



Collaboration and Innovation Bolster Contamination Investigation Efforts in East Chicago, Indiana

The Value of Environmental Enforcement

At the former Cities Service Refinery facility in East Chicago, Indiana, the U.S. Environmental Protection Agency (EPA) worked with the facility owners to expedite investigation of contamination at the facility and prepare for cleanup work, known as “corrective action,” under authority of the Resource Conservation and Recovery Act (RCRA). The companies’ cooperation resulted in quick determination of the threats to the health of community residents and sensitive ecological areas posed by the contamination.

EPA Region 5’s RCRA Corrective Action enforcement program (serving Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) and the facility owners worked on guided investigations, which were accelerated using advanced technology such as obtaining sampling results in real time and using the information to better define the extent of contamination.

Facility History and Cleanup

The former Cities Service Refinery facility comprises two adjacent properties in East Chicago, Indiana, covering 322 acres. The facility was originally

Cleanup Enforcement Benefits the Community

Environmental and public health factors affect people most significantly where they live. EPA provides strong, effective enforcement support to all communities. As the Agency implements environmental and public health improvements across the country, EPA is looking for new ways to assist communities in environmentally overburdened, underserved, and economically disadvantaged areas where the needs are greatest.

EPA’s responsive oversight, coordination with the state of Indiana, early and voluntary action from the companies, and an innovative approach to investigation of contamination at the facility provided for project cost savings, reductions in wastes and sampling redundancies. Collaborative approaches expedited the early stages of investigations and cleanup work, ultimately reducing the process to several months.

a single-owner operation. Today, it includes an active petroleum bulk storage terminal owned by Citgo and a former refinery area owned by Oxy.

The facility is located in a mixed heavy industrial and residential area of East Chicago. The area is bound to the north and west by residential areas, and to the southwest by wetlands. The Grand Calumet River is a half mile south of the site.

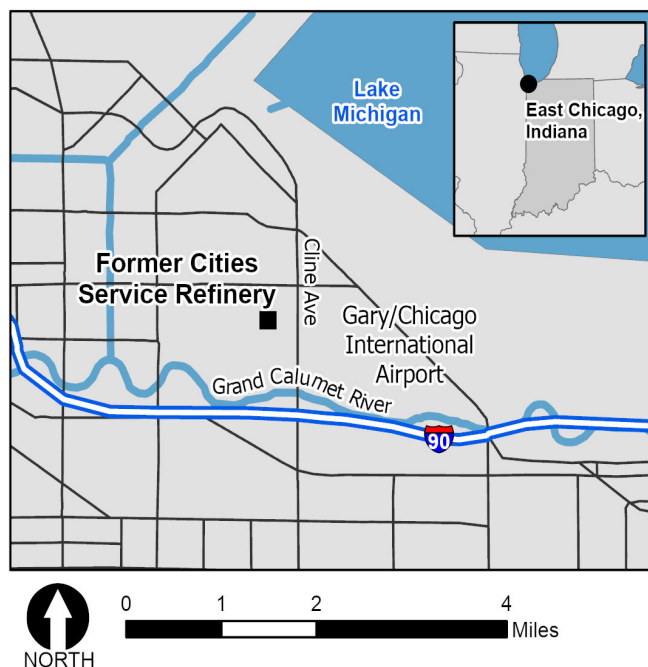
Ownership of the Cities Service Refinery facility area has changed over the years as part of corporate reconfigurations. Initially, Cities Service Company started refining and bulk storage operations in 1929. The refinery stopped operating around 1972, and the company removed aboveground structures in the refinery area. The tank terminal stores refined petroleum products prior to distribution to customers by pipeline or truck. Today, the terminal has 53 storage tanks. It handles about 2 to 3 billion gallons of petroleum product annually.

Wastes produced at the refinery included asbestos-containing materials, petroleum coke, oil and caustic sludges, sewer cleanout wastes and other petroleum wastes. Tank terminal waste includes asbestos-containing material, oil-saturated tank bottoms, oil-saturated soil, waste oil and oily residue, oil/water separator sludge, ignitable and corrosive waste, universal wastes, and blasting grits.

The former refinery at the facility has soil staining and residual oil. Sampling at the storage terminal and former refinery found lead, arsenic, benzene, ethylbenzene, toluene, 1,4-dioxane, methyl ethyl ketone, and xylene in groundwater, and asbestos and petroleum-related hazardous constituents in the soil.

Community Context

About 26,000 people live in East Chicago. Within 1 mile of the facility, 90% of residents are people of color. The area experiences higher unemployment, lower incomes, and more linguistic isolation in comparison with other communities in Indiana. East Chicago was once known as the most industrialized city in America. Four out of five of its residents were foreign-born, representing more than 70 nationalities. The community west of the facility has a rich history and unique neighborhoods, each with its own distinct characteristics, as well as the shared experience of contending with a long legacy



Sources: Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC, USGS and the 2021 Investigation Report.

The facility's location in East Chicago.

of industrial contamination.

The importance of protecting the health of the community and the sensitive ecosystem impacted by decades of contamination led EPA to prioritize environmental investigation efforts at the former Cities Service Refinery facility.

Enforcement Actions: Coming to the Table

Since RCRA cleanup work began at the facility, sustained communication has kept parties focused on EPA enforcement goals and highlighted priorities shared by Citgo and Oxy. In 2020, Citgo and Oxy entered into settlement cleanup agreements with EPA for the active tank terminal and closed refinery area. The settlements required Citgo and Oxy to clean up the contaminated areas and also required the companies to support job creation and use greener cleanup best management practices to reduce the environmental footprint of cleanup activities and include long-term sustainability measures.

Both companies incorporated RCRA Facilities Investigation Remedy Selection Track (RCRA

“Just being able to talk about everybody’s concerns has been key. Within a matter of minutes, we are able to resolve potential issues in a way that works for all parties and then sign off at each step of the way, giving everyone an understanding of the end goal.”

- Renee Wawczak, EPA Project Manager

FIRST) tools into the investigation process and will also use these tools to develop corrective measures. RCRA FIRST allows EPA and responsible parties to avoid obstacles that could slow down facility investigations and remedy selection.

Documenting Project Outcomes to Date, Looking Forward

Working with EPA and in line with the site’s settlement agreements, the companies documented their support for job creation and the use of greener cleanup best practices during their innovative approach (high-resolution site characterization) to the RFI.

Job Creation

- During high-resolution screening investigation efforts from July 2020 to December 2022, the project created several temporary professional, technical, managerial and skilled-trade jobs, accounting for a full-time equivalent (FTE) of 1.28 over a period of two-and-a-half years.

Greener Cleanup Best Practices

- The site’s jointly conducted, real-time, high-

resolution screening investigation enabled the completion of more borings without repeat visits or workplan development, accelerating project schedules for groundwater sampling and conserving resources.

- The screening-investigation results meant that follow-on investigations could be highly targeted, reducing the number of wells needed and thus reducing investigation-derived waste (IDW) and labor. The companies estimate that their approach cut the total number of wells needed in half, from 64 wells to 32 wells.
- Efforts relied on local field staff, vendors, suppliers, laboratories and waste facilities to reduce travel and freight needs.
- Regular teleconferences also reduced travel and time requirements for meetings. Specially designated electronic networks also supported this outcome, managing data transfers, team decisions, document preparation, document submission to EPA and data collection in the field.
- Fieldwork took place outside of periods of extreme hot and cold weather, to avoid excess fuel use.

Reuse and Redevelopment

Looking forward, the city of East Chicago has included the

Why Are Wetlands Important?



Wetlands provide unique ecosystem benefits to people. They include natural water quality improvement, flood protection, shoreline erosion control, opportunities for recreation and aesthetic appreciation, and natural products for human use. RCRA corrective actions can lead to the protection or restoration of vital wetland habitat.

For more information, visit: <https://www.epa.gov/wetlands/why-are-wetlands-important>.

RCRA § 3008(h) Enforcement Authority

RCRA § 3008(h) authorizes EPA to settle with parties who agree to perform corrective action at or in connection with a facility. The agreement outlines the corrective action responsibilities, including interim measures, RCRA facility investigations (RFIs), corrective action measures studies (CMSs), financial assurance, and implementation of corrective measures.

development of the former Cities Service Refinery area as part of its Comprehensive Plan (up to four commercial/industrial buildings). The companies estimate that, at full buildout, the area's redevelopment will support up to 800 jobs, assuming industrial reuse.

Enforcement Makes a Difference

EPA's use of RCRA's cleanup enforcement authority makes a vital difference in communities across the country. At facilities such as the former Cities Service Refinery, EPA's enforcement program often pursues approaches that incentivize better and faster cooperation by responsible parties. This approach helps address exposure risks to human health and the environment efficiently as part of the implementation of final remedies that are effective, protective, and sustainable. In East Chicago, EPA's dynamic communication and active oversight of the corrective action process with the responsible parties resulted in an expedited cleanup that relied on sustainability principles and green remediation best practices to reduce the environmental footprint of cleanup activities

High-Resolution Site Characterization: The Bottom Line

The companies estimate that, in comparison with a conventional fieldwork approach, their innovative high-resolution site characterization approach resulted in a project savings of \$387,617.

as well as project costs. Thanks to these efforts, the prospect of redevelopment at the former Cities Service Refinery is now on the horizon.

RCRA FIRST Approach

EPA designed the [RCRA FIRST approach](#) to improve the efficiency of RCRA facility investigations and remedy selection.

EPA developed a [toolbox](#) to make it easier to complete different parts of the RCRA FIRST approach and monitor its effectiveness using lessons learned from federal, state, and regulated community representatives involved with facility investigations and remedy selection. It includes a how-to guide, process flow maps, and tools and templates.

For more information on the seven sustainability principles:

www.epa.gov/enforcement/incorporating-sustainability-principles-cercla-and-rcra-cleanup-enforcement-actions

For more information on contamination investigation efforts, please contact

Elisabeth Freed

Office of Site Remediation Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency



(202) 564-5117



freed.elisabeth@epa.gov