5.4.11 Hazardous Materials Release

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the hazardous materials hazard in Warren County.

2016 Plan Update Changes

- For the 2016 Plan Update, the hazardous materials profile includes fixed-site and in-transit events. The hazard profile has been significantly enhanced to include a detailed hazard description, location, extent, previous occurrences, probability of future occurrence, and potential change in climate and its impacts on the hazardous materials hazard is discussed. The hazardous materials hazard is now located in Section 5 of the plan update.
- New and updated figures from federal and state agencies are incorporated.
- Previous occurrences were updated with events that occurred between 2008 and 2015.
- A vulnerability assessment was conducted for the hazardous materials hazard and it now directly follows the hazard profile.

5.4.11.1 Profile

Hazard Description

Hazardous materials are substances that are considered severely harmful to human health and the environment, as defined by the United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund Law). Many are commonly used substances which are harmless in their normal uses, but are quite dangerous if released. The Superfund law designates more than 800 substances as hazardous and identifies many more as potentially hazardous due to their characteristics and the circumstances of their release (USEPA 2013). Superfund's definition of a hazardous substance includes the following:

- Any element, compound, mixture, solution, or substance designated as hazardous under section 102 of CERCLA.
- Any hazardous substance designated under section 311(b)(2)(a) of the Clean Water Act (CWA), or any toxic pollutant listed under section 307(a) of the CWA. There are over 400 substances designated as either hazardous or toxic under the CWA.
- Any hazardous waste having the characteristics identified or listed under section 3001 of the Resource Conservation and Recovery Act.
- Any hazardous air pollutant listed under section 112 of the Clean Air Act, as amended. There are over 200 substances listed as hazardous air pollutants under the Clean Air Act (CAA).
- Any imminently hazardous chemical substance or mixture which the EPA Administrator has "taken action under" section 7 of the Toxic Substances Control Act (USEPA 2015).

If released or misused, hazardous substances can cause death, serious injury, long-lasting health effects, and damage to structures and other properties, as well as the environment. Many products containing hazardous substances are used and stored in homes and these products are shipped daily on highways, railroads, waterways, and pipelines.

Transportation of hazardous substances on highways involves tanker trucks or trailers, which are responsible for the greatest number of hazard substance release incidents. New Jersey is composed of over 39,213 miles of highway, many of which are used to transport hazardous substances (New Jersey Department of Transportation

[NJDOT] 2013). These roads cross rivers and streams at many points; hazardous substance spills on roads have the potential to pollute watersheds that serve as domestic water supplies for parts of the State. Potential also exists for hazardous substance releases to occur along rail lines as collisions and derailments of train cars can result in large spills.

Additionally, oil is shipped by rail throughout New Jersey. The adoption of hydraulic fracturing ("fracking") to extract oil and gas has led to an increase in the production and shipment of energy products. Lack of pipelines connecting the energy-producing regions with refineries or ports, coupled with the flexibility that railroad transportation provides, have resulted in significant shipments of oil by rail. Refineries in New Jersey are experiencing a surge in petroleum shipments by rail unit train ("rolling pipelines"). The top three rail-transported commodities in New Jersey are freight of all kinds, chemical products, and waste or scrap materials (NJ Transit 2015).

Pipelines can also transport hazardous liquids and flammable substances such as natural gas and petroleum. Incidents can occur when pipes corrode, when they are damaged during excavation, incorrectly operated, or damaged by other forces. In Warren County, there are several natural gas transmission pipelines in the Townships of Greenwich, Holland, Harmony and Pohatcong (National Pipeline Mapping System 2015).

The Warren County Hazardous Materials (HAZMAT) team was developed to support the County during a response of any HAZMAT or Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) incident. The team is made up of County employees who have completed the Hazardous Materials Technician course (Warren County Health Department 2015).

Location

The following provides information regarding the location of hazardous substance incidents.

Hazardous Substances Fixed Site

Many years ago, numerous wastes were dumped on the ground, in rivers, or left out in the open. As a result, thousands of uncontrolled or abandoned contaminated sites were created. These sites included abandoned warehouses, manufacturing facilities, processing plants, and landfills. In response to concerns regarding health and environmental risks, Congress established the Superfund program in 1980 to clean up these sites. The Superfund program is administered by the USEPA in cooperation with individual states (USEPA 2014). In New Jersey, the Department of Environmental Protection (NJDEP) Site Remediation Program oversees the Superfund program (NJDEP 2013).

Federal regulations, include the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) required that a National Priorities List (NPL) of sites throughout the United States be maintained and revised at least annually (NJDEP 2013).

Fixed-site facilities that use, manufacture, or store hazardous substances in New Jersey pose risk and must comply with Title III of the federal SARA. SARA was signed into law on October 17, 1986. It is a federal law that applies nationwide. It must be realized that this law is linked to N.J.S.A. 34:5A, the New Jersey Worker and Community Right to Know Act. SARA requires the governor of each state to establish a State Emergency Response Commission (SERC). New Jersey's SERC was established by Executive Order on February 13, 1987. SARA also requires that the emergency planning districts be established by the SERC. The Act specified that these districts can be existing political subdivisions. The function of the emergency planning district is to facilitate preparation and implementation of emergency plans. In New Jersey, all municipalities and counties

have been designated emergency planning districts (total of 588). The Local Emergency Planning Committees (LEPC) is the policy body for the emergency planning district (NJOEM 2002).

The State enacted the Toxic Catastrophe Prevention Act (TCPA), N.J.S.A. 13:1K-19 et seq. Currently, implementation of the requirements established under this Act is facilitated by the TCPA Program. Certain industrial facilities using materials considered extraordinarily hazardous must take steps to prevent releases and protect public safety. New Jersey has also mandated that facilities storing large quantities of hazardous substances take preventative measures to reduce the likelihood of a leak or discharge. Established under the New Jersey Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), these requirements include testing and inspection of storage tanks, training of employees, and emergency response planning. The Discharge Prevention Containment and Countermeasure (DPCC) program facilitates implementation of these requirements. Regulations related to reporting of chemical and petroleum discharges are also administered under this program. The Program is sometimes referred to by the acronym DPCC, which refers to an important preparedness document that major facilities develop under the program (NJDEP 2015).

The Community Right to Know (CRTK) program collects, processes, and disseminates the chemical inventory, environmental release and materials accounting data required to be reported under the New Jersey Worker and Community Right to Know Act, N.J.S.A.34:5A and the federal Emergency Planning and Community Right to Know Act of 1986 (EPCRA). EPCRA is also known as Title III of the SARA. This information is used by the public, emergency planners, and first responders to determine the chemical hazards in the community (NJDEP 2012). In Warren County, there are three Superfund sites (USEPA 2015).

New Jersey employers, whose businesses are assigned covered North American Industry Classification System (NAICS) codes listed in the New Jersey Worker and Community Right to Know (CRTK) regulations, are required to submit CRTK surveys listing the environmental hazardous substances (EHSs) present at their facilities in quantities that exceed 500 pounds, unless the EHS is on the federal Emergency Planning and Community Right to Know Act (EPCRA) Section 302 list of extremely hazardous substances with a lower reporting threshold. In addition, Section 312 of EPCRA requires owners and operators of federal facilities and private sector facilities that are subject to the United States Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard to report their inventories of any chemical that requires a Materials Safety Data Sheet (MSDS) of safety data sheets (SDS) and is present on site in quantities that exceed 10,000 pounds, unless the chemical is an Extremely Hazardous Substance with a lower reporting threshold (NJDEP 2011).

Owners and operators of manufacturing, and select non-manufacturing companies, having the equivalent of 10 or more full-time employees, and manufacturing, importing, processing or otherwise using toxic chemicals listed on the EPCRA Section 313 (TRI) list in quantities that exceed specified thresholds, are required to annually report their releases of these chemicals for the previous year. Approximately 500 New Jersey companies are required to file federal Toxic Chemical Release Inventory (TRI) forms. TRI Form R requires the listing of environmental releases, on-site waste management and off-site transfers while the simplified Form A Certification Statement requires the listing of the chemical only. These companies are also required to submit to NJDEP the Release and Pollution Prevention Report (RPPR) listing the quantities of environmental release, on-site waste management, waste transfer, and chemical throughput information. Most of these facilities are also subject to Pollution Prevention Planning Requirements and, therefore, required to report pollution prevention progress information on the RPPR (NJDEP 2011).

The NJDEP maintains a list of Known Contaminated Sites of New Jersey (KCSNJ). It is an inventory that includes all sites in the State where contamination is known to exist. The remediation for these sites is currently

active or pending in the NJDEP's Site Remediation Program (SRP). As of April 17, 2012, there are over 13,000 active KCSNJ sites in New Jersey, with 139 of those sites in Warren County (NJDEP 2012).

The Right-to-Know Network

The Right-to-Know Network provides access to databases and resources on the environment. The databases include: Toxic Release Inventory (TRI), National Response Center Spills and Accidents (ERNS), Risk Management Plans (RMP), Hazardous Waste Biennial Reporting System (BRS), and Resource Conservation and Recovery Act Information System - violations and permits (RCRIS).

- Toxic Release Inventory (TRI) Database - TRI is a database of information about releases and transfers of toxic chemicals from facilities in certain industrial sectors, including manufacturing, waste handling, mining, and electricity generation. Facilities must also report the total amount of toxic chemicals in waste that they produce.
- National Response Center (NRC) Spills and Accidents database - the Spills and Accidents database contains data on toxic chemical spills and other accidents reported to the NRC. This database used to be called ERNS, the Emergency Response Notification System, and is still referred to as ERNS in many situations. Incidents reported to NRC range from minor to serious, from an oil-sheen on water to a release of thousands of gallons. NRC reports are extensive, but also known to be incomplete, as many incidents are never reported, and those that are reported generally are not subject to verification.
- Risk Management Plan (RMP) database - Federal law requires industrial facilities that use large amounts of extremely hazardous substances to file a RMP with the U.S. Environmental Protection Agency (EPA). These RMP data are intended to save lives, protect property, and prevent pollution. In particular, some industrial facilities are switching to safer and more secure chemicals that reduce the danger to employees and surrounding communities. EPA does not release to the public some of the most important data in the RMP database; these data can only be obtained by going to a federal reading room.
- Biennial Reporting System (BRS) database – the BRS database contains data on the generation, shipment, and receipt of hazardous waste. BRS contains information from the Hazardous Waste Reports that must be filed every two years under the Resource Conservation and Recovery Act (RCRA), the Federal statute that regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous waste.
- Resource Conservation and Recovery Act Information System (RCRIS) database – this database contains data on hazardous waste handler permits and activities. The RCRIS database, unlike many EPA databases, does not have "reporting years". It is a continuously updated set of data that includes records from the early years of RCRA through the present.

Between 1989 and 2011, there were 103 facilities in Warren County that generated 59,628 tons of hazardous waste. Most of the waste was generated (47%) as part of production processes at facilities within the County, while 36% was from pollution control, spills and remediation. The Town of Belvidere had the largest amount of waste generated between 1989 and 2011 (25,959 tons) followed by the Town of Phillipsburg (15,072 tons) (Right to Know Network 2015).

The County HAZMAT team maintains effective coordination and information sharing related to hazardous material sites with NJOEM and the Right-to-Know Network.

Hazardous Substances In-Transit

Incidents involving hazardous substances in transit can occur anywhere in Warren County. The main concerns in the County are highways and railroads. Bakken oil is a major concern for the County. CSX and Norfolk Southern rail cars are used to move Bakken crude oil, posing a threat to communities that are located along these

rail lines. Bakken crude is lighter and more flammable than other oils, making it more dangerous to transport than other types of crude oil; thus, posing a large threat to those living near the rail corridors.

Rail corridors are important features of Warren County and some of the active railroads play an important role in the County's economy. There are currently two rail freight operators providing service on three rail freight lines in Warren County. The rail lines are located in the middle and southern portion of the County and provide service between Hackettstown and the Phillipsburg/Alpha area. The two major railroads serving the northern New Jersey area are CSX Transportation and Norfolk Southern Railway. In addition, the Belvidere and Delaware River Railroad is a short line railroad with 16 miles in Warren County. Norfolk Southern has a major railroad presence in the County and operates from the former Lehigh Valley/Conrail main line known was the Lehigh Line. This line operates between Newark Oak Island, Allentown, and Harrisburg/Enola Yards. This line typically has a high volume of trains and the tracks were altered to double stack clearance (Warren County Planning 2005).

The Belvidere Delaware (Bel-Del) Railroad is a short line that runs between Hudson Yard in Phillipsburg to Milford along the Delaware River. The Bel-Del serves the Jersey Central Power Plant in Milford, lumber yards in Phillipsburg, a quarry in Carpentersville, and paper mills in Hunterdon County. Norfolk Southern also operates the upper portion of the former Bel-Del Railroad out of Allentown Yard. Local service is provided to industries along the line and to two coal powered generating plants in Martins Creek, PA and Portland, PA. Additionally, Norfolk Southern operates the former Delaware Lackawanna & Western Line between Phillipsburg, Washington, Hackettstown, Port Morris, and Dover (Warren County Planning 2005).

Major highways in the County over which hazardous materials are transported daily include Interstates 80 and 78; U.S. Highways 46; and State Highways 94, 57 and 31. Figure 5.4.11-1 shows the major transportation routes in the County.

Extent

The extent (or severity) of a hazardous material release relates primarily to its impact on human health and safety and on the threat to the environment. As for hazardous material incidents through transportation, the severity is similar to that of a fixed-site incident. Threat to human health and safety includes: poisoning of water or food sources and/or supply; presence of toxic fumes or explosive conditions; damage to personal property; need for the evacuation of people; and interference with public or commercial transportation. Threats to the environment include: injury or loss of animals or plants or habitats that are of economic or ecological importance such as commercial, recreation, or subsistence fisheries or livestock; impact to recreational areas such as public beaches; and impact to ecological reserves, forests, parks, archaeological and cultural sites.

There is a system used for classifying hazardous material responses. The classification is broken down into three categories which are based on three levels of response function:

- Level 1 – emergencies involving minor situations requiring defensive actions only
- Level 2 – emergencies often requiring only defensive actions but may involve some offensive response
- Level 3 – emergencies requiring more involved defensive and offensive actions and will most likely involve consideration such as public exposure and/or evacuation.

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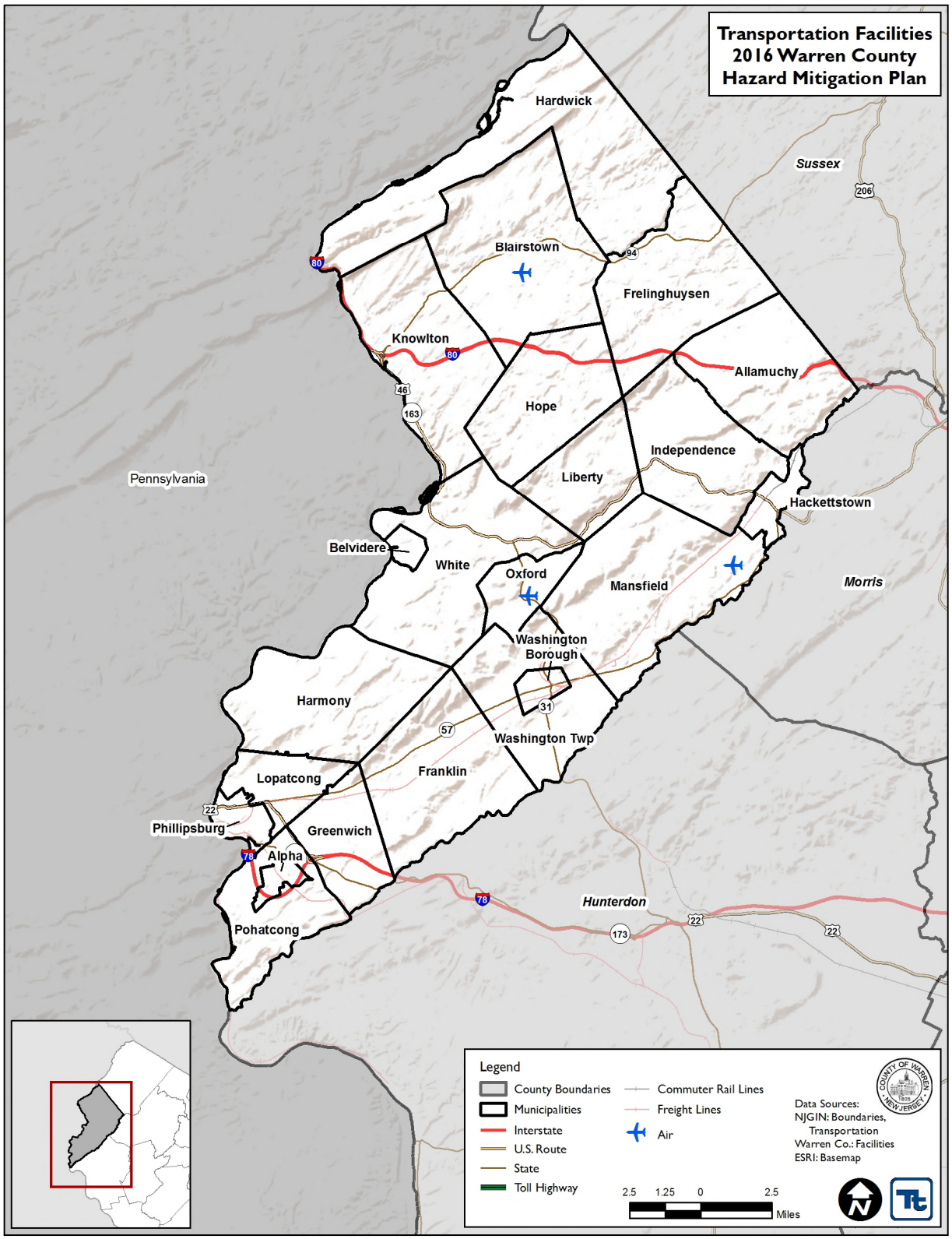
Figure 5.4.11-1. Major Transportation Routes in Warren County



Source: NJGIN

Previous Occurrences and Losses

The U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) provides an incident report database for information on incidents throughout the U.S. The data is from the hazardous materials incident report. According to this database, between 2008 and 2014, there have been 10 incidents in Warren County (six highway and four water) (PHMSA 2015). Hazardous substances incidents on-site or in-transit occur frequently across the State and in Warren County. These incidents are typically small, localized events. EPA maintains records of the amount of chemicals released at facilities each year in the EPA Release Chemical Report. Between 2008 and 2013, Warren County had a total of 4,605,443 pounds of on-site disposal or other release and off-site disposal or other releases reported by facilities within the Toxic Release Inventory (TRI) Program (U.S. EPA 2015).

For this 2016 Plan Update, known hazardous substances incidents that have impacted Warren County between 2008 and 2015 are identified in Appendix E. Between 1954 and 2015, the State of New Jersey was not included in any FEMA declared disasters (DR) or emergencies (EM) related to hazardous substances incidents (FEMA 2015). For events prior to 2008, please refer to the 2011 Warren County HMP. Please note that not all events that have occurred in Warren County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.

Probability of Future Occurrences

Predicting future hazardous substance incidents in Warren County is difficult. They can occur at anytime and anywhere in the County. Incidents can be sudden without any warning or slowly develop. Small spills, both fixed site and in-transit, occur throughout the year and the probability for these events are high. The risk of major incidents in a given year is rare. It is estimated that the County will continue to experience direct and indirect impacts of hazardous substance incidents annually that may induce secondary hazards such as infrastructure deterioration or failure, water quality and supply concerns, and transportation delays, accidents and inconveniences.

According to the North American Hazmat Situations and Deployments Map, Warren County has experienced 25 hazardous materials incidents between 1950 and 2015; however, this may not include all incidents that have occurred in the County. This data was used to determine the recurrence interval and the average annual number of events for Warren County. The table below shows these statistics, as well as the annual average number of events and the estimated percent chance of an incident occurring in a given year (NOAA NCDC 2015).

Table 5.4.11-1. Probability of Future Occurrence of Hazardous Materials Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence	Recurrence Interval (in years)	Probability of event Occurring in Any Given Year	% Chance of Occurring in Any Given Year
Hazardous Materials	25	0.38	2.64	0.38	37.88%

Source: North American Hazmat Situations and Deployments Map 2015

In Section 5.3, the identified hazards of concern for Warren County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for the release of hazardous substances in the County is considered 'frequent' (likely to occur within 25 years, as presented in Table 5.3-3).

Climate Change Impacts

Hazardous substance incidents are non-natural incidents; therefore, there are no implications for impacts from climate change.

5.4.11.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the hazardous substances hazard, all of Warren County is exposed to the hazard. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Section 4), are exposed and potentially vulnerable to the release of hazardous substances. The following text evaluates and estimates the potential impact of the hazardous substances hazard on the County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2011 Warren County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

Overview of Vulnerability

Overall, it is difficult to quantify potential losses of hazardous substances incidents due to the many variables and human elements. Human safety and welfare can become compromised from negative health effects of poisoning or exposure to toxic substances, fires, or explosions.

Data and Methodology

For this hazard, data was obtained from the U.S. Environmental Protection Agency.

Impact on Life, Health and Safety

The U.S. EPA Hazardous Waste Report, which is a biennial report, collects data on the generation, management, and minimization of hazardous waste. This report provides detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage, and disposal facilities. This report lists 542 EPA-regulated facilities in Warren County.

As noted earlier, Superfund is a program administered by the U.S. EPA to locate, investigate, and cleanup the worst hazardous waste sites throughout the U.S. Data from the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database indicated that Warren County has eight Superfund sites located throughout the County; four in Phillipsburg, one in Belvidere and three in Washington (U.S. EPA 2015).

Depending on the type and quantity of chemicals released and the weather conditions, an incident can affect larger areas that cross jurisdictional boundaries. When hazardous substances are released in the air, water or on land they may contaminate the environment and pose greater danger to human health. The general population may be exposed to a hazardous substances release through inhalation, ingestion, absorption, injection or dermal exposure. Exposure may be either acute or chronic, depending upon the nature of the substance and extent of release and contamination.

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Due to the location of these different hazardous substance and waste sites in Warren County, the entire County is considered vulnerable to this hazard. Those particularly vulnerable to the effects of hazardous substances incidents are populations located along major transportation routes because of the quantities of chemicals transported on these major thoroughfares. Potential losses from hazardous substances incidences include human health and life and property resources. These types of incidents can lead to injury, illnesses, and/or death from both the involved persons and those living in the impacted areas.

Impact on General Building Stock

Potential losses to the general building stock caused by a hazardous substances incident is difficult to quantify. The degree of damages to the general building stock depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination and/or potential structural and content losses if an explosion occurs.

Impact on Critical Facilities

Potential losses to critical facilities caused by a hazardous substances incident is also difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination and/or potential structural and content losses if an explosion occurs. Refer to Section 4 (County Profile) which summarizes the number and type of critical facilities in Warren County.

Impact on Economy

If a significant hazardous substances incident occurred, not only would life, safety, and building stock be at risk, but the economy of Warren County may be impacted as well. A significant incident in an urban area may force businesses to close for an extended period of time because on contamination or direct damage caused by an explosion, if one occurred. The exact impact on the economy is difficult to determine, given the uncertain nature of the size and scope of incidents.

Hazardous substances incidents have the potential to lead to major transportation route closures in Warren County. The closure of waterways, railroads, airports, and highways as a result of these incidents has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may be local, regional, or statewide, depending on the magnitude of the event and the level of services disruptions.

Future Growth and Development

As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Warren County. Any areas of growth could be potentially impacted by hazardous substances incidents because the entire County is exposed and vulnerable. An increase in development and population has the ability to increase the likelihood of a hazardous substance incident. Future migration to larger jurisdictions may also increase the likelihood of an incident. Please refer to the specific areas of development indicated in tabular form and/or on the hazard maps included in the jurisdictional annexes in Volume II, Section 9 of this plan.

Effect of Climate Change on Vulnerability

A hazardous substance incident is a human-caused hazard; therefore, no climate change impacts are associated with the hazard.

Change of Vulnerability

Overall, the County's vulnerability has not changed; however, the increased transport of Bakken oil via rail through the County may increase the risk to areas along the rail lines. The entire County will continue to be exposed and vulnerable to hazardous substances incidents.

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Additional Data and Next Steps

For the Plan Update, any additional information regarding localized concerns and past impacts will be collected and analyzed. This data will be developed to support future revisions to the plan. Mitigation efforts could include building on existing New Jersey, Warren County, and local efforts.

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