



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 5
 77 WEST JACKSON BOULEVARD
 CHICAGO, IL 60604-3590


April 25, 2023

REPLY TO THE ATTENTION OF:
 S-6J

MEMORANDUM

SUBJECT: Request for an Exemption from the \$2 Million Statutory Limit for the Time-Critical Removal Action at the East Palestine Train Derailment Site, East Palestine, Columbiana County, Ohio (Site ID # C5XR)

FROM: Doug Ballotti, Director
 Superfund and Emergency Response Division

 Digitally signed by
 TIMOTHY FISCHER
 Date: 2023.04.25
 15:37:07 -05'00' *for*

THRU: Dana Stalcup, Acting Director
 Office of Emergency Management

DANA STALCUP Digitally signed by DANA
 STALCUP
 Date: 2023.04.27 20:54:38 -04'00'

TO: Barry N. Breen, Acting Assistant Administrator
 Office of Land and Emergency Management

The purpose of this memorandum is to request your approval to expend up to \$34,438,166.83 to continue oversight activities related to the actions described in the Enforcement Action Memorandum and to request an exemption from the \$2 million statutory limit at the East Palestine Train Derailment Site (the Site) located in the Village of East Palestine, Columbiana County, Ohio.

On February 18, 2023, authorization to spend up to \$250,000 was granted by the Section Supervisor of the Emergency Response Section 1 and the Branch Manager of Emergency Response Branch 1 to begin emergency removal actions outlined in the Enforcement Action Memorandum. EPA coordinated with the Emergency and Rapid Response Removal Services (ERRS) contractor for mobilization. EPA and ERRS scoped out the project requirement and requested an immediate ceiling increase to \$1,500,000.00 which was approved by the SEMD Division Director on February 21, 2023.

This Action Memorandum has been reviewed by the Office of Regional Counsel. Additionally, I have consulted with Debra Shore, the Region 5 Administrator on the scope and proposed funding associated with this Action Memo, and it is being submitted on behalf of the Regional Administrator. We are seeking your approval of Region 5's request for an exemption from the \$2 Million Statutory Limit to continue oversight actions at the East Palestine Train Derailment Site.

Attachments



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SUBJECT: **ACTION MEMORANDUM:** Request for an Exemption from the \$2 Million Statutory Limit for the Time-Critical Removal Action at the East Palestine Train Derailment Site, East Palestine, Columbiana County, Ohio (Site ID # C5XR).

FROM: Douglas Ballotti, Director
Superfund and Emergency Management Division

Handwritten signature of Douglas Ballotti in black ink, positioned above a horizontal line.

THRU: Dana Stalcup, Acting Director
Office of Emergency Management

Handwritten signature of Dana Stalcup in black ink, positioned above a horizontal line.

TO: Barry N. Breen, Acting Assistant Administrator
Office of Land and Emergency Management

I. PURPOSE

The purpose of this memorandum is to request and document your approval to expend up to \$34,438,166.83 to continue oversight activities related to the actions described in the Enforcement Action Memorandum (AR #9) and to request an exemption from the \$2 million statutory limit at the East Palestine Train Derailment Site (the Site) located in the Village of East Palestine, Columbiana County, Ohio.

On February 18, 2023, authorization to spend up to \$250,000 was granted (via email) (AR #7) by the Section Supervisor of the Emergency Response Section 1 and the Branch Manager of Emergency Response Branch 1 to begin emergency removal actions outlined in the Enforcement Action Memorandum. EPA coordinated with the Emergency and Rapid Response Removal Services (ERRS) contractor for mobilization. EPA and ERRS scoped out the project requirement and requested an

immediate ceiling increase to \$1,500,000.00 which was approved by the Branch Manager of the Emergency Response Branch 1 (via email) after consultation with the Superfund Emergency Management Division Director (verbal) on February 21, 2023 (AR #8).

The proposed removal action will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9604(a)(1), to abate or eliminate the immediate threat posed to public health and/or the environment by the release into the environment and presence of the hazardous substances and/or pollutants or contaminants. The uncontrolled conditions of the hazardous substances and/or pollutants or contaminants present at the Site require that this action be classified as a continuing time-critical removal action. The removal is expected to require approximately 180 working days to complete.

The actions proposed within this Action Memo for the East Palestine Train Derailment Site, do not deviate from any Agency Policies. More specifically, the action is consistent with the EPA's 2009 *Superfund Removal Guidance for Preparing Action Memoranda*, as amended by 2021 *Changes to Nationally Significant and Precedent Setting Categories* Memo and does not involve any categories that would be considered nationally significant or precedent setting. Therefore, this site does not require any additional consultation or concurrence requirements. Additionally, the East Palestine Train Derailment Site is not on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

Name: East Palestine Train Derailment Site (Site ID: C5XR)

CERCLIS ID:

Site Location: East Palestine, Columbiana County, Ohio

Lat/Long: 40.8360864; -80.5215884

RCRA ID:

State ID:

Potentially Responsible Parties (PRP): Norfolk Southern Railway Company

NPL Status: Non NPL

Category: Emergency and Time-Critical Removal Action

A. Site Description

A train derailment and a subsequent fire occurred at approximately 20:55 eastern standard time (EST) on February 3, 2023, in East Palestine, Columbiana County, Ohio, less than a mile from the Ohio-Pennsylvania border. Norfolk Southern Railway Company (Norfolk Southern) reported the incident at 22:53 EST to the National Response Center (NRC) (AR #9). EPA mobilized to the Site with EPA Superfund Technical Assessment and Response Team (START) at approximately 23:30 EST on February 3, 2023. An EPA On-Scene Coordinator arrived on Site at approximately 2:00 EST February 4, 2023. Norfolk Southern, Ohio Environmental Protection Agency (Ohio EPA), Columbiana County, Village of East Palestine, Pennsylvania Department of Environmental Protection (Pennsylvania DEP), Ohio Department of Natural Resources (ODNR), Butler County Incident Management Team (IMT), Federal Railroad Administration (FRA), National Transportation Safety Board (NTSB), and other agencies also mobilized to the Site. EPA coordinated with the Interagency Modeling and Atmospheric

Assessment Center (IMAAC) to provide plume modeling throughout the duration of the derailment fire. EPA was provided with a train consist by Norfolk Southern on February 4, 2023 (AR #9).

At the time of the initial report, the number of derailed cars (of the 149 cars on the train) was unknown but 20 of the cars were listed as carrying hazardous materials (HazMat), as described below:

- Vinyl Chloride, Stabilized (5)
- Sulfuric Acid (5)
- Ethylene Glycol Monobutyl Ether (1)
- Butyl Acrylates, Stabilized (2)
- Combustible Liquids nos (1)
- Isobutylene (1)
- Ethyl-Hexyl Acrylate (1)
- Residue – last contained liquified petroleum gas (LPG) (1)
- Residue – last contained Benzene (2)

The derailment resulted in a large fire affecting numerous rail cars, including HazMat rail cars, although the status (e.g., breached, burning, etc) was initially unknown due to safety concerns associated with the fire as well as the position of the derailed cars, which affected the ability of the responders to identify which rail cars were actively breached and/or burning (AR #9). Initially a shelter-in-place order was recommended, and firefighting efforts were stood down due to safety concerns; however, an evacuation order was enacted by the Village of East Palestine on February 4, 2023. The fire continued to burn throughout the following days.

By February 4, 2023, water quality impacts to Sulphur Run were evident due to runoff from the derailment fire. Containment measures were implemented by Norfolk Southern; however, complete containment was not viable. Containment and recovery resources, including vacuum trucks and aerators, were mobilized to the Site and containment boom was placed within Sulphur Run. Underflow dams (2) were constructed on Sulphur Run on February 5, 2023. Negative impacts, most notably a significant fish kill, were noted due to the release to Sulphur Run and subsequent downstream waterways, including Leslie Run. On February 5, EPA collected surface water samples (3) from Sulphur Run, which showed elevated levels of contaminants of concern. Drinking water intakes along the Ohio River were also notified of the spill on February 5, 2023.

On February 6, due to concerns of a catastrophic boiling liquid expanding vapor explosion (BLEVE) after a pressure relief valve failed and internal temperatures were increasing within one of the vinyl chloride rail cars, Norfolk Southern, in consultation with Ohio response officials, made the decision to conduct a ‘controlled burn’ of the contents of the vinyl chloride rail car. Norfolk Southern subsequently informed the Incident Command that all five (5) rail cars containing vinyl chloride would have to be involved in the ‘controlled burn’ due to their proximity to the reacting rail car. Norfolk Southern developed a plan to breach and flare the contents of the rail cars within a trench. The Ohio National Guard and State Highway Patrol were mobilized to the Village of East Palestine to control ingress/egress and to ensure all residents were evacuated from their residences prior to, during, and after the ‘controlled burn’ operation pursuant to evacuation orders issued by the State of Ohio and the Commonwealth of Pennsylvania, with an extended evacuation zone of one by two miles. IMAAC and the Ohio National Guard, in conjunction with experts from the Defense Department, provided updated modeling for the

anticipated plume of the release. TransCanada Energy stopped and purged their natural gas pipeline within the area as a preventative measure.

The ‘controlled burn’ occurred on February 6 at approximately 16:30 EST by Norfolk Southern. The fire in the trench associated with the ‘controlled burn’ was reported to be out by 21:00 EST. Derailment rail car fires continued through February 7. EPA conducted stationary and roaming air monitoring surrounding the area throughout the operation. As part of air monitoring, EPA deployed AreaRAE Pro units which monitored volatile organic compounds (VOCs), hydrogen cyanide (HCN), carbon monoxide (CO), hydrogen sulfide (H₂S), and lower explosive limit (LEL). Single Point Monitor (SPM) Flex units were also deployed to monitor phosgene and mineral acids. Roaming air monitoring teams screened for particulates (particulate matter [PM] 2.5 and PM 10), hydrogen cyanide (HCN), benzene, phosgene, and mineral acids. During the ‘controlled burn,’ low levels of phosgene (23 parts per billion [ppb]) and HCL (0.02 to 1.37 ppb) were observed within the plume but below the screening levels of 0.04 parts per million (ppm) and 1.8 ppm, respectively. One (1) eight (8)-hour SUMMA Canister was deployed at the center of the smoke plume just prior to the ‘controlled burn’ operation which was analyzed for TO-15 volatile organics. EPA’s Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft mobilized to the Site on February 5 and conducted two survey and monitoring overflights on February 7.

Rail car fires were extinguished, and the Evacuation Order was lifted by Fire Chief of the Village of East Palestine on February 8, 2023. A ‘Home Safely Plan,’ which included voluntary residential air screening, was offered by Norfolk Southern with EPA oversight. Containment measures within affected waterways were enhanced and continued and wrecking equipment was mobilized by Norfolk Southern to begin clearing rail cars and debris from the immediate railway area, with evident gross contamination and areas of free product throughout the derailment area. Debris and rail cars in the immediate rail area were removed, temporary tracks were laid, and the railway became active again on February 8.

Due to significant contamination of the wreck area with spilled product from the derailment, water was diverted from an upstream wetland area to a point further downstream in Sulphur Run in order to bypass the areas of gross contamination within the wreck area and to prevent additional contamination from mobilizing downstream (‘Sulphur Run Bypass’).

EPA issued a General Notice of Potential Liability to Norfolk Southern on February 10, 2023 (AR #9). Ohio EPA issued a Notice of Violation letter on February 10, 2023 (AR #9).

1. Removal Site Evaluation

EPA issued a Unilateral Administrative Order (UAO) on February 21, 2023, to the PRP to conduct response actions at the site due to the train derailment, release of hazardous substances, pollutants, or contaminants and subsequent fire. All actions outlined in the UAO need to be completed for the protection of human health and the environment.

2. Physical location

The Site is located in and around East Palestine, Columbiana County, Ohio (-80.5215884°W, 40.8360864°N). The Site consists of the East Palestine Derailment area within and around East

Palestine, Columbiana County, Ohio and surrounding areas, including Beaver County, Pennsylvania. Norfolk Southern Railway Company owns and operates a Class I freight railroad which transects the Site from eastern Ohio to western Pennsylvania. The areas surrounding the railroad are mixed use commercial, industrial, and residential within East Palestine, OH. Areas outside the Village of East Palestine are primarily residential agricultural use. Darlington Township, Pennsylvania is located southeast of the derailment location.

3. Site characteristics

The Site consists of the East Palestine Derailment area within and around East Palestine, Columbiana County, Ohio and surrounding areas, including Beaver County, Pennsylvania. Two unnamed ditches lie on either side of the tracks (north ditch and south ditch). The ditches discharge into Sulphur Run, which flows southwest into Leslie Run, a Coldwater Habitat designated stream in Ohio. Coldwater Habitat is a State of Ohio water quality designation that identifies waters capable of supporting populations of native coldwater fish and associated vertebrate and invertebrate organisms and plants on an annual basis. Downstream of Leslie Run is Bull Creek, North Fork Little Beaver Creek, and the Ohio River.

Local topography lies within a valley approximately 1000 ft above sea level. Valleys and rolling hills in the area slope to the west and south. Surface geology is typically characterized as end moraines and high valley sided terraces. Bedrock geology is composed of Allegheny and Conemaugh groups with a major constituent being sandstone with minor constituents of clay, limestone, shale, and coal.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

A release or threat of release of hazardous substances, pollutants, or contaminants is present at the Site. There is a documented release into the environment and presence of hazardous substances, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), onsite, including vinyl chloride, benzene, and wastes consistent with the parameters likely to be classified as characteristically hazardous including for toxicity; and pollutants and contaminants as defined by Section 101(33) of CERCLA, 42 U.S.C. § 9601(33).

Human exposure can occur from inhalation of ambient air vapors; inhalation via fugitive dust generation; dermal contact with spilled contaminants; incidental ingestion of material due to potential drinking water contamination; and incidental ingestion of material following dermal contact.

Potential human receptors include nearby residents and community members, emergency response workers, and recreators within affected waterways.

A significant amount of chemicals including vinyl chloride, benzene, sulfuric acid, ethylene glycol monobutyl ether, butyl acrylates and isobutylene and ethyl-hexyl acrylate (AR#6) were being transported by railcars by Norfolk Southern when the derailment occurred, releasing some of these materials to the ground, some of which were consumed by the subsequent fire. Several of these chemicals display hazardous characteristics (corrosive, ignitable, toxic, reactive). See Section III., Table 2 for a summary of chemicals displaying hazardous characteristics. Further, three chemicals (benzene, vinyl chloride, and

sulfuric acid) are considered ‘hazardous substances’ as defined in Table 302.4 in Section 101(14) of CERCLA (40 CFR 302.4). See Section III., Table 1 for a list of CERCLA hazardous substances.

Animal exposure has occurred including a documented fish kill of an estimated 3,500 fish of at least 12 different species (AR#9). Additional animal exposure can occur through contaminated waterways via inhalation, ingestion, and dermal contact for aquatic and riparian species.

5. NPL status

This Site is not on the NPL and has not been proposed for listing on the NPL. The Site has not received a Hazard Ranking Score or been referred to the NPL Site Assessment program.

6. Maps, pictures and other graphic representations

Figures

1. Site Location Map
2. Site Layout Map

7. Environmental Justice Analysis

An Environmental Justice (EJ) analysis for the Site is contained in Attachment 3. Screeners of the surrounding area used Region 5’s EJScreen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the Site and determined that there is a potential for EJ concerns at the Site.

B. Other Actions to Date

1. Previous actions

Refer to Section II.A of this Memorandum.

2. Current actions

EPA is coordinating with the identified Potentially Responsible Party, Norfolk Southern, the Ohio EPA, Columbiana County Emergency Management Agency, the Village of East Palestine, ODNR, Federal Emergency Management Agency (FEMA) Region 5, representatives of the Commonwealth of Pennsylvania and other agencies to coordinate cleanup efforts and delineate the extent of contamination under a Unified Command structure. All actions being performed by the PRP are being overseen by EPA, Ohio EPA, or another agency under Unified Command. EPA issued a Unilateral Administrative Order on February 21, 2023, and became the lead Agency under Unified Command for the incident.

Current EPA actions include establishment and maintenance of a Unified Command structure to manage the response as well as oversight (including split sampling) of all PRP actions.

Actions currently being performed by the PRP include:

- Excavation, temporary staging, management, transportation and disposal of contaminated solids located along the railway (including contamination located beneath the railway), including the delivery of a Characterization and Remediation Work Plan for Derailment-Area Soil and a Waste Sampling and Management Plan
- Management, temporary storage, transportation and disposal of contaminated liquids
- Delineating surface soil contamination through implementation of a Phase 1 – Residential/Agricultural/commercial Soil Sampling Plan
- Delineating ground water contamination through the installation of monitoring wells and delivery of a Groundwater Characterization Work Plan and Sentinel Monitoring Well and Groundwater characterization Work Plan
- Delineating drinking water contamination through sampling of private and public water supplies
- Delineating surface water contamination through sampling of the tributary system to the Ohio River and delivery of a Surface Water Sampling Plan
- Cleaning surface water and sediment through the use of air sparges
- Planning for delineation of sediment contamination by delivery of a Sediment Sampling Work Plan
- Performing community and worker air monitoring, sampling and analysis
- Responding to community concerns and reimbursing community members for expenses occurred for temporary relocation, including delivery of a Community Impact Mitigation Plan

C. State and Local Authorities' Roles

1. State and local actions to date

As a member of Unified Command, the State continues in an active oversight role for all actions being performed by the PRP. State of Ohio representatives review and approve all plan submittals to ensure the State's needs are met. Representatives from the Commonwealth of Pennsylvania also participate in the Unified Command structure at the Site and provide input to all plans associated with the site.

Local authorities continue in an active role in Unified Command by assuring that community needs are met and have the responsibility for sampling all private drinking water wells in the affected area. Local authorities also help provide meeting space for public events and are actively helping coordinate activities with the local community.

2. Potential for continued State/local response

Ohio EPA will continue to maintain presence and authority at the response during the remaining response phase at the Site as a member of the Unified Command. Representatives from the Commonwealth of Pennsylvania are also expected to continue participation in the Unified Command structure at the Site. Local response agencies are also maintaining presence onsite due to the nature and complexity of the response.

III. THREATS TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions remaining at the Site present a potential threat to the public health or welfare, and the environment, and meet the criteria for a time-critical removal action as provided for in the 40 C.F.R. § 300.415(b)(2) of the NCP. These criteria include, but are not limited to, the following:

40 C.F.R. § 300.415(b)(2)(i). Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

The hazardous substances in Table 1 were documented in transport and involved in the derailment.

Chemical	CAS#
Vinyl Chloride	75-01-4
Ethylene Glycol Monobutyl Ether	111-76-2
Isobutylene	115-11-7
Ethyl-Hexyl Acrylate	103-11-7
Residue – last contained Benzene	71-43-2
Butyl Acrylates	141-32-2

Table 1. CERCLA hazardous substances as provided by Norfolk Southern Consist.

In addition, U.S. EPA conducted a review of all Safety Data Sheets (SDSs) and found many with hazardous characteristics, as shown in Table 2.

Characteristic	Number of Chemicals
Toxic	7
Ignitable	6
Corrosive	2
Reactive	2

Table 2. Number and characteristics of chemical Safety Data Sheets as provided by Norfolk Southern Consist.

Actual and potential exposures to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants has occurred due to the derailment. There is a documented presence of hazardous substances, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), including vinyl chloride, sulfuric acid, ethylene glycol monobutyl ether, ethyl hexyl acrylate, isobutylene, benzene, and butyl acrylates consistent with the parameters likely to be classified as characteristically hazardous including for toxicity; and pollutants and contaminants as defined by Section 101(33) of CERCLA, 42 U.S.C. § 9601(33). Given the nature of the known hazardous substances on the train (SDS information) and the release of these substances to the environment via fire and surficial contact demonstrates potential exposure.

Human exposure can occur from inhalation of ambient air vapors; inhalation via fugitive dust generation; dermal contact with spilled contaminants; incidental ingestion of material due to potential drinking water contamination; and incidental ingestion of material following dermal contact.

Potential human receptors include nearby residents and community members, emergency response workers, and recreators within affected waterways.

Animal exposure has occurred including a documented fish kill of an estimated 3,500 fish of at least 12 different species. Additional animal exposure can occur through contaminated waterways via inhalation, ingestion, and dermal contact for aquatic and riparian species.

Information on toxicological effects of certain hazardous substances, pollutants, and contaminants identified on site is listed below and referenced in the Administrative Record (Attachment #4):

Vinyl Chloride: Breathing high levels of vinyl chloride can cause dizziness or sleepiness. Breathing very high levels can cause fainting and breathing extremely high levels can cause death. Studies have shown chronic inhalation of vinyl chloride for several years cause changes in the structure of the liver. Individuals are more likely to develop these changes if they breath high levels of vinyl chloride. Highly exposed workers have also developed liver cancer (angiosarcoma of the liver). The effects of ingesting high levels of vinyl chloride are unknown. Dermal exposure may cause numbness, redness, and blisters. Animal studies have shown that exposure to vinyl chloride during pregnancy can affect the growth and development of the fetus. (AR #9) (AR #5)

Ethylene Glycol Monobutyl Ether: Routes of exposure include ingestion and dermal contact. Ethylene glycol monobutyl ether is a carcinogen. Inhaling Ethylene glycol monobutyl ether can irritate the nose and throat. It can also cause nausea, vomiting, diarrhea, and abdominal pain. Exposure can cause headache, dizziness, lightheadedness, and passing out. It may damage the liver and kidneys. (AR #9) (AR #3)

Isobutylene: Acute exposure to isobutylene is associated with the following health effects: irritation of eyes, nose, and throat; dermal contact can cause frostbite; headache, dizziness, lightheadedness, and fatigue. Higher levels of isobutylene can cause coma and death. Chronic health hazards include cancer hazard, reproductive hazard, and other long-term health effects. (AR #9) (AR #4)

Benzene: Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Exposure through ingestion can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death. The major effect of benzene from chronic exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance of infection. Benzene may affect menstruation and decrease the size of ovaries in women following many months of exposure to high levels. Benzene is a known human carcinogen according to the Department of Health and Human Services, the International Agency for Research or Cancer (IARC), and the EPA. (AR #9) (AR #1)

Butyl Acrylate: Butyl acrylate can cause health effects due to inhalation and through dermal contact. Contact with butyl acrylate can irritate the nose, throat, and lungs. Butyl acrylate may cause a skin allergy. Exposure to butyl acrylate can cause headache, dizziness, nausea, and vomiting. Repeated exposure can lead to permanent lung damage. (AR #9) (AR #2)

Phosgene: Exposure to phosgene in the air can cause eye and throat irritation. High amounts in the air can cause severe lung damage. Exposure can occur through inhalation, dermal contact, or (less likely) ingestion. Higher levels of phosgene can cause lungs to swell, making it difficult to breathe. Even higher levels can result in severe damage to your lungs that might lead to death. Dermal contact with phosgene can result in chemical burns or may cause frostbite. (AR #9)

Hydrogen Chloride: Hydrogen chloride is irritating and corrosive to any tissue it contacts. Brief exposure to low levels causes throat irritation. Exposure to higher levels can result in rapid breathing, narrowing of the bronchioles, blue coloring of the skin, accumulation of fluid in the lungs, and even death. Exposure to even higher levels can cause swelling and spasm of the throat and suffocation. Some people may develop an inflammatory reaction to hydrogen chloride. This condition is called reactive airways dysfunction syndrome (RADS), a type of asthma caused by irritating or corrosive substances. Depending on the concentration, hydrogen chloride can produce mild irritation to severe burns of the eyes and skin. Long-term exposure to low levels can cause respiratory problems, eye and skin irritation, and discoloration of the teeth. Swallowing concentrated hydrochloric acid will cause severe corrosive injury to the lips, mouth, throat, esophagus, and stomach. (AR #9)

40 C.F.R. § 300.415(b)(2)(ii). Actual or potential contamination of drinking water supplies or sensitive ecosystems.

Hazardous substances and pollutants or contaminants released as a result of the derailment have the potential to contaminate drinking water supplies for private drinking groundwater wells within the affected area. Hazardous substances, such as vinyl chloride and other volatile organic compounds released during the derailment, have the potential to migrate from spill areas on soil into the subsurface soil and potentially groundwater, which supplies residential private drinking water wells with potable water. Residents on private drinking water wells within the affected area are being advised to get their water tested by county officials and utilize bottled water until the well water quality can be determined to be uncontaminated. As of March 22, 2023, approximately 234 private drinking water wells in the affected area have been tested by the Columbiana County Health District and PDEP. In addition, Ohio EPA continues to sample the public drinking water supply for the Village of East Palestine.

Additionally, the Ohio River was affected by the initial derailment and subsequent release of chemicals from the derailed cars, which migrated from the ditches immediately north and south of the derailment into Sulphur Run and eventually into the Ohio River. Numerous public water utilities located in the Ohio River Basin use the Ohio River as their water source, supplying drinking water to over five million people. Detectable concentrations of n-Butyl Acrylate, known to be associated with the February 3, 2023, derailment, have been identified at fourteen (14) locations on the Ohio River according to the Ohio River Valley Water Sanitation Commission (ORSANCO) (AR #9).

Hazardous substances and pollutants or contaminants released as a result of the derailment have been documented to have negatively impacted aquatic life and/or water quality within Sulphur Run, Leslie

Run, Bull Run, North Fork of Beaver Creek, and the Ohio River. A fish kill of 3,500 fish, across 7.5 miles of waterways, occurred as a result of the derailment (AR #9). Portions of the affected waterways are known habitat for the Eastern Hellbender (*Cryptobranchus alleganiensis*), an endangered species. Leslie Run is designated by the State of Ohio as Coldwater Habitat. Coldwater Habitat aquatic life designation is assigned to streams that support either native coldwater species (e.g., brook trout and certain invertebrate species) or are coldwater streams managed by ODNR as stocked trout fisheries (associated with more stringent water quality requirements).

40 C.F.R. § 300.415(b)(2)(iv). High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

Large stockpiles of contaminated soil remain on Site awaiting disposal (estimated 25,045 cubic yards) and Norfolk Southern continues to excavate additional contaminated soils under the railroad tracks (estimated 20,000 cubic yards). In addition, a complete delineation of the full extent of contamination has not been completed which opens the possibility of additional contaminated residential/commercial/agricultural properties as well as the excavation where current stockpiles are located.

40 C.F.R. § 300.415(b)(2)(v). Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Weather conditions may contribute to deterioration of temporary containment measures currently in-place, releasing contaminants into the environment. The presence of derailment-related debris and/or contaminated soils present a threat to the public health or welfare or the environment through migration as windblown particles or suspended in rainwater/snow melt runoff. The 2022-2023 Winter Precipitation Outlook indicates likely ‘wetter than normal’ conditions in the northeastern Ohio area according to the NWS Climate Prediction Center. Precipitation could result in additional contamination into the environment from the source (derailment) location. Heavy rain fall may contribute to flushing which would cause residual material in the soil to find a preferential pathway to a navigable waterway. As of March 22, approximately 7,698,354 gallons of liquid waste, including contaminated rainwater, and 8,393 tons of contaminated solids has been shipped off site.

40 C.F.R. § 300.415(b)(2)(vii). The availability of other appropriate federal or state response mechanisms to respond to the release.

EPA issued an UAO to the PRP and needs to provide oversight of the actions taken by the PRP which are outlined in Section II.B.2.

Additionally, the full extent of contamination has not yet been delineated and the full scope of impact is not yet understood. The EPA has the experience and the resources to manage a cleanup taking place across state lines and involving multiple local, state, and other federal agencies.

40 C.F.R. § 300.415(b)(2)(viii). Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

Trust between the citizens affected by the derailment, including the community of East Palestine, and Norfolk Southern has been significantly and negatively impacted by the derailment. It has been communicated to EPA and other local, State, and Federal partners by the community that there is a lack of trust and community members do not have faith in Norfolk Southern to provide reliable and transparent scientific data for critical environmental and public health measurements that aid in personal decisions related to an individual's health and wellbeing.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the suspected hazardous substances and/or pollutants or contaminants on-Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances and/or pollutants or contaminants from this Site may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a Federal response action to 12 months and \$2 million unless response actions meet emergency and/or consistency exemptions. Based on the scope of work outlined in the February 21, 2023 Enforcement Action Memorandum the total time-critical removal cost to EPA is expected to exceed \$2 million. The quantities of hazardous substances involved in the train derailment and subsequent fire has justified the need to complete the actions outlined in the Enforcement Action Memorandum (AR# 9) with EPA oversight and warrants an application of the \$2 million exemption based on the following factors:

A) There is an immediate risk to public health or welfare or the environment;

On February 3, 2023, an eastbound Norfolk Southern train derailed with 20 railcars carrying hazardous materials. The derailment resulted in a large fire affecting the railcars. Based on information provided by Norfolk Southern, the primary hazardous substances/pollutants of concern were vinyl chloride, Glycol Ether, Butyl Acrylates, Ethyl-Hexyl Acrylates, sulfuric acid, Isobutylene, and Benzene (residual). The subsequent release into the environment of these hazardous substances, pollutants, or contaminants caused negative impacts to Sulphur Run and resulted in a fish kill. On February 6, 2023, Norfolk Southern in consultation with Ohio response officials determined to implement a 'controlled burn' of the vinyl chloride tanks to address concerns of a boiling liquid expanding liquid vapor explosion (BLEVE). Initial fires, the controlled burn and subsequent fires created soot and particulate matter. This particulate matter may have impacted structures within the mandatory evacuation zone (approximate 1 mile by 2 miles). Particulate matter resulting from the fire of these pollutants can cause irritation of the airways, coughing or difficulty breathing. A number of structures may have been impacted by the fires and 'controlled burn'. Therefore, additional efforts may need to be taken to address the concerns related to the release into the environment of these hazardous substances, pollutants, or contaminants.

The Site is located within a residential area and is bordered by numerous residential properties. Sulphur Run, Leslie Run, Bull Creek, North Fork of Beaver Creek, and Ohio River all have had documented contamination of chemicals from the derailment. Additionally, a fish kill was documented in Sulphur Run, Leslie Run, Bull Creek, and the North Fork of Beaver Creek by ODNR (AR #9).

There are few barriers to protect the public from the hazardous substances located at the Site because the affected area is broad, and the extent of contamination is not yet fully delineated.

B) Continued response actions are immediately required to prevent, limit, or mitigate an emergency;

The current condition of the Site presents an imminent threat to human health and the environment as documented above. Continued response actions are immediately required to mitigate exposure to nearby residents and businesses from hazardous substances and additional residual material from the fires. The ongoing response activities at the East Palestine Train Derailment Site have expanded the border of the Site in order to include the full areal extent of where hazardous substances have come to be located, in Ohio and Pennsylvania, as a result of the train derailment. Removal activities to address residual material from the fires at the Site may involve a number of structures. Adults and children may be exposed to particulate matter and other substances related to the incident. Additional delineation of the extent of contamination is needed to be protective of public health and the environment. The response actions will prevent, limit, and mitigate threats to human health including sensitive populations.

C) Assistance will not otherwise be provided on a timely basis

Due to the size and scope of the emergency response and necessary subsequent remediation activities, including those not yet known or delineated, adequate assistance will not otherwise be provided on a timely basis.

The PRP is conducting work under an UAO issued by EPA which requires EPA oversight. Although EPA is coordinating with the State and local agencies, neither state nor local agencies have the resources to conduct this work. Without this removal action by EPA, assistance will not be provided on a timely basis. The conditions present at the Site warrant an emergency exemption to the statutory limits.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions Taken

1. Action description

All actions described in the February 21, 2023, Enforcement Action Memorandum (AR #9) and Unilateral Administrative Order are currently being conducted or will be conducted by the PRP and EPA expects those actions to be continued by the PRP at this time. EPA will continue to review and approve

required plans as well as provide oversight of plan implementation which may include split sampling. All actions to be taken are outlined in the Enforcement Action Memorandum (AR #9).

Post Removal Site Controls - The removal action will be conducted in a manner not inconsistent with the NCP. The EPA Incident Commander, which is a Region 5 OSC, has initiated planning for provision of post-removal Site control consistent with Section 300.415(l) of the NCP. Ohio EPA and PA DEP are in coordinating roles as part of the Unified Command structure for the response and will assume responsibility for any long-term monitoring actions that are required post removal.

Off-Site Rule - All hazardous substances, pollutants or contaminants removed off-Site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as EPA determines, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to remedial performance:

The proposed action will not impede future actions, based on available information. The Site is currently not on the NPL.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

4. Applicable or Relevant and Appropriate Requirements (ARARs)

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable considering the exigencies of the circumstances.

Federal

Federal ARARs for the Site may include, but are not limited to:

- a) 49 U.S.C. § 5101 *et seq.* which regulates the transportation of hazardous waste and hazardous substances by aircraft, railcars, vessels, and motor vehicles, further defined at 49 CFR Parts 171-179;
- b) Resource Conservation and Recovery Act (RCRA) requirements concerning manifesting, waste packaging, labeling, waste analysis and notification to treatment, storage and disposal facilities (40 CFR 262.20 – 262.23 and 262.30 - 262.32, and 40 CFR 268.7); and
- c) RCRA standards applicable to transporters of hazardous wastes found at 40 CFR Part 263.

The following may apply to drum and container storage on-site, as applicable:

- a) Containers of RCRA hazardous waste must be maintained in good condition;

compatible with hazardous waste to be stored; and closed during storage (except to add or remove waste) (40 CFR § 264.171-172);

- b) Containers must be placed on a sloped, crack-free base, and protected from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system (40 CFR § 264.175);
- c) Containers of ignitable or reactive waste must be kept at least 50 feet from the facility's property line (40 CFR § 264.176); and
- d) Incompatible materials must be kept separate. Incompatible materials stored near each other must be separated by a dike or other barrier (40 CFR § 264.177).

State

The IC will continue to identify and comply with applicable, relevant, and appropriate requirements (ARARs) of Federal and State law. Ohio representatives provide input and approve all work plans as members of Unified Command, thus ensuring Ohio’s requirements and needs are met. Similarly, representatives from the Commonwealth of Pennsylvania serve in coordinating roles as part of the Unified Command structure for the response thus ensuring the Commonwealth’s requirements and needs are met.

5. Project Schedule

The EPA response actions identified in this Action Memo will require an estimated 180 working days to complete.

B. Estimated Costs

The detailed cleanup contractor cost is presented in Attachment 1 and the Independent Government Cost Estimate is presented in Attachment 2. Estimated project costs are summarized below:

REMOVAL ACTION PROJECT CEILING ESTIMATE	
<u>Extramural Costs:</u>	
<u>Regional Removal Allowance Costs:</u>	\$6,301,755.36
Total Cleanup Contractor Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies. Includes a 20% contingency)	
<u>Other Extramural Costs Not Funded from the Regional Allowance:</u>	\$20,506,717.00
Total START, including multiplier costs	
Total Decontamination, Analytical & Tech. Services (DATS)	
Total CLP	
Subtotal	

<u>Other EPA Contractor</u>	
PHILIS	\$1,000,000
TAGA (2)	\$ 790,000
ASPECT	\$ 100,000
Subtotal Extramural Costs	\$28,698,472.36
Extramural Costs Contingency (20% of Subtotal, Extramural Costs rounded to nearest thousand)	\$5,739,694.47
TOTAL REMOVAL ACTION PROJECT CEILING	\$34,438,166.83

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented on-site, and the potential exposure pathways to nearby populations described in Sections II, III, and IV above, the actual or threatened release of hazardous substances and pollutants or contaminants into the environment from the Site may present an imminent and substantial endangerment to public health or welfare or the environment if this action is not taken. Non-action will increase the potential that hazardous substances will be released into the environment, thereby threatening public health and the environment. Delayed or non-action may result in increased likelihood of external exposure, inhalation, ingestion, or direct contact to human populations at or near the Site.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

EPA sent a General Notice Letter to Norfolk Southern on February 10, 2023. For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$75,354,436.45.¹

$$(\$34,438,166.83 + \$9,603,00.00) + (71.10\% \times \$44,041,168.83) = \$75,354,436.45$$

X. RECOMMENDATION

¹ Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Dave Yost, Ohio Attorney General, **w/o Enf. Addendum**
(email: Dave.Yost@Ohioattorneygeneral.gov)

BCC PAGE HAS BEEN REDACTED

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ENFORCEMENT ADDENDUM

HAS BEEN REDACTED

THREE PAGES

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY FOIA
EXEMPT**

**NOT RELEVANT TO SELECTION
OF REMOVAL ACTION**

FIGURE 1
Site Location Map

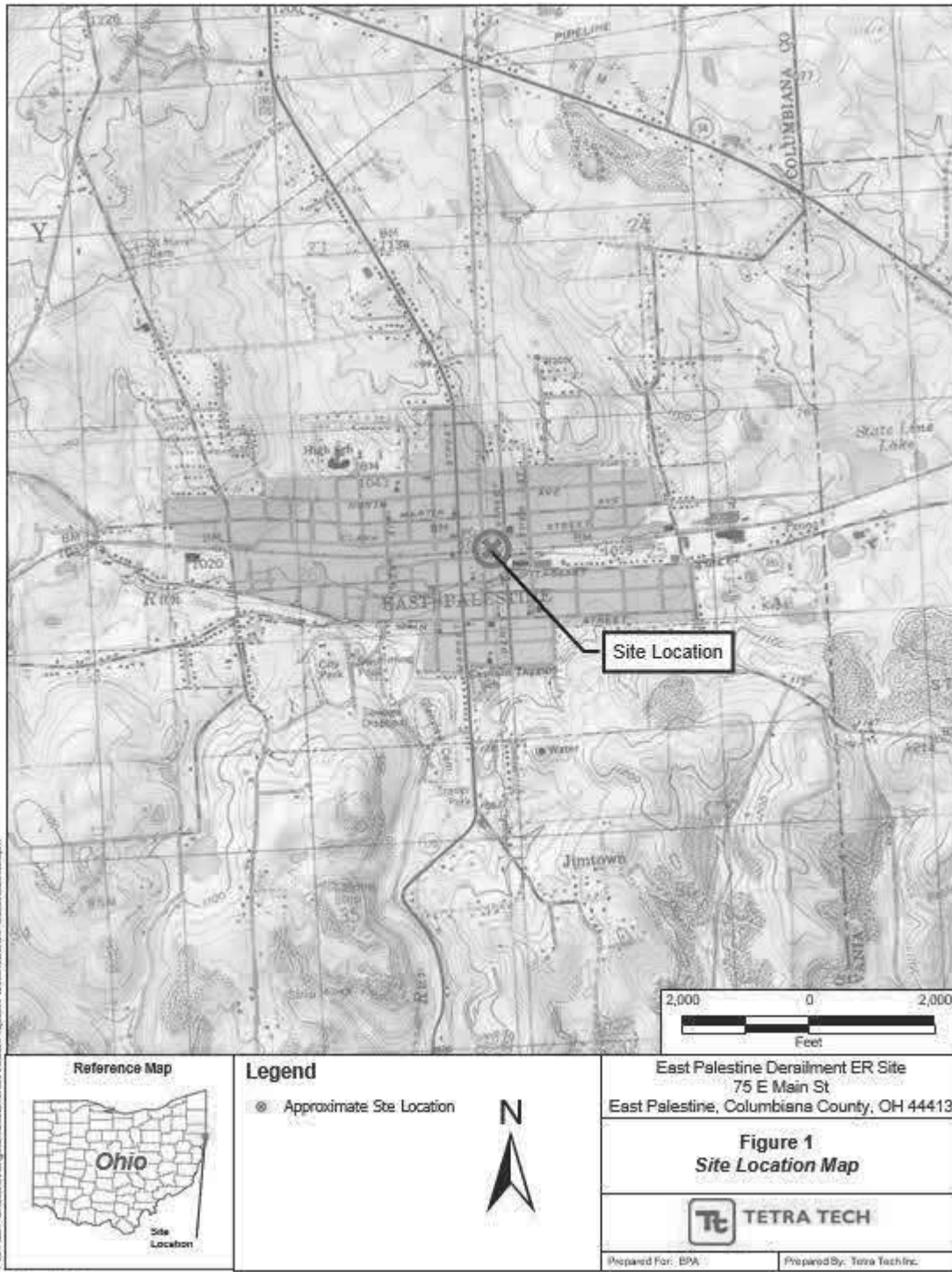


FIGURE 2

Site Layout Map



ATTACHMENT 1

DETAILED CLEANUP

**CONTRACTOR COSTS
ESTIMATE**

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ONE PAGE

NOT RELEVANT TO

SELECTION OF

REMOVAL ACTION

ATTACHMENT 2

**INDEPENDENT GOVERNMENT COST
ESTIMATE HAS BEEN REDACTED**

THREE PAGES

**NOT RELEVANT TO SELECTION
OF REMOVAL ACTION**

ATTACHMENT 3
ENVIRONMENTAL JUSTICE ANALYSIS
EAST PALESTINE TRAIN DERAILMENT SITE
VILLAGE OF EAST PALESTINE, OHIO



EJScreen Report (Version 2.1)



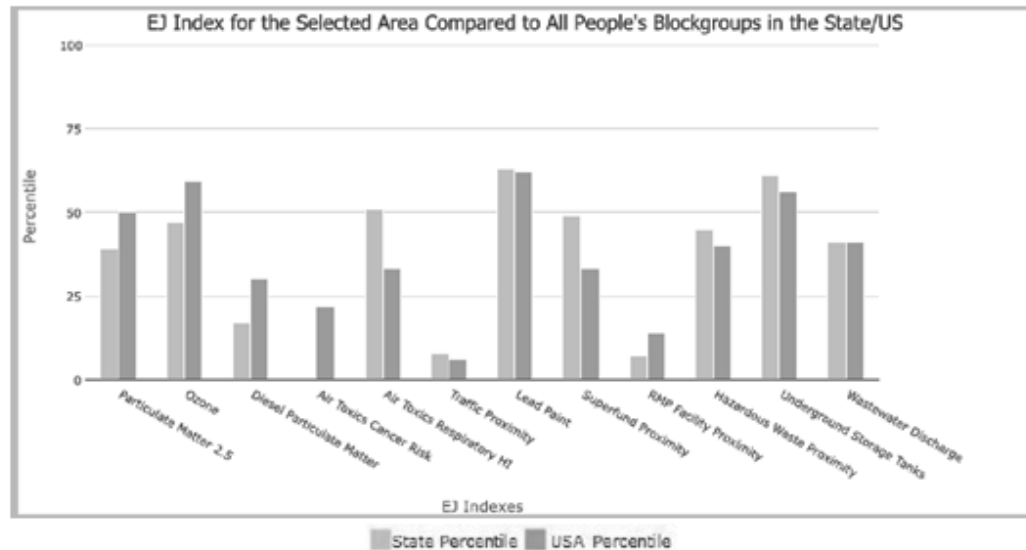
1 mile Ring Centered at 40.834593,-80.526953, OHIO, EPA Region 5

Approximate Population: 3,449

Input Area (sq. miles): 3.14

East Palestine Train Derailment

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	39	50
EJ Index for Ozone	47	59
EJ Index for Diesel Particulate Matter*	17	30
EJ Index for Air Toxics Cancer Risk*	0	22
EJ Index for Air Toxics Respiratory HI*	51	33
EJ Index for Traffic Proximity	8	6
EJ Index for Lead Paint	63	62
EJ Index for Superfund Proximity	49	33
EJ Index for RMP Facility Proximity	7	14
EJ Index for Hazardous Waste Proximity	45	40
EJ Index for Underground Storage Tanks	81	56
EJ Index for Wastewater Discharge	41	41



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

February 04, 2023

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FEBRUARY 2023

EJScreen Report (Version 2.1)



1 mile Ring Centered at 40.834593, -80.526953, OHIO, EPA Region 5

Approximate Population: 3,449

Input Area (sq. miles): 3.14

East Palestine Train Derailment

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	8.8	9.12	27	8.67	56
Ozone (ppb)	44.1	44.4	40	42.5	68
Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.14	0.279	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	24	0	28	<50th
Air Toxics Respiratory HI*	0.29	0.3	81	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	3	430	4	780	4
Lead Paint (% Pre-1960 Housing)	0.62	0.4	68	0.27	81
Superfund Proximity (site count/km distance)	0.032	0.093	42	0.13	30
RMP Facility Proximity (facility count/km distance)	0.071	0.81	3	0.77	10
Hazardous Waste Proximity (facility count/km distance)	0.35	1.7	36	2.2	40
Underground Storage Tanks (count/km ²)	3.4	2.9	70	3.9	69
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00063	0.37	37	12	45
Socioeconomic Indicators					
Demographic Index	21%	28%	49	35%	35
People of Color	5%	22%	29	40%	14
Low Income	37%	30%	62	30%	65
Unemployment Rate	6%	5%	66	5%	67
Limited English Speaking Households	0%	1%	0	5%	0
Less Than High School Education	13%	9%	71	12%	64
Under Age 5	9%	6%	78	6%	78
Over Age 64	17%	17%	55	16%	58

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

For additional information, see: www.epa.gov/environmentaljustice

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

February 04, 2023

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**ATTACHMENT 4
U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
EAST PALESTINE TRAIN DERAILMENT
EAST PALESTINE, COLUMBIANA COUNTY, OHIO**

**UPDATE 1
MARCH, 2023
SEMS ID:**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	977730	07/30/14	ALON USA	General Public	Benzene also known as Benzol According to Federal Register Vol. 77, No. 58 - Safety Data Sheet Rules and Regulations	10
2	977731	01/21/17	Arkema Inc.	General Public	Butyl Acrylate - Data Safety Sheet	16
3	977732	10/22/19	Equistar Chemicals, LP	General Public	Glycol Ether E B - Identification of Substance Mixture and of the Company Undertaking - Safety Data Sheet	12
4	977733	11/22/19	Lyondell Chemical Company	General Public	Isobutylene - Identification of Substance Mixture and of the Company Undertaking - Safety Data Sheet	16
5	977734	11/30/20	Oxy Vinyls, LP	General Public	Vinyl Chloride (Monomer) also known as VCM; Monochloroethylene; Chloroethene; Ethylene, Chlor- Vinyl Chloride Monomer - Safety Data Sheet	18
6	977729	11/25/22	Dow Chemical Company	General Public	2-Ethylhexyl Acrylate 50 ppm MEHQ - Safety Data Sheet	16
7	977736	02/18/23	Wolfe, S., U.S. EPA	Augustyn, J., U.S. EPA	Email - Re: Request and Approval for ERRS Assistance in Procuring IMT Command Center	2

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
8	977737	02/21/23	El-Zein, J., U.S. EPA	Wolfe,. S., U.S. EPA Augustyn, J., U.S. EPA	Email - Re: Approval for Initial Ceiling of ERRS Process	1
9	977725	02/21/23	Dollhopf, R., U.S. EPA	El-Zein, J., U.S. EPA	Enforcement Action Memorandum - Determination of Threat to Public Health and the Environment at the East Palestine Train Derailment Site [Redacted] <i>(Included as Reference)</i>	30
10	*****	*****	*****	*****	Action Memorandum Amendment - <i>(Pending)</i>	****

