and ends September 24, 1999.
23. BENNETT'S QUARRY	CBS		121.16 Tons of capacitors removed to TSCA incinerator [1,756 capacitors]	Removal operations started August 1999 and completed October 29, 1999. A total of 36,157 tons of TSCA waste has been transported and disposed of off-site. A total of 119,888 gallons of water was treated. Post-remediation activities as required for groundwater and sediment: OU2 & OU3/RODA/SOW/2008
24. INTERIM STORAGE FACILITY (ISF)	CBS (Feb. 1998)			Total removal of stored material completed February 1998(TSCA and NON-TSCA): 9923 TONS ISF WILL BE USED DURING FUTURE CLEANUP ACTIONS AND DEMOLISHED PER THE CDA/2008
25. WINSTON THOMAS STP	WESTINGHOUSE (Sept. 1997)			WEST SIDE CLEAR CREEK/ 1997 completion/ 8698 TONS OF CONTAMINATED SOIL REMOVED/ALL TSCA
26. WINSTON THOMAS STP	WESTINGHOUSE (Oct.1997)			EAST SIDE OF ENTRANCE ROAD 450 TONS OF CONTAMINATED SOIL REMOVED/ALL TSCA/1997
27. WINSTON THOMAS STP	WESTINGHOUSE (Oct.1997)			SLUDGE DRYING BEDS CONTAMINATED MATERIALS REMOVED DURING PHASE I:(1997) TSCA: 4900 TONS NON-TSCA: 2468 TONS Piping system also removed;

Location	Contractor	Surface	Subsurface	Other
				REMOVED DURING PHASE II(1998): TSCA 248 TONS
28. WINSTON THOMAS STP	WESTINGHOUSE /CBS (Dec. 1997)			SLUDGE DIGESTERS CONTAMINATED MATERIALS REMOVED/1997/ALL TSCA: 6378 TONS of sludge and additives. Piping system also removed
29. OTHER SITES IN AND AROUND MONROE, GREENE, LAWRENCE & OWEN COUNTIES	CITY OF BLOOMINGTON WESTINGHOUSE CBS/OTHER PRPs	2 (MCPL)	Sewell Road Fluckmill Road Eastern Greene site (2001)	GARDEN SLUDGE USERS ERRIS/CERCLIS LISTINGS LOCAL SITE SEARCH TASK FORCE LISTINGS USEPA SITE SEARCH LISTING 170 tons of TSCA soils and 158 tons of non-TSCA soils.
30. ABB Plant/July 2009 – August 2010	CBS/Focus			TSCA Soil/38,416 Tons SW Soil/2,569 Tons TSCA Concrete/3,840 Tons SW Concrete/178,59 Tons Solidified Sludge/433 Tons Petroleum Soil & Gravel/ 398 Tons Water Treated/Discharged/ 1,415,500 gallons 368,000 square feet of concrete floor slab removed (8.5 acres)
31.LLLF/ICSTP/ Swallowhole and Quarry Springs areas/2010	CBS/PSARA			Final Report due January 2011.

BLOOMINGTON, INDIANA PCB CLEANUP PROJECT

REMOVAL/REMEDATION ACTIVITIES SUMMARY TOTALS:

14,422 NUMBER OF CAPACITORS REMOVED AND INCINERATED AT TSCA
INCINERATOR

369,032 TONS OF TSCA WASTE REMOVED AND DISPOSED AT TSCA LANDFILLS

7872 TONS OF NON-TSCA WASTE REMOVED AND DISPOSED AT NON-TSCA
LANDFILLS

52,242,325 GALLONS OF WATER TREATED AND DISCHARGED (below 0.3 ug/m3)

28,971 NUMBER OF TIRES PROCESSED

145,200 TONS of low level contaminated materials in consolidation areas under RCRA caps
(FROM JUNE 1983 TO DECEMBER 2009)

TOTAL CAPACITOR REMOVAL SUMMARY PER SITE LOCATION:

LLLF = 4,806

NFL = 4,241

ND = 2,614

BD = 2,011

FIM = 525

ARLF = 202

WLML = 18

ML = 3

MCPL = 2

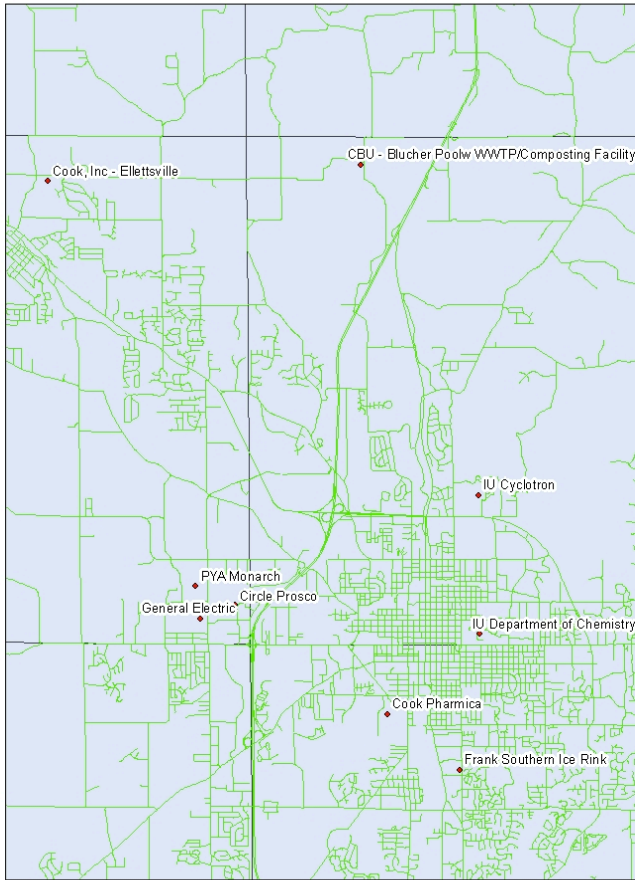
TOTAL = 14,422

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(812)349-2542

AS OF DECEMBER 3, 1987

Appendix D. Monroe County Emergency Planning Information



Location name	Substance	Zone (miles) from potential incident
Blucher Poole Wastewater Treatment Plant	Chlorine	2.7
	Sulfur dioxide	1.0
Chemistry Building – Indiana University	Liquid nitrogen	0.125
Circle Proscio	Nitric acid	0.6
	Hydrofluoric acid	0.6
Cook, Inc. (Ellettsville)	Ethylene oxide	0.5
Cook Pharmica	Sulfuric acid	0.5
Cyclotron – Indiana University	Liquid nitrogen	0.125
Frank Southern Center Ice Rink	Ammonia	0.6
General Electric	Propane	1.0
	Liquid nitrogen/ oxygen	0.125

(Source: Distribution of Key Monroe Country Facilities for Emergency Management Planning: Monroe County Emergency Response Plan (subsection of Monroe County Emergency Management). “Hazard Specific Section: Comprehensive Emergency Response Plan for Hazardous Materials Incidents.” 2007 revision of the Monroe County Emergency Management’s 2003 Monroe County Comprehensive Emergency Management Plan. 62-105.)

Appendix E. Limitations of the UST and LUST database

IDEM identifies sites that house underground storage tanks by means of UST facility identification numbers. A site's UST facility ID is a permanent designation. It remains the same from year to year regardless of future activity involving the closure or installation of particular underground storage tanks on a facility's grounds. In contrast, when a suspected leak is reported at an UST facility, sites are assigned a unique LUST incident number that is used to track the progress of a leak's investigation and remediation. If an UST facility is investigated for an additional leak in the future, a new incident number is assigned. Thus, one UST facility can have multiple incident numbers associated with it.

LUST incident numbers store information about when a suspected leak was first investigated. The first four digits of a LUST incident number correspond with the year in which an incident was reported. The fifth and sixth digit represent the month in which the incident was reported. Additional digits are incident specific identifiers. For example, the LUST incident number 200706XXX would mean that an incident was reported in June 2007.

Unfortunately it is very difficult using IDEM's data to determine exactly which substance(s) were leaked/are being leaked in each of Bloomington's reported LUST incidents. IDEM has two primarily databases relating to underground storage tanks that are publically available on their website: their LUST Data Cover (available at <http://www.in.gov/idem/5065.htm>) and their UST Report (available at <http://www.in.gov/idem/5081.htm>). IDEM's LUST Data Cover was most recently updated in January 2010 while the most current UST Report dates from September 2009.

IDEM's UST Report is a profile of UST facilities containing data on facility location as well as the contents, number, and size of all tanks present at a particular site. IDEM's LUST report outlines data on leak investigations at UST sites, referenced by LUST incident number and UST Facility ID. The LUST report also contains information on the nature and severity of leaks as well as the remediation status of LUST incidents.

The LUST report does not, however, list which of an UST facility's tanks are or were responsible for a leak incident. Sometimes this data can be found in individual LUST incident case reports but often this data is simply unavailable. The underground location of USTs, as well as the fact that piping often connects multiple tanks at UST facilities, makes accurate leak assessment difficult.

A second obstacle to cross-referencing LUST incident numbers with tank contents descriptions is that even if tank numbers were provided in IDEM's LUST report, there is no guarantee that at the time of a historical LUST incident a given tank contained the same substance it is listed as containing in IDEM's 2009 UST Report. A final limitation of IDEM's data is that UST contents are not listed in IDEM's UST Report in terms of a technical chemical identification scheme such as the CAS Registry Number system. Instead, the content of Bloomington's underground storage tanks is divided into six categories: diesel, kerosene, gasoline, other, unknown, and used oil.

Despite these limitations, IDEM's data still provides a useful overview of Bloomington's LUST situation.

Table A. 2008 Indiana Department of Environmental Management (IDEM) list of Bloomington area Category 5 303(d) Impaired Waters^a

(Source: Department of Environmental Management. “Impaired Waters - Section 303(d).” Available at <http://www.in.gov/idem/4680.htm>. Accessed 6 October 2010.)

Major Basin	Assessment Unit Name	Cause of Impairment
West Fork White	S.F. Griffy Creek	Impaired biotic communities
West Fork White	Beanblossom Creek	PCBs in fish tissue
West Fork White	Beanblossom Creek	PCBs in fish tissue
West Fork White	Beanblossom Creek	PCBs in fish tissue
West Fork White	Lake Lemon	Mercury in fish tissue
East Fork White	Clear Creek	PCBs in fish tissue
East Fork White	Clear Creek, Little Clear Creek	Mercury in fish tissue
East Fork White	Clear Creek	<i>E. coli</i>
East Fork White	Clear Creek	Mercury in fish tissue
East Fork White	Clear Creek	PCBs in fish tissue
East Fork White	Monroe Reservoir (lower)	Algae
East Fork White	Monroe Reservoir (lower)	Taste and odor
East Fork White	Monroe Reservoir (lower)	Mercury in fish tissue
East Fork White	Weimer Lake	Mercury in fish tissue
East Fork White	Monroe Reservoir (upper)	Algae
East Fork White	Monroe Reservoir (upper)	Taste and odor
East Fork White	Monroe Reservoir (upper)	Mercury in fish tissue

^a The 303(d) List of Impaired Waters is a component of Indiana’s comprehensive Integrated Water Monitoring and Assessment Report (IR), which is submitted to the U.S. EPA every two years in accordance with Sections 305(b) and 303(d) of the Clean Water Act (CWA). IDEM assigns water impairment levels (1 through 5) using a procedure known as the Consolidated Assessment and Listing Methodology (CALM), a method designed in consultation with the EPA.

Table B. 2010 Fish Consumption Advisories for Monroe County Waterways

Fish Consumption “Advisory Groups” refer to the maximum amount and frequency of consumption, which should not exceed the following guidelines. **General Population:** Group 1 = unlimited meals; Group 2 = 1 meal per week; Group 3 = 1 meal per month; Group 4 = 1 meal per 2 months; Group 5 = *do not eat*. **Children and Women of Childbearing Age:** Group 1= 1 meal/week, Group 2= 1 meal/month, Group 3 and higher = *do not eat*.^a (Source: Indiana State Department of Health. “2010 Indiana Fish Consumption Advisory Complete Report.” Accessed 7 October 2010 at http://www.in.gov/isdh/files/2010_FCA_May28.pdf.)

Water body	Advisory Group	Contaminant	Fish Covered
Bean Blossom Creek	2 3	PCBs	All species EXCEPT: Channel Catfish longer than 13 in
Clear Creek	5	PCBs	All species - DO NOT EAT!!
Griffy Lake	2 1 3	Mercury ^b	All species EXCEPT: Bluegill smaller than 6 in Large Mouth Bass longer than 13 in
Lake Lemon	2 1 1 3 1 1	PCBs	All species EXCEPT: Black Crappie smaller than 7 in Bluegill smaller than 6 in Flathead Catfish longer than 20 in Redear Sunfish smaller than 9 in White Crappie smaller than 9 in
Monroe Lake	2 3	Mercury ^b	All species EXCEPT: Bluegil smaller than 7 in Walleye longer than 20 in
Richland Creek	3 2 2	PCBs	All species EXCEPT: Longear Sunfish smaller than 5 in Rock Bass smaller than 6 in
Salt Creek, downstream of Clear Creek	5 4 2 3 2 3 4	PCBs	All species EXCEPT: Freshwater Drum shorter than 16 in Striped Bass smaller than 12 in Striped Bass longer than 12 in Walleye smaller than 15 in Walleye between 15 and 21 in Walleye longer than 21 in
Stouts Creek	3	PCBs	All species

^a Note that the State of Indiana is under a general Group 2 advisory for mercury in fish. Carp in Indiana also are under a general advisory for PCBs: 15-20 inches = Group 3; 20-25 inches = Group 4; over 25 inches = Group 5.
^b There are no known direct effluents released into water containing mercury in Monroe County. In addition to natural sources, mercury that reaches the Monroe County waterways are from air deposition from coal burning power plants and any other combustion sources that burn household and industrial waste.

Table C. Tier II storage facility data for the area of Bloomington, Indiana, 2009.

Forty facilities have submitted Tier II data and are included in the following table. *Max. daily amount* and *Avg. daily amount* refer to the maximum and average amounts of chemical stored onsite. Some facilities only report amounts in terms of a chemical amount code. Note that on Tier II forms certain facilities list chemical amounts in terms of pounds while other facilities report their data in terms of amount codes 01 through 06. Codes 01-06 refer to the following weight intervals: 01 = 0-99 lbs; 02 = 100-999 lbs; 03 = 1,000-9,999 lbs; 04 = 10,000-99,999 lbs; 05 = 100,000-999,999 lbs and, 06 = 1,000,000- 9,999,999 lbs. Exact pounds of material stored have been provided (*italics*) where available. *Physical/health hazards* are defined by the Tier II reporting system as falling into three categories: fire, reactivity, or sudden release of pressure. We have listed them in this table as noted in database; no additional research was conducted for physical/health hazards. Hazards are also defined as to whether the potential harm is *acute* (or immediate) or *chronic* (delayed), or both.

Name	Address	Chemical(s)	Max. daily amount	Avg. daily amount	Physical/health hazards	Acute/Chronic
Amerigas Propane LP	1829 Curry Pike	Liquified Petroleum Gas	05	05	Fire, Sudden Release of Pressure	Acute
AT&T	2010 S Vernal Pike	Sulfuric Acid	04 (<i>553</i>)	04 (<i>553</i>)	Reactivity	Both
		Lead	05	05	Reactivity	Both
		Diesel Fuel #2 Low Sulfur	04	04	Fire	Both
Austin Powder Company	1100 Ford Rd.	Blasting Agent	03 (<i>7,100</i>)	03 (<i>1749</i>)	Sudden Release of Pressure	Acute
		Class A Explosives	03 (<i>9,590</i>)	03 (<i>3,503</i>)	Sudden Release of Pressure	Acute
		Detonators	01 (<i>9</i>)	01 (<i>4</i>)	Sudden Release of Pressure	Acute
Baxter	927 S Curry Pike	Carbon	04	04		Acute
		Fuel Oil #2	04	04	Fire	Both
		Lead	04	04		Both
		Nitrogen	04	03	Sudden Release of Pressure	Acute
		Sodium Chloride	04	04		Acute
		Sulfuric Acid	03	03		Acute
Blue Flame	Corner N Reeves Rd. and N Starnes Rd.	Propane	04	04	Fire, Sudden Release of Pressure	Acute
Bybee Stone Company	6293 Matthews Dr.	Homasote Board	04	03	Fire	Acute
		Limestone	06	06		Acute
City of Bloomington: Blutcher Poole Water	5555 N Bottom Rd	Chlorine	03 (<i>4000</i>)	03 (<i>3500</i>)	Sudden Release of Pressure, Reactivity	Both

Toxics Report for Bloomington

Name	Address	Chemical(s)	Max. daily amount	Avg. daily amount	Physical/health hazards	Acute/Chronic
Treatment Plant (WTP)		Diesel	04 (18,269)	04 (26,560)	Fire	Both
		Ferric Chloride	04 (67,888)	04 (48,139)		Acute
		SO2	03 (4,000)	03 (3,500)	Sudden Release of Pressure, Reactivity	Both
City of Bloomington: Dillman Rd. WTP	100 W Dillman Rd.	Diesel	04 (64,408)	04 (49,806)	Fire	Both
		Gasoline	04 (24,900)	04 (18,675)	Fire	Both
		Sodium Bisulfite	04 (49,136)	04 (30,710)		Acute
		Sodium Hypo Chloride	04 (97,608)	04 (65,072)		Acute
		Sulfuric Acid, Aluminum Salt	05 (182,351)	05 (120,352)		Acute
City of Bloomington: Monroe WTP	7470 S. Shields Ridge Dr.	Ammonium Hydroxide	04 (27,017)	04 (16,210)		Acute
		Carbon	04 (30,000)	04 (20,000)		Acute
		Diesel	04 (15,936)	04 (10,000)	Fire	Both
		Fluorosilicic Acid	04 (67,728)	04 (33,864)		Both
		Sodium Hydroxide	05 (123,255)	04 (41,085)	Reactivity	Acute
		Sodium Hypo Chloride	05 (283,609)	05 (283,609)		Acute
		Sulfuric Acid, Aluminum Salt	05 (178,142)	05 (133,607)		Acute
City of Bloomington: South Adams St. Fuel Pumps	545 S Adams St.	Diesel	04 (79,680)	04 (59,760)	Fire	Both
		Gasoline	04	04 (46,688)	Fire	Both
City of Bloomington: Service Center Fuel Pumps	1969 S Henderson St.	Diesel	04 (66,400)	04 (49,800)	Fire	Both
		Gasoline	05 (124,500)	04 (93,375)	Fire	Both
City of Bloomington: Frank Southern Ice Arena	2100 S Henderson St.	Ammonia	03 (8,500)	03 (9,000)	Sudden Release of Pressure	Acute
Coca-Cola	1701 S Liberty Dr.	Sulfuric Acid	03 (3,179)	03 (3,179)	Fire, Reactivity	Acute
Circle-Prosc0, Inc.	401 N Gates Rd.	Hydrogen Fluoride	03	03	Reactivity	Both
		Hydrotreated naphthalene	04	04	Fire	Chronic
		Potassium Hydroxide	04	03	Reactivity	Both
		Sodium Hydroxide	04	03	Reactivity	Both
		Sulfuric Acid	03	02	Reactivity	Both
		Nitric Acid	03	02	Reactivity	Both
Comcast	1600 W Vernal Pike	Sulfuric Acid	02	02	Reactivity	Both
Victor Oolitic	7850 Victor	Ammonium Nitrate	04	03	Fire,	

Name	Address	Chemical(s)	Max. daily amount	Avg. daily amount	Physical/health hazards	Acute/Chronic
Stone Company	Pike				Reactivity	
		Diesel	04	04	Fire	Both
Cook Pharmica LLC	1300 S Patterson	Fuel Oil #2	04 (69,046)	04 (34,522)	Fire	Both
		Nitrogen	05 (160,444)	04 (91,444)	Sudden Release of Pressure	
		Oxygen	04 (44,100)	04 (22,500)	Fire, Sudden Release of Pressure	
		Sulfuric Acid	03 (7,020)	03 (3,500)	Reactivity	Both
Ferrellgas	704 Temperance St.	Methanol	02	02	Fire	Both
		Propane	05	05	Fire, Sudden Release of Pressure	Both
General Electric	301 N Curry Pike	Compressor Oil	05	04		Acute
		HFC 134a	04	04	Sudden Release of Pressure	Chronic
		Oil	04	04	Fire	Acute
		Powder Paint	04	04		Both
		Sulfuric Acid and Electrolyte	03	03	Reactivity	Both
		Nitrogen	04	04	Sudden Release of Pressure	Acute
		Copper	04	04		Both
		Polycat Catalyst	04	04	Fire	Both
		Polymeric MDI	05	04	Reactivity	Acute
		Polyol	05	05	Fire	Acute
		Silicone	04	04		Both
		ABS Plastic	05	05	Fire	Both
		Lexan Plastic	05	05	Fire	Both
		Aluminum Alloy	04	04		Both
		Sulfur/Copper Brazing Rods	04	04		Both
		Steel Galvanized	05	05	Fire	Acute
		Xylol	04	04	Fire	Both
		Hydrochloric Acid	03	03	Reactivity	Both
		Paint	04	04	Fire	Both
		HIPS Plastic	05	05	Fire	Both
Multranol	05	05	Fire	Both		
Diesel	03	03	Fire	Both		
HFC 245fa	04	04	Sudden Release of Pressure	Chronic		
Hoosier Disposal	6660 South SR 37	Diesel Fuel #2 Low Sulfur	04	03	Fire	Both
Hoosier Energy	7398 N SR 37	Fuel Oil #2	03	03	Fire	
		Gasoline	03	03	Fire	
		Mineral Oil	03	03	Fire	

Name	Address	Chemical(s)	Max. daily amount	Avg. daily amount	Physical/health hazards	Acute/Chronic
Irving Materials, Inc.	1800 N Kinser Pike	Fuel Oil	04	03	Fire	
		Portland Cement	05	04		Chronic
		Fly Ash	04	04		Both
Indiana Metal Craft	4602 W Innovation Ct.	Ammonia	02 (650)	02 (375)	Fire, Reactivity, Sudden Release of Pressure	Both
Indiana Oxygen	3900 Farmer Ave.	Oxygen	04	04	Fire, Reactivity, Sudden Release of Pressure	Acute
Indiana University	1514 E 3rd St.	Calcium Chloride	04	04	Reactivity	
		Diesel Fuel	05	05	Fire	
		Fuel Oil No.2-D	05	05	Fire	
		Fuel Oil No. 1	05	05	Fire	
		Gasoline	05	05	Fire	Acute
		Nitrogen	04	04	Sudden Release of Pressure	Acute
		Sodium Hydroxide	04	04	Reactivity	Acute
		Sulfuric Acid	04	04	Reactivity	
		Ice Melter-HP	04	04		Chronic
		Coal	06	05	Fire	
		1-bromo-3-chloro-5,5 dimethyl hydantoin	04	03		Chronic
		Surtech B-0002	04	04		Chronic
		Surtech B-0003	04	04		Chronic
Koorsen	4700 W Innovation Ct.	CO2	04	04	Sudden Release of Pressure	Acute
Penske Truck Leasing	2212 S Yost Ave	Diesel	04 (88,800)	04 (44,400)	Fire	Both
Sam's Club	3205 W State Hwy 45	Sulfuric Acid	03	03		Acute
Speedway #1327	3021 E 3rd St.	Kerosene	04	04	Fire	Acute
Speedway #5183	3585 W SR 46	Kerosene	04	04	Fire	Acute
Speedway #6013	5510 W SR 46	Kerosene	04	04	Fire	Acute
Speedway #6009	3939 W 3rd St.	Kerosene	04	04	Fire	Acute
Speedway #6010	2700 N Walnut	Kerosene	04	04	Fire	Acute
Swiftly Oil #277	2200 W 3rd St.	Kerosene	04	04	Fire	Both
Swiftly Oil #225	4723 W SR 46	Kerosene	04	04	Fire	

Name	Address	Chemical(s)	Max. daily amount	Avg. daily amount	Physical/health hazards	Acute/Chronic
UPS	1700 S Liberty Dr.	Light Petroleum Distillate	04	04	Fire	Both
USPS	3210 E 10th St.	Gasoline	04	03	Fire	Chronic
Vectren	3592 Boltinghouse Rd.	Methane	09	09	Fire, Sudden Release of Pressure	Acute
Verizon	5996 Tower Rd	Sulfuric Acid	02	02	Fire, Reactivity	Both
White River Co-op	1305 W Bloomfield Rd	Motor and Hydraulic Oil	04	03	Fire	Both
		Pesticides Aggregate	05	03	Fire	Both
		Motor Fuels	05	04	Fire	Both
		Motor Fuels Bulk	05	04	Fire	Both
		Propane	04	03	Fire, Sudden Release of Pressure	Both

Table D. Select Historical Toxic Release Inventory (TRI) Data for Bloomington, Indiana. The following four sites are meant to be a representative sample of historic toxic releases to air and water. “Contaminant of concern” refers to the chemical released. “Medium” refers to the type of release (into the air or into water), and “Contaminant fate,” for water releases, tells what body of water the chemical was released into. Note that for air releases, contaminant fate is simply “release” because air mixes and so a specific end location for the contaminant cannot be determined.

(Source: United States Environmental Protection Agency. “Toxic Release Inventory (TRI) Query Results: Bloomington, IN.” Available at:

http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=bloomington&county_name=&state_code=in&epa_region_code=&sic_code=&all_programs=NO&sic_code_desc=&naics_code=&all_programs_naics=NO&naics_code_desc=&chem_name=&chem_search=Beginning+With&cas_num=&program_search=2&page_no=1&output_sql_switch=TRUE&report=1&database_type=TRIS . Accessed 21 October 2010.)

Latest year data available	Contaminant of concern	Medium	Amount (lbs)	Contaminant Fate
FACILITY: Otis Elevator: 1331 S. Curry Pike				
2002	Chromium compounds	Air	10	Release
		Water	250	Discharged to Twin Lakes
2002	Copper compounds	Air	10	Release
		Water	250	Discharged to Twin Lakes
2002	Manganese compounds ^a	Air	260	Release
		Water	750	Discharged to Twin Lakes
2002	N-Hexane	Air	10810	Release
2002	Nickel compounds ^b	Air	10	Release
		Water	250	Discharged to Twin Lakes
FACILITY: ABB Power T&D Co. Inc.: 300 N. Curry Pike				
1998	Copper	Air	56	Release
1993	Tetrachloroethylene	Air	15840	Release
1993	1,1,1-Trichloroethane	Air	13000	Release
1991	Toluene ^c	Air	1150	Release
1989	Trichloroethylene	Air	9500	Release
		Water	2	Discharged to Stout Creek and Sinking Creek
1992	Zinc compounds ^d	Air	147	Release
		Water	75	Discharged to Stout Creek, Sinking Creek, and sinkhole
FACILITY: CLEO Inc.: 3963 Vernal Pike				
1990	Toluene ^c	Air	30000	Release
ST-Semiconductors of Indiana: 415 N. College Ave.				
1990	1,1,1-Trichloroethane	Air	4500	Release
1989	Hydrogen Fluoride ^e	Air	137	Release
1989	Methanol	Air	3575	Release
1989	Nitric Acid ^f	Air	391	Release
^a One manganese compound, tricarbonyl methylcyclopentadienyl manganese (CAS# 12108-13-3), is an EHS with an RQ of 100 lbs and a TPQ of 100 lbs. Whether the manganese reported by Otis				

Elevator contained this EHS is unknown.

^b One nickel compound, nickel carbonyl (CAS# 13463-39-3 101) is an EHS with an RQ of 10 lbs and a TPQ of 1 lb. Whether the nickel compounds reported by Otis Elevator contained this EHS is unknown.

^c Two toluene compounds, toluene 2,4-diisocyanate (CAS# 584-84-9) and toluene 2,6-diisocyanate (CAS# 91-08-7) are both classified as extremely hazardous substances. Whether the toluene reported by Bloomington facilities contained these EHSs is unknown.

^d Two zinc compounds, dichloro(4,4-dimethyl-5((((methylamino)carbonyl)oxy)imino)pentanenitrile)- or T-4 zinc (CAS# 58270-08-9) and zinc phosphide (CAS# 1314-84-7) are both classified as extremely hazardous substances. Whether the zinc compounds reported by ABB Power T&D Co., Inc. contained these EHSs is unknown.

^e Hydrogen fluoride (CAS# 7664-39-3) is an extremely hazardous substance with an RQ (reportable quantity) of 100 lbs and a TPQ (threshold planning quantity) of 100 lbs.

^f Nitric Acid (CAS# 7697-37-2) is an extremely hazardous substance with an RQ (reportable quantity) of 1000 lbs and a TPQ (threshold planning quantity) of 1000 lbs.

Table E. Bloomington 2008 326 IAC 2-6 Air Emissions Summary in Tons/Year by Site. The criteria pollutants identified by 326 IAC 2-6 are carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter less than 10 micrometers in diameter (PM-10), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

(Source: United States Environmental Protection Agency. Appendices A and B to part EPCRA 40 CFR 355: “The List of Extremely Hazardous Substances and Their Threshold Planning Quantities.” Available 4 Nov 2010 at <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=5fc8e8e3aaf2d0c06a2e4422bd279c23&rgn=div5&view=text&node=40%3A27.0.1.1.11&iid=40#40:27.0.1.1.11.4.17.2>. Last updated Nov 2, 2010.)

Inventory Year	Facility Name	CO	NO _x ^a	PM-10	SO ₂ ^b	VOC	PM-2.5 ^c	Pb
2008	General Electric Company	3.48	4.2	0.7	0.52	59.42	0.63	0.000004
2008	Indiana University	156.01	327.53	29.25	2306.96	2.36	12.38	0.072322

^a NO_x includes nitric oxide (CAS# 10102–43–9) and nitrogen dioxide (CAS# 10102–44–0), both of which are classified as extremely hazardous substances and have a reportable quantity (RQ) of 10 lbs and a threshold planning quantity (TPQ) of 100 lbs.

^b Sulfur dioxide (CAS# 7446–09–5) is also an extremely hazardous substance and has an RQ of 500 lbs and a TPQ of 500 lbs.

^c A sub-category of PM-10 is PM-2.5, or fine particle pollution. PM-2.5 includes air pollutants with a diameter of 2.5 micrometers or less. Their small size can enable fine particles to travel far into the human respiratory tract. The EPA has identified fine particles as a public health concern due to studies showing a correlation between fine particles exposure and premature death from heart or lung disease. (Source: “Fine Particle (PM2.5) Designations.” U.S. Environmental Protection Agency. Available at <http://www.epa.gov/pmdesignations/basicinfo.htm>. Last updated 6 August 2010.)

Table F. 2009 Toxic Release Inventory (TRI) Data for Bloomington Air Emissions.

(Source: United States Environmental Protection Agency. “Toxic Release Inventory (TRI) Query Results: Bloomington, IN.” Available at http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=bloomington&county_name=&state_code=in&epa_region_code=&sic_code=&all_programs=NO&sic_code_desc=&naics_code=&all_programs_naics=NO&naics_code_desc=&chem_name=&chem_search=Beginning+With&cas_num=&program_search=2&page_no=1&output_sql_switch=TRUE&report=1&database_type=TRIS. Accessed 21 October 2010.)

Facility (Address)	Contaminant of Concern	Amount (lbs)
Circle-Prosc0, Inc. (401 N Gates Dr.)	Hydrogen fluoride ^a	5
GEA PBO LLC, General Electric (301 N. Curry Pike)	1,2,4- Trimethylbenzene	13,211
	Chromium compounds	10
	Copper compounds	255
	Diisocyanates ^b	11
	Ethylbenzene	13,200
	Glycol ethers	22,092
	Manganese ^c	10
	N-Butyl alcohol	13,211
	Nickel compounds ^d	10
	Sodium nitrite	5
	Xylene	27,868
Zinc compounds ^e	10	

^a Hydrogen fluoride (CAS# 7664–39–3) is an extremely hazardous substance with an RQ (reportable quantity) of 100 lbs and a TPQ (threshold planning quantity) of 100 lbs.

^b Various diisocyanates are classified as EHSs. Whether the diisocyanates reported by General Electric are EHSs is unknown.

^c One manganese compound, tricarbonyl methylcyclopentadienyl manganese (CAS# 12108–13–3), is an EHS with an RQ of 100 lbs and a TPQ of 100 lbs. Whether the manganese reported by General Electric contain this EHS is unknown.

^d One nickel compound, nickel carbonyl (CAS# 13463–39–3 101) is an EHS with an RQ of 10 lbs and a TPQ of 1 lb. Whether the nickel compounds reported by General Electric contain this EHS is unknown.

^e Two zinc compounds, dichloro(4,4-dimethyl-5((((methylamino)carbonyl)oxy)imino)pentanenitrile)- or T-4 zinc (CAS# 58270–08–9) and zinc phosphide (CAS# 1314–84–7) are both classified as extremely hazardous substances. Whether the zinc compounds reported by General Electric contain these EHSs is unknown.

Figure G. UST Status Percentages for Bloomington

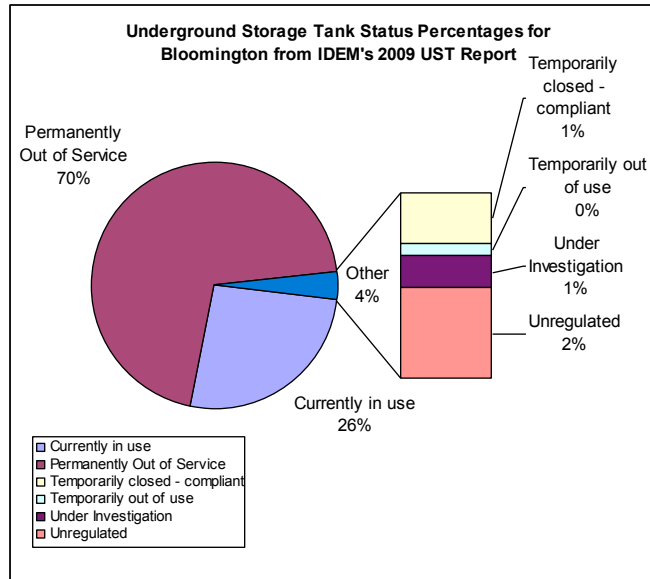


Table G. LUST Status Percentages for Bloomington

Bloomington LUST Status Summary	Notes	Site #
Number of Active LUST incident sites	(Note: All 11 sites had only one active LUST incident. 3 of the 11 Active LUST sites also had a LUST incident that has been reclassified as discontinued)	11
Discontinued only LUST sites		22
One Discontinued incident & one incident with NFA-UST Branch Guidance Manual status		1
Monitored Natural Attenuation Sites	Note: 4 of these sites had only one LUST incident reported. The fifth site had a second incident described as NFA-UST Branch Guidance Manual	5
NFA-RISC industrial soil and ground water (Closed)	All sites had only one incident except for site 15843, which had 3 incidents	6
NFA-RISC industrial soil only (Closed)		1
NFA-RISC residential soil only (Closed)		3
NFA-RISC residential soil & Industrial groundwater (Closed)		2
NFA-RISC residential soil and groundwater (Closed)		2
NFA-UST Branch Guidance Manual (Closed)	All but 5 sites had only one LUST incident reported. Of those sites that had more than one incident, 4 had two incidents and one had three incidents.	56
No Paper File		2
Referred to another IDEM program		1
TOTAL SITES		112

Figure H. Contents of USTs in Bloomington from IDEM's 2009 UST Report

Note: the content percentages are based on data from individual tanks, not UST facilities (one UST facility can have many tanks with different contents).

