

Environmental Study in Grenada, Mississippi

EPA APRIL/MAY 2016 SAMPLING INVESTIGATION RESULTS

Introduction:

The U.S. Environmental Protection Agency (EPA) conducted additional sampling in the Eastern Heights neighborhood in May 2016, as well as an investigation at the Grenada Manufacturing, LLC facility (Facility) in April 2016 (Figure 1). These investigations are part of a precautionary approach to protect public health and determine whether residents are being exposed to unsafe levels of trichloroethene (TCE) in indoor or outdoor air. **Based on results received to date, EPA has determined that there is no immediate threat to public health in the Eastern Heights neighborhood due to TCE.** The results of these investigations will be used to make decisions in the ongoing cleanup of the Facility and surrounding areas.

More detailed information about the results follows, and additional information is posted on the website: www.epa.gov/grenadacleanup. Please direct any questions about the results, or any of EPA's work in Grenada, to the points of contact listed on the last page.

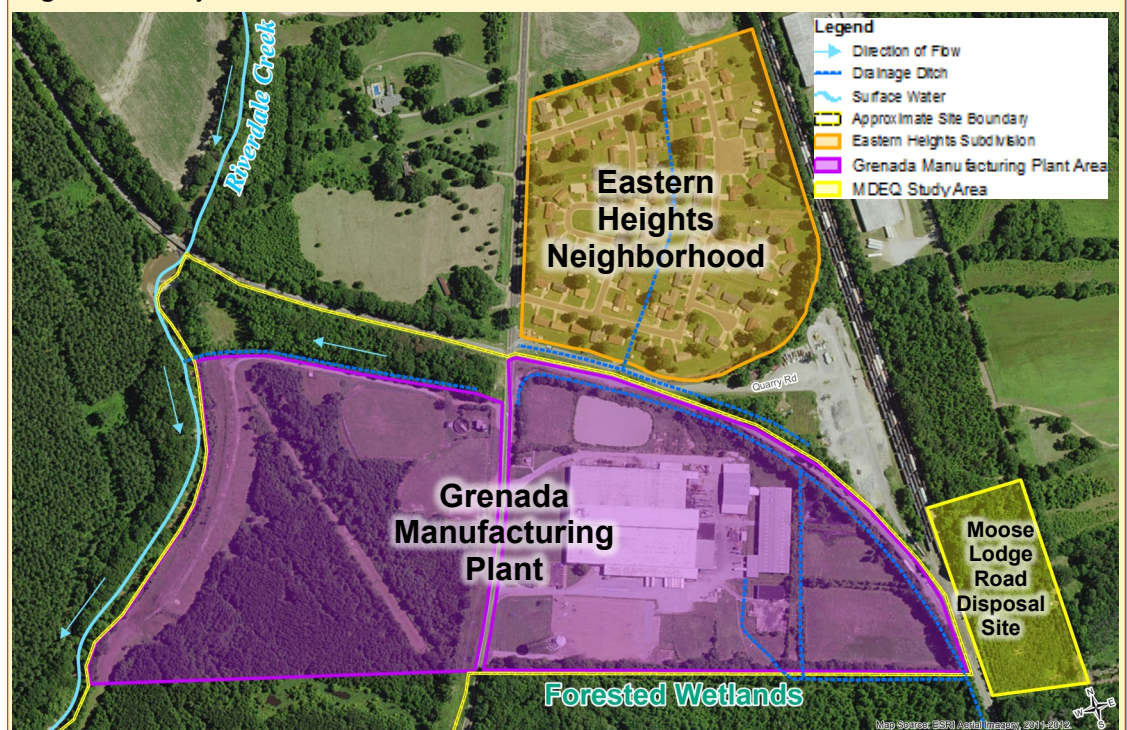
Summary of EPA Sampling Results

EPA found no evidence that chemicals in groundwater are migrating into outdoor air or homes in the Eastern Heights neighborhood. However, EPA plans to conduct an additional round of outdoor air sampling in the Eastern Heights neighborhood in September 2016, and an additional round of indoor air sampling in November/December 2016 at the 17 homes that were tested in May 2016. This second round of seasonal sampling will be done to supplement the May results and draw conclusions regarding vapor intrusion.

Within the neighborhood, EPA detected TCE and TCE-related chemicals in the shallow groundwater consistent with previous sampling done by the Facility. (See definition of "TCE-Related Chemicals" on page 2.) No one is exposed to the groundwater because it is not a source for drinking water. EPA did not detect chemicals related to the Facility in any of the soil and sediment samples taken throughout the neighborhood.

EPA detected low levels of TCE and TCE-related

Figure 1: Study areas



chemicals in the outdoor air near the Facility plant building and near a drainage ditch on the Facility property. This information will be used in the ongoing study and clean-up of the Facility.

Eastern Heights Neighborhood Indoor Air Study

EPA tested the air inside 17 homes in the south and southeast area of the neighborhood. The selected homes are close to the area of groundwater contamination. EPA used two kinds of air sampling methods: a mobile laboratory (EPA's Trace Atmospheric Gas Analyzer, or TAGA bus) to instantaneously measure air throughout each home, and a canister (called a SUMMA canister) to measure air over a 24-hour period. Sub-slab air beneath the homes was also monitored. **EPA did not find that chemicals present in the groundwater were entering homes via vapor intrusion.** Homeowners and residents of each home that was investigated have been sent an individual letter detailing their results.

Outdoor Air Study

EPA monitored the outdoor air throughout the Eastern Heights neighborhood and the Facility property. Four air monitoring stations were set up in the neighborhood, and air samples were collected during 24-hour periods over 3 days (May 3-5, 2016). TCE was detected in only 1 of the 15 samples at a

low level below the screening level for residential indoor air. (See definition for "Screening Level.") The mobile laboratory (TAGA bus) also monitored the outdoor air throughout the neighborhood and the Facility property (Figure 2). **The TAGA bus detected no TCE or TCE-related chemicals in outdoor air in Eastern Heights.**

TCE and TCE-related chemicals were detected in the outdoor air near the Facility plant building and near a drainage ditch. **Though the levels were low, the data may indicate that contaminated groundwater is moving from below ground to the surface into ditches within the Facility property boundary.** This information will be used in the ongoing study and clean-up of the Facility.

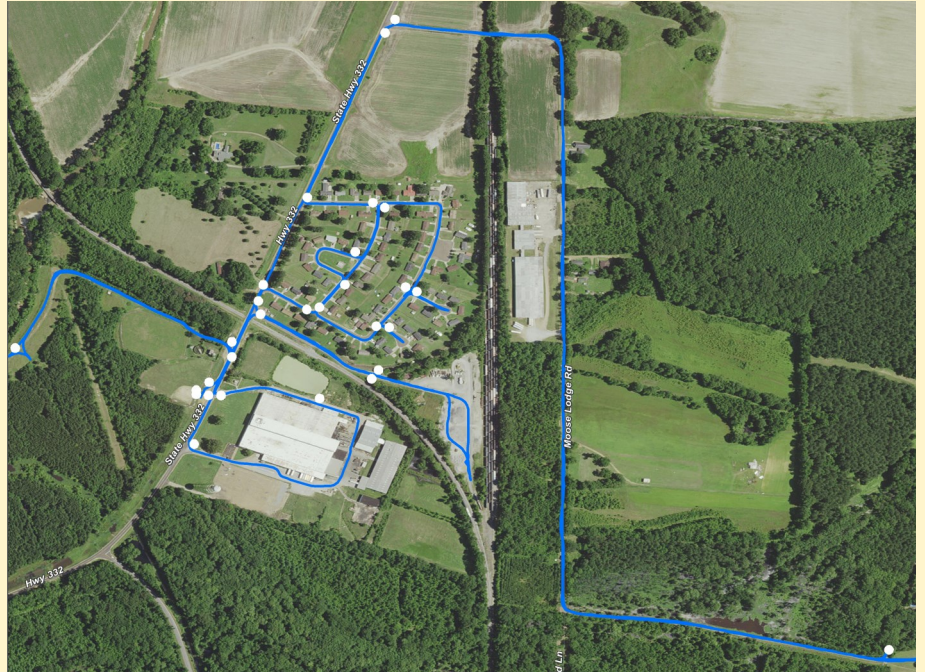
Chemicals related to gasoline, like benzene, were detected in the outdoor air in and around Eastern Heights and the Facility. These chemicals are common in the environment due to vehicle exhaust.

Eastern Heights Neighborhood Soil, Sediment and Groundwater Study

EPA collected environmental samples from various locations throughout the Eastern Heights neighborhood (Figure 3, on next page).

EPA drilled borings approximately 15 feet below ground to collect soil samples throughout the

Figure 2: Outdoor air sampling locations collected in Eastern Heights and around the Facility by EPA's TAGA bus (mobile air sampling laboratory). The blue line is the 4.25 mile TAGA bus route. The white dots are the actual air sampling locations.



What are "TCE-Related Chemicals"?

Some chemicals can degrade over time into other chemicals. TCE can break down into chemicals such as cis-1,2-dichloroethene and vinyl chloride. EPA's investigation includes all of these chemicals.

What are "Screening Levels"?

EPA's screening levels are values used by the EPA to help determine if a chemical in air, soil, sediment, groundwater or surface water should be considered for further evaluation. An exceedance of a screening level does not imply that adverse health or ecological effects will occur.

neighborhood and test them for volatile chemicals and metals. **EPA did not encounter evidence of buried waste material in any of the soil borings.**

Additional surface soil samples were collected from the playground on Tallahoma Drive from areas where children were most likely to come into contact with the soil (for example beneath the swings and at the bottom of the slide). **No TCE or TCE-related chemicals were detected in the soil at the playground.**

EPA collected sediment samples from the drainage ditch located in the center of the Eastern Heights neighborhood to determine whether chemicals may be entering the neighborhood through drainage runoff. **No chemicals related to the Facility were detected in the drainage ditch.**

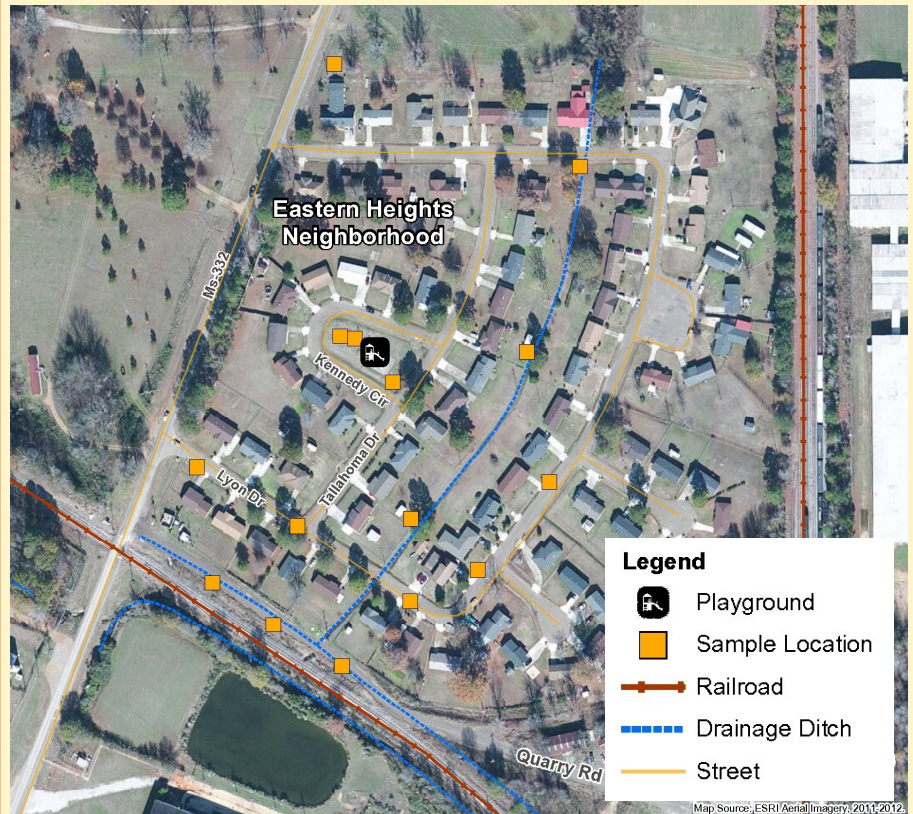
EPA collected groundwater samples from various locations throughout the Eastern Heights neighborhood. **TCE and TCE-related chemicals were detected in the groundwater at shallow depths (15 feet deep) in the Eastern Heights neighborhood, consistent with results previously reported by the Facility.**

The shallow groundwater in Eastern Heights is not used as a drinking water source and no one is exposed through ingestion. However, there is a potential for the volatile chemicals in the groundwater to form vapor that can lead to air contamination. This is known as vapor intrusion. Therefore, EPA conducted an extensive outdoor air and vapor intrusion study (indoor air) in the Eastern Heights neighborhood and surrounding area in order to determine whether air is contaminated with these chemicals.

Facility Study

In addition to the investigation in the Eastern Heights neighborhood, EPA collected samples on the Facility property, including the plant, the former disposal area and outfall ditch. Samples were also collected in nearby areas, including the area between the Facility and the neighborhood. Air, sediment, surface water and soil were tested in order to supplement existing information. The results will be detailed in the Expanded Site Inspection (ESI) Report and will be used in the ongoing clean-up of the Facility and surrounding areas. Upon completion, the ESI Report will be made available on the Grenada website: www.epa.gov/grenadacleanup.

Figure 3: Location of environmental samples collected in the Eastern Heights neighborhood.



Below: Common household products found in every home contain volatile organic compounds including many of the same chemicals being tested for in the environmental study. These products were removed from the home prior to the air sampling.



Next Steps:

- **EPA has directed Grenada Manufacturing, LLC to complete the following work:**

- * Make improvements to the Permeable Reactive Barrier (PRB) which is used to treat the groundwater. *EPA approved the PRB Pilot Study Work Plan in April 2016. Work began in May 2016 and is ongoing.*

- * Provide treatment alternatives for reducing the concentration of TCE in a spill area at the Facility known as Area of Concern A (near a former TCE above-ground storage tank). *Two treatment alternatives were submitted in May 2016. EPA will approve the final treatment option based on results from the PRB Pilot Study.*

- * Conduct an indoor air study inside the Facility's main plant building. *Sampling will start upon EPA approval.*

- * Conduct additional on-site groundwater sampling in order to support future clean-up decisions. *EPA is awaiting results from additional on-site groundwater sampling by the Facility.*

- **Additional Outdoor Air Sampling:** EPA will return to the Eastern Heights neighborhood in September 2016 to sample outdoor air.

- **Additional Sampling in Homes:** EPA plans to conduct a second round of vapor intrusion sampling in November/December 2016 at the 17 homes that were tested in May 2016. EPA will notify the homeowners of the specific dates once the sampling event is confirmed. EPA will request permission from these residents to conduct this air sampling inside and outside of these homes.

Public Health Concerns:

If you are sick and believe you were exposed to chemicals related to the Facility, tell your doctor about your exposure and symptoms. The Agency for Toxic Substances and Disease Registry (ATSDR) and the Mississippi State Department of Health (MSDH) have given chemical exposure training materials and information to doctors in Mississippi. The materials explain how you can be exposed to chemicals and how it may affect your health. Doctors can contact Leann Bing at 404-562-1784 or at KBing@cdc.gov, about chemical exposure and possible health effects.



Above Left: Field personnel reading air monitoring data in real time inside the TAGA bus.

Above Right: EPA personnel collecting a sub-slab air sample.

Contact EPA Region 4 Representatives for more information:

EPA Community Engagement Team:

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Information Repository: Elizabeth Jones Library, 1050 Fairfield Avenue, Grenada, MS 38901

Website: www.epa.gov/grenadacleanup. Please see the website for updates and site related reports.