4.7 Hazardous Materials

Description

According to the Ohio Environmental Protection Agency, hazardous materials can be defined in different ways depending on the law or regulation administered by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the U.S. Nuclear Regulatory Commission (NRC).

- The Institute for Hazardous Materials Management defines hazardous materials as "any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors."
- OSHA's definition includes any substance or chemical which is a health hazard or a physical hazard, including carcinogens, toxic agents, irritants, corrosives, and sensitizers, as well as agents that interact to be harmful to the human body, explosive, or flammable.
- The Environmental Protection Agency's definition includes the Occupational Safety and Health Administration definition. It also adds to its definition, any item or chemical which can cause harm to people, plants, or animals when released into the environment.
- The Department of Transportation defines hazardous materials as any item or chemical which, when being transported or moved in commerce, is a risk to public safety or the environment.

The Ohio Environmental Protection Agency (Ohio EPA) indicates that there are five categories in which materials can be hazardous including acute, chronic, fire, reactive, or sudden release of pressure.

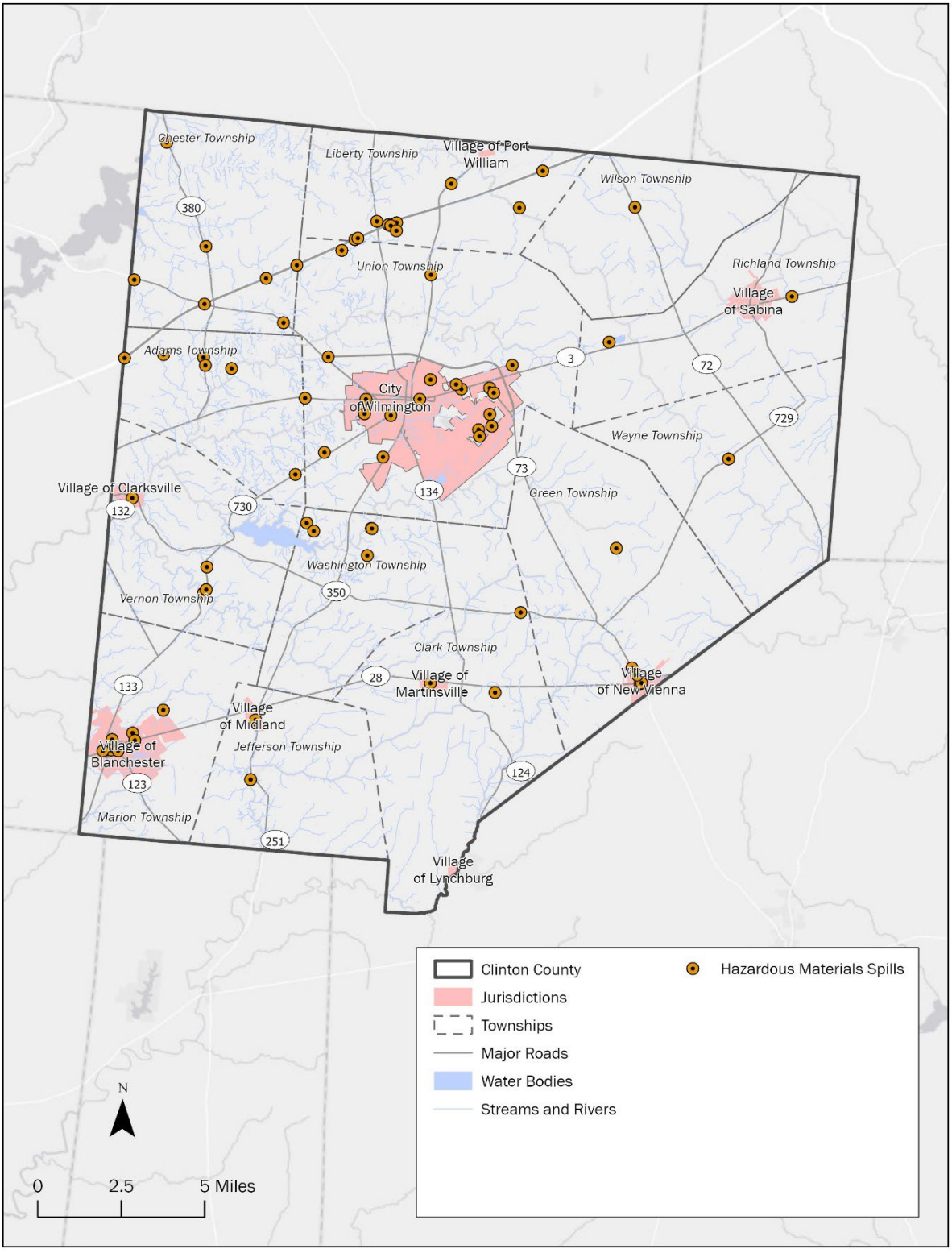
The U.S. Nuclear Regulatory Committee regulates materials that produce ionizing radiation, which includes by-product material and radioactive substances.

The Emergency Planning and Right-to-Know Act, or EPCRA, was passed as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), which requires a facility to notify their local and state emergency response organizations if they have "extremely hazardous substances" on site if the amounts are above a set threshold. This gives communities the "right to know" about potentially dangerous materials in their neighborhoods. This is also codified in the Ohio Revised Code (ORC) Chapter 3750 and the Ohio Administrative Code Chapter 3750.

Location

Hazardous material spills can occur wherever hazardous materials are stored and during shipment to these facilities. **Figure 4.7.1** shows 108 spills reported to the Ohio EPA from January 2017 through December 2023.

Figure 4.7.1: Location of Spills Reported to the Ohio EMA



Extent

The EPA keeps records for Extremely Hazardous Substance facilities because these facilities have a greater probability of spills due to the higher amounts of hazardous materials at their sites. Each potentially hazardous material has varying levels of toxicity. The concentration of these materials are measured in parts-per-million to determine whether they present a threat. Many chemicals are safe at low amounts and low concentrations but can become dangerous and toxic at high amounts and concentrations. Additionally, some chemicals can be flammable and can become more volatile when exposed to oxygen. In ground spills, untreated chemical and waste spills can contaminate the soil and drinking water creating toxic and dangerous environmental conditions. Corrosive, flammable, and/or explosive chemicals can damage infrastructure depending on the location, amount spilled, and the circumstances of the incident. In worst-case scenarios, large spills can trigger community evacuations and the closing of public roadways for hazardous materials transport, which affects residents.

History

There have been 108 reported hazardous material spills and releases in Clinton County between January 2017 and December 2023. Estimated property and crop damages were not recorded. **Figure 4.7.1** shows the locations of hazardous materials spills within Clinton County as recorded by the Ohio Environmental Protection Agency (OEPA). **Table 4.7.2** shows the reported product, amount, year, and impacted waterway, if recorded.

Table 4.7.2: Spills Reported to the Ohio EMA

Reported Product	Reported Amount	Year	Waterway
Fuel Jet / Kerosene (All)	75 Gal	11/22/2024	
Other / All Other / Trade Name / Mixture / Solution etc..	2000 Lbs.	11/7/2024	
Diesel Fuel (Vehicle on or off road)		7/15/2024	
Chemical(s) Unk	100 Gal	5/28/2024	
Diesel Fuel (Vehicle on or off road)	20 Gal	5/22/2024	
Other / All Other / Trade Name / Mixture / Solution etc.		2/24/2024	
Diesel Fuel (Vehicle on or off road)		1/27/2024	
Fuel Oil/ Home Heating / Heating Oil		1/27/2024	
Material Unknown		1/27/2024	
Diesel Fuel (Vehicle on or off road)		1/23/2024	
Diesel Fuel (Vehicle on or off road)	100 Gal	1/2/2024	
Water (H20)		11/24/2023	
Sewage, Human		10/5/2023	eask
Chemical(s) Unk		9/26/2023	
Diesel Fuel (Vehicle on or off road)		9/26/2023	
Other / All Other / Trade Name / Mixture / Solution etc.		9/26/2023	
Diesel Fuel (Vehicle on or off road)	100 Gal	9/15/2023	

Reported Product	Reported Amount	Year	Waterway
Fuel Jet / Kerosene (All)	55 Gal	8/15/2023	
Waste Water	130 Gal	8/11/2023	
Air Odor All Other		8/8/2023	
Manure, Horse		8/1/2023	East Fork Todd Fork
Manure, Nos (Not Specified)		8/1/2023	East Fork Todd Fork
Diesel Fuel (Vehicle on or off road)	150 Gal	7/28/2023	Dutch Creek
Other / All Other / Trade Name / Mixture / Solution etc.	150 Gal	6/22/2023	
Material White		6/13/2023	Wilson Creek
Waste Water		6/13/2023	Wilson Creek
Diesel Fuel (Vehicle on or off road)		5/21/2023	
Oil Motor / Lube Oil / Vehicle	2 Gal	5/21/2023	
Diesel Fuel (Vehicle on or off road)		5/4/2023	Second Creek
Oil Hydraulic Fluid(s)		5/4/2023	Second Creek
Diesel Fuel (Vehicle on or off road)		4/28/2023	
Oil Hydraulic Fluid(s)		4/28/2023	
Diesel Fuel (Vehicle on or off road)		4/25/2023	
Nothing Found / No Spill Noted / Issue Not Founded		4/25/2023	
Oil Motor / Lube Oil / Vehicle	65 Gal	4/17/2023	
Antifreeze Vehicle Cooling		1/4/2023	
Battery Acid (Dilute Sulfuric)		1/4/2023	
Fuel Jet / Kerosene (All)		1/4/2023	
Oil Motor / Lube Oil / Vehicle		1/4/2023	
Diesel Fuel (Vehicle on or off road)	50 Gal	1/3/2023	
Oil Petroleum Not Otherwise Specified (Nos)		9/20/2022	
Fish Kill		8/13/2022	
Oil Hydraulic Fluid(s)		6/24/2022	
Sheen Rainbow / Hydrocarbon		5/26/2022	

Reported Product	Reported Amount	Year	Waterway
Diesel Fuel (Vehicle on or off road)	25 Gal	5/14/2022	
Air Odor Gasoline / Hydrocarbon		3/5/2022	
Fish Kill		3/5/2022	
Diesel Fuel (Vehicle on or off road)		3/5/2022	
Other / All Other / Trade Name / Mixture / Solution etc.		3/5/2022	
Oil Transformer Non-PCB	100 Gal	2/22/2022	
Fuel Gasoline (25% Ethanol Not E85)		1/12/2022	
Material Unknown		1/12/2022	
Diesel Fuel (Vehicle on or off road)		11/1/2021	
Fish Kill		9/1/2021	Anderson Fork
Nitrogen Fertilizer 28%		9/1/2021	Anderson Fork
Diesel Fuel (Vehicle on or off road)	40 Gal	8/8/2021	
Diesel Fuel (Vehicle on or off road)	90 Gal	6/9/2021	
Fuel Jet / Kerosene (All)		5/11/2021	
Antifreeze Vehicle Cooling		4/12/2021	
Diesel Fuel (Vehicle on or off road)		4/12/2021	
Oil Hydraulic Fluid(s)		4/12/2021	
Waste Water		4/6/2021	
Oil Motor / Lube Oil / Vehicle		3/29/2021	
Air Odor Gasoline / Hydrocarbon	49 Gal	1/22/2021	
Oil Petroleum Not Otherwise Specified (Nos)		1/22/2021	
Oil Transformer Non-PCB		11/16/2020	
Oil Transformer PCB		11/16/2020	
Solid Waste, Nos (Not Specified)		11/8/2020	Cowan Creek
Diesel Fuel (Vehicle on or off road)		9/10/2020	
Oil Motor / Lube Oil / Vehicle		9/10/2020	
Oil Hydraulic Fluid(s)	20 Gal	7/14/2020	
Oil Transformer Non-PCB	100 Gal	6/19/2020	
Anhydrous Ammonia (Nh3)		4/7/2020	Todd Fork
Fish Kill		4/7/2020	Todd Fork

Reported Product	Reported Amount	Year	Waterway
Air Fire Open Burning		3/8/2020	
Air Fire Open Burning		3/6/2020	
Air Fire Open Burning		1/17/2020	
Diesel Fuel (Vehicle on or off road)	300 Gal	1/15/2020	
Oil Transformer Non-PCB	18 Gal	1/13/2020	
Diesel Fuel (Vehicle on or off road)		1/11/2020	
Material Unknown		1/11/2020	
Fuel Gasoline (25% Ethanol Not E85)		11/12/2019	
Material Undetermined / Other		11/12/2019	
Diesel Fuel (Vehicle on or off road)	200 Gal	9/17/2019	
Diesel Fuel (Vehicle on or off road)	50 Gal	7/14/2019	
Air Fire Open Burning		7/12/2019	
Air Fire Tires		7/12/2019	
Oil Hydraulic Fluid(s)	65 Gal	6/24/2019	Indian Run
Ink / Printing Ink	40 Gal	5/10/2019	
Other / All Other / Trade Name / Mixture / Solution etc.		5/10/2019	
Diesel Fuel (Vehicle on or off road)		5/3/2019	
Material Undetermined / Other		5/3/2019	
Sheen Rainbow / Hydrocarbon		3/1/2019	
Diesel Fuel (Vehicle on or off road)		2/9/2019	
Diesel Fuel (Vehicle on or off road)		2/9/2019	
Diesel Fuel (Vehicle on or off road)		1/13/2019	
Antifreeze Vehicle Cooling		1/8/2019	
Material Undetermined / Other		1/8/2019	
Antifreeze Vehicle Cooling		12/11/2018	
Ethylene Glycol (C2H6O2)	2 Gal	12/11/2018	
Diesel Fuel (Vehicle on or off road)	50 Gal	9/28/2018	
Fertilizer(s) Nos (Not Specified)		9/6/2018	
Fish Kill		9/6/2018	
Fuel Oil/ Home Heating / Heating Oil	100 Gal	8/21/2018	
Fish Kill		7/30/2018	
Antifreeze Vehicle Cooling	100 Gal	7/25/2018	

Reported Product	Reported Amount	Year	Waterway
Nitrogen Fertilizer 28%	800 Gal	6/18/2018	
Fuel Gasoline (25% Ethanol Not E85)	1 Gal	6/9/2018	
Mineral Spirits / Stoddard Solvent / Paint Thinner	10 Gal	2/12/2018	
Ink / Printing Ink	1 Gal	1/11/2018	
Manure, Swine		11/28/2017	East Fork Little Miami River
Orphan Container(s)	12 Items	10/17/2017	
Ink / Printing Ink		10/5/2017	
Boil Alert / Boil Advisory / Drinking Water Issue(s)		9/29/2017	
Solid Waste Nos (Not Specified)		9/15/2017	Lytle Creek
Sewage Human		9/4/2017	Moore Branch
Boil Alert / Boil Advisory / Drinking Water Issue(s)		7/29/2017	
Boil Alert / Boil Advisory / Drinking Water Issue(s)		6/30/2017	
Resin Solution, Flammable		5/24/2017	

Source: Ohio EPA

Probability

Due to their unpredictable nature and the influence of human error, the probability of hazardous materials spills is difficult to quantify. However, there have been 77 spills between 2017 and 2023, averaging an approximate 11 spills per year. Since hazardous material spills can occur at any time, they should be considered likely events.

Vulnerability Assessment

Infrastructure Impact

Roadways, waterways, and groundwater may be impacted by hazardous materials spills. Road closures may occur as a direct or indirect result of hazardous materials spills.

Population Impact

The local population may be directly exposed to hazardous materials. If a large spill occurs, some residents may need to be evacuated and given shelter elsewhere. Hazardous material spills can lead to long-term impacts on the population, including future generations.

Property Damage

Depending on the chemical, property damage is likely. Properties near Extremely Hazardous Substance facilities are likely to be damaged during a spill.

Loss of Life

While some hazardous materials can be toxic, loss of life from hazardous materials spills is unlikely. It is possible, however, and extreme precautions should be taken in the event of a spill.

Economic Losses

Economic losses can occur from the loss of hazardous materials that may be needed in manufacturing or for other processes. Road closures may lead to slowed commerce, and businesses impacted by hazardous materials spills may suffer property damage, damage to goods, or be required to close.

Future Trends

Land Use and Development Trends

Development that has occurred since the previous plan and any future development near hazardous materials storage facilities may be impacted by hazardous materials spills. All land uses are equally impacted by potential hazardous materials spills.