



Environmental Cleanup at C&D Technologies

EPA RCRA Corrective Action

Attica, IN

June 2013

Public Participation

EPA will open a 30-day public comment period from June 24th to July 24th, 2013 for the community to state their opinions about the clean up strategy for contaminated sediment adjacent to the C&D facility and source areas within the facility. If enough interest is shown, EPA will also schedule a public meeting to present the clean up alternatives, proposed cleanup plan, answer questions and accept oral comments.

After consideration of public comments, EPA will select a final cleanup plan and discuss the selection in a document called "final decision and response to comments". Public comments will be summarized and responses provided as part of the decision.

If you have any comments or would like to request additional information on the C&D facility, please contact:

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Region 5 toll-free: 800-621-8431,
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Documents Available
The Statement of Basis and other official documents about this site can be viewed at the Attica Public Library, 305 S. Perry St, Attica, IN 47918 or through the internet at URL:
<http://www.epa.gov/region5/cleanup/rcra/cdtechnologies/index.html>

U.S. Environmental Protection Agency Region 5 has a Resource Conservation and Recovery Act (RCRA) Consent Order with C&D Technologies (C&D or the Facility) to investigate and cleanup releases of hazardous waste at its Plant located in Attica, IN. EPA is proposing a plan to clean up to address contaminated soil and its potential effects on surface water, ground water and soil gas at the Facility and an adjacent area bordering the Wabash River in Attica, Indiana.

This fact sheet is a summary of an official EPA document called a Statement of Basis. The document describes a range of proposed cleanup alternatives and EPA's preferred options for the C&D facility. EPA will select the final cleanup plan for the soil and sediment after considering comments from the public. The final plan could differ from this proposed plan, depending on information or comments EPA receives during the public comment period.

About the C&D Technologies Site

C&D owns and operates a battery manufacturing plant at 200 West Main Street in the City of Attica, Fountain County, Indiana. The Facility contains an active battery manufacturing area, a former landfill, and riverbank property along the Wabash River. The Facility is located on approximately 12.5 acres in the north-northwestern portion of the city. The Wabash River borders the Facility on the west and northwest. Residential and commercial properties surround the remaining sides of the Facility.

The Attica plant manufactures lead acid batteries for commercial, industrial and military applications. Manufacturing processes include casting or curing lead battery parts, pasting battery grids, plate processing, battery assembling, charging and finishing. The Facility is located in the Wabash River Valley, which is underlain by approximately 140 feet of unconsolidated deposits containing sand and gravel. Groundwater production wells owned by the City of Attica are located approximately 300 to 400 feet to the southwest of the site.

Pollution Investigations

In January 2007, EPA Region 5 and C&D entered into a RCRA Section 3008(h) Corrective Action Order (Corrective Action Order) that required C&D to investigate and address all historic releases of hazardous waste and constituents at or from the site. C&D collected and analyzed groundwater, surface water, sediment, soil, sub-slab soil gas and indoor air samples.

Investigators found elevated levels of metals in the soil, sediment and underground water. Most of the hot spots could be traced to sewers and waste material storage areas and the Riverbank Area. Some of the contaminants involved were metals such as lead, arsenic and cadmium. Solvents such as trichloroethylene and tetrachloroethylene were found in sub slab soil gas with a potential for indoor vapor intrusion in former waste and container storage room.

Summary of Site Risks

After the pollution investigation, a human health risk assessment was performed to determine the health problems that could result if contamination at the facility was not cleaned up. A key assumption of the health assessment was that future use of the property will be restricted to industrial activity. Health risks were then calculated for routine exposures to the pollution by industrial workers who would be present on the property over many years.

The health assessment computes the chances of developing an additional case of cancer from the contamination found in soil. Unfortunately, zero risk is impossible to achieve in the highly industrialized United States. EPA sets an acceptable risk range as 1-in-a million chance of getting cancer from pollution to 1-in -ten-thousand.

For this cleanup project, EPA selected Indiana standards that land on the midpoint of EPA's acceptable cancer target limits. If contaminants are not cancer causing chemicals but cause other health problems, EPA uses what is called a hazard quotient. To be acceptable to the Agency, the hazard quotient for individual chemicals must be less than one. Sections of the facility with contaminants that exceed Indiana's cleanup standards will be cleaned up or the pollution adequately shielded to protect human health and environment.

The human health risk evaluated for receptors from the residential and commercial properties surrounding the site did not indicate any risk based on the Indiana cleanup standards.

EPA determined from the baseline ecological risk assessment that there are potential adverse ecological effects at the Riverbank soil due to soil erosion or surface water run-off from the C&D facility. EPA did not identify any site-related contaminants in surface water or sediment in the Wabash River. One of the monitoring wells from the site showed a potential for lead from the groundwater to discharge to the Wabash River.

Cleanup goals

Considering the anticipated industrial use of the property, the goals for the corrective measures proposed for the areas within the facility are to protect workers health. The ecological clean up goals are designed to protect the sensitive receptors such as Short Tailed Shrew and American Robin at the Wabash River bank area near the C&D facility. A long term monitoring plan for under- ground water will also be part of the cleanup plan to ensure that the river is protected from lead contamination. The city drinking water is currently treated due to the contamination from a distant source.

Cleanup alternatives

Clean up alternatives were developed for three areas of concern: on site soil contamination, primarily concentrated in four separate hot spots in former hazardous waste storage areas; sub-slab soil gas contamination at the former waste and dust storage area and storm sewer; and the Wabash River bank area owned by the C&D facility.

On-site soil hotspot remedial options

Alternative 1- No further Action. This option is a baseline scenario to which the other options may be compared. Under this option, EPA would not require C&D to conduct a remedial action to mitigate potential lead and arsenic exposure from the surface soil to facility workers. Cost: \$0

Alternative 2 – Land use restrictions and engineering controls such as pavement and soil cover. (EPA's preferred alternative) Under this alternative, engineering controls would include maintaining the present concrete surface cover to shield the workers from lead and arsenic exposure.

This option also includes paving the uncovered surface soil with concrete consistent with other paved areas at the facility.

Cost: \$ 10,000

On-site soil vapor intrusion remedial options

Alternative 1: No further Action. This option is a baseline scenario to which the other options may be compared. Under this option, EPA would not require C&D to conduct a remedial action to mitigate potential lead and arsenic exposure from the surface soil to facility workers. Cost : \$0

Alternative 2 - Excavation and Offsite Disposal of Contaminated Soil: C&D will leave soils contaminated with PCE and TCE beneath active manufacturing areas in place. C&D will excavate accessible soil to a depth of five feet below ground surface and dispose an estimated volume of 231 cubic yards. Cost: \$91,500

Alternative 3 - Soil Vapor Extraction (SVE) and capping (no off-gas treatment): C&D will use this *in-situ* remedial technology to reduce concentrations of VOCs adsorbed to soils in the unsaturated (vadose) zone. The SVE system will utilize three extraction wells screened across the shallow contaminated zone to maximize soil vapor collection. C&D estimated that a 20ft effective radius of influence will be around each SVE well. The extracted vapors from each SVE well would be released in to the atmosphere without treatment. As established by an enforceable institutional control, C&D will conduct routine monitoring and will maintain the integrity of the concrete foundation slab. Cost: \$95,000

Alternative 4 - Soil Vapor Extraction (SVE) with off-gas treatment: C&D will use this *in-situ* remedial technology to reduce concentrations of VOCs adsorbed to soils in the unsaturated (vadose) zone. C&D will treat the extracted vapors discharged over time with an appropriate vapor treatment system (activated carbon) before discharging to the atmosphere. The existing concrete foundation slab in Area 9 will continue to serve as the cap and C&D will conduct routine monitoring and will maintain the integrity of the concrete foundation slab. Cost: \$105,000

Alternative 5 - Excavation and Off- site Disposal and SVE: With this alternative, C&D will excavate contaminated soil from the outdoor alleyway and dispose of the soil off-site at an EPA approved landfill. C&D will backfill the excavated area with clean fill and restore the area to the pre-excavation condition. C&D will use a modified a SVE system to treat PCE and TCE contaminated soils that are not excavated from beneath the active manufacturing areas. As established by an enforceable institutional control, C&D will conduct routine monitoring and will maintain the integrity of the concrete foundation slab. Cost: \$165,000

River Bank Area Remedial Alternatives

Alternative 1 - No Further Action: EPA would not require C&D to conduct a remedial action to mitigate potential metal exposure to ecological receptors. Cost: \$ 0

Alternative 2 - Immobilization and Exposure Barrier: This alternative involves excavation of lead contaminated soil and on-site treatment (immobilization) with Triple Super Phosphate (TSP). C&D will place treated soil back in the excavation footprint and cover the soil with an exposure barrier. C&D will construct the exposure barrier with a permeable geo-textile fabric covered with appropriately sized riprap. Such a measure will aid in bank stabilization and erosion control. As established by an enforceable institutional control, C&D will conduct routine monitoring and will maintain the integrity of the geo-textile exposure barrier. Cost: \$76,500

Alternative 3 - On-Site Treatment and Off-Site Disposal with Exposure Barriers: This alternative involves excavation of lead contaminated soil, on-site treatment (immobilization), and off-site disposal at an EPA approved landfill. The C&D proposed excavation Area covers 800 square feet. Approximately 30 cubic yards of contaminated soil will be removed for off-site disposal. Cost: \$ 88,000

Alternative 4 - Exposure Barrier: This alternative involves construction of an exposure barrier to contain and isolate lead-contaminated soils associated with a hotspot. C&D will construct the

exposure barrier to cover approximately 800 square feet of the Riverbank Area. C&D will construct the cap using a permeable geo-textile fabric overlain with riprap. As established by an enforceable institutional control, C&D will conduct routine monitoring and will maintain the integrity of the geo-textile exposure barrier. Cost: \$61,000

Evaluation of Alternatives

Each of the cleanup alternatives was evaluated against nine criteria listed in the box on the back page. All of the cleanup options would protect human health and the environment. On-site soil hot spot removal alternative 2 is preferred since the remedy protects facility workers exposure to soil and also prevent migration of soil contaminants to groundwater. For on-site soil vapor intrusion remedy, alternative 4 is preferred since it would reduce the release of VOCs in the soil to groundwater, indoor air and outdoor air. For Riverbank Area, alternative 4 is preferred since the exposure barrier would protect the ecologically sensitive receptors from the metal contamination in the surface soil.

EPA's proposed Cleanup Plan

On-site hotspot removal: EPA's proposed remedy for onsite soil hot spot contamination is to prevent the human exposure by either constructing the pavement and/or maintaining surface cover (Alternative 2). The proposed remedy also includes an enforceable institutional control requiring routine inspection and maintenance to ensure the integrity of the exposure barrier.

On-site soil vapor intrusion: EPA's proposed remedy for Area 9 and 4 is SVE and capping with off-gas Treatment (Alternative 4). C&D will use *in-situ* remediation technology to reduce PCE and TCE concentration in the soil underneath the manufacturing building. Approximately 2.4 to 5 pounds of PCE and 8 to 16 pounds of TCE are present in the subsurface soil in Area 9 and 4. The SVE system will utilize three extraction wells screened across the shallow contaminated zone to maximize soil vapor collection. Treatment will continue until the soil vapor levels do not exceed the IDEM IDCL of 880 $\mu\text{g}/\text{m}^3$ of TCE. The PCE

level in the soil gas is already below the IDEM IDCL of 17,500 $\mu\text{g}/\text{m}^3$. C&D will treat the extracted vapor if necessary (based on the nature, concentration, and total mass discharged over time) with an appropriate vapor treatment system (activated carbon) before discharging to the atmosphere. With the exception of well installation, C&D will not modify the existing concrete foundation slab in Area 9 so that the existing slab will continue to serve as the cap. During system operation, C&D will monitor influent soil gas vapor concentrations on a routine basis. C&D will pave areas where surface soil contamination exceeds the IDEM groundwater protection criteria. The paved area would act as an exposure barrier to workers and limit infiltration of precipitation into the subsurface. The proposed remedy also includes an enforceable institutional control requiring routine inspection and maintenance to ensure the integrity of the exposure barrier.

River Bank Area: EPA's proposed remedy for the Riverbank Area is construction of an exposure barrier (Alternative 4). This barrier will have minimal impact to the native soils and will help stabilize the stream bank and prevent erosion. Prior to construction, C&D will remove the understory vegetation and visible surface debris from the work area. Since mature trees are present within the footprint of the exposure barrier, C&D will cut and fit the geo-textile around the base of each tree. Riprap will be placed over the geo-textile fabric. Riprap will be sized based on the velocity of the Wabash River during flood stage. During installation, soil will be trenched along the hillside at the base of the work area to provide a base and reduce the potential for erosion during the flood events. In addition, riprap on the upstream and downstream sides of the exposure barrier will also be keyed in to prevent dislodging. C&D will conduct routine inspections of the exposure barrier after heavy rain or flood events.

Groundwater Monitoring: C&D will sample and analyze monitoring well 4S twice a year for metals. Monitoring will continue until the lead level in groundwater does not exceed the IDEM RDCL for two consecutive rounds six months apart.

EPA proposes Clean up plan For Polluted Soil

C&D Technologies, Attica, IN

Evaluation criteria

The proposed cleanup alternatives discussed inside this fact sheet for the C&D Technologies were evaluated against these nine criteria:

1. **Overall protection** (determines whether the option protects human health and the environment by eliminating, reducing or controlling pollutants).
2. **Attaining cleanup standards.**
3. **Controlling pollutant releases.**
4. **Compliance with waste management standards** (disposal of the waste must meet state and federal regulations).
5. **Long-term effectiveness.**
6. **Reduction of toxicity, mobility or volume of contaminated waste.**
7. **Short-term effectiveness.**
8. **Implementability** (how easy can the cleanup option be installed given

C&D Technologies Site: EPA proposes Clean up Plan



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C&D Technologies Comment Sheet

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