



Maryland Department of the
Environment

FACTS ABOUT: CENTRAL CHEMICAL SITE

SITE LOCATION

The Central Chemical site (MDE0302) occupies 19 acres in Hagerstown, Washington County, Maryland. The site is located on Mitchell Avenue, approximately 0.8 mile north of U.S. Highway 11.

SITE HISTORY

From 1937 through 1984, the facility was a blender of agricultural pesticides, herbicides, and fertilizers. Concentrated pesticides manufactured at other locations, were blended with inert materials to produce and package consumer grade products. In 1965, a fire destroyed the pesticide manufacturing building and operations ceased. From 1968 to 1984, the plant processed fertilizers and herbicides. The facility was later leased to various small businesses until 2003. The site is currently unoccupied.

Over the years, wind-blown powders from blending operations and product spills contaminated shallow soils throughout the property. In addition, bulk wastes and liquid wastes were disposed in several onsite areas. Contaminants of concern (COCs) at the site include the metals arsenic and lead, the pesticides DDT, DDD, DDE, chlordane, dieldrin, endrin, lindane, and alpha- and beta-BHC; and the volatile organic compounds benzene, chlorobenzene, chloroform, and 1,2- and 1,4-dichlorobenzene.

Elevated levels of DDT were first detected in sediments of Antietam Creek in 1976 by the United States Geological Survey and were traced back through sediment sampling in the surface water to the Central Chemical site. Consequently, the Maryland Water Resources Administration issued a Complaint and Order to Central Chemical, requiring a hydrologic investigation and cleanup to prevent release of DDT to surface water. Central Chemical again came to the attention of state regulators in 1987 when a former disposal lagoon for pesticides was unearthed during a trenching operation for a sewer line. Soil sampling revealed high COC concentrations. Consequently, the Maryland Department of the Environment (MDE) ordered Central Chemical to perform an investigation to characterize potential hazardous waste sources.

In August 1997, the Potentially Responsible Parties (PRPs) entered into an



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

Administrative Order of Consent with the Environmental Protection Agency (EPA) to conduct the Remedial Investigation (RI)/ Feasibility Study (FS). On September 25, 1997 this site was listed on the National Priorities List (NPL). EPA approved the PRP Work Plan for the RI/FS of the Central Chemical in February 2003.

ENVIRONMENTAL INVESTIGATIONS

Various consultants, the MDE, and the EPA performed hydrogeologic investigations at Central Chemical between 1977 and 1997. Results from these investigations indicated that surface and subsurface soil were extensively contaminated with pesticides and metals. Groundwater and surface water had also been impacted. In February 1997, the fence along the northern site boundary was extended an additional 15 feet to contain soils that exceeded Removal Action Levels. A toxicological risk evaluation of soil data by MDE indicated that the risks to human health and the environment were not significant outside the new fence boundary.

In April 2003, the Central Chemical Community Liaison Panel (CLP) consisting of Hagerstown community members, the PRP Group and their consultant (URS), EPA, and MDE held an initial meeting. The CLP meetings are held on an approximate quarterly basis.

RI fieldwork began in 2003 and was completed in 2004. The RI fieldwork focused on characterization of buildings, surface and subsurface soil, groundwater, storm water, and offsite surface water, sediment and groundwater. A draft RI Report was submitted to regulators in December 2004. Based on EPA and MDE comments, it was determined that a Supplemental Investigation of groundwater was necessary to delineate contaminants offsite and to obtain a better understanding of aquifer characteristics. EPA and MDE split the delineation of the groundwater into a separate parallel Operable Unit (OU-2) from the RI/FS of onsite soils (OU-1) so that the RI/FS process could advance in a timely manner. Fieldwork to delineate offsite groundwater was initiated in 2005 and has continued until November 2007.

Under EPA and MDE oversight, the PRP's demolished the Central Chemical building structures between February 2005 and May 2005. Construction debris was recycled or disposed at Subtitle C or D facilities.

A draft Comprehensive RI Report was prepared by URS for regulator comment in December 2005. Based on EPA/MDE comments, the draft final RI Report was submitted to regulators in December 2006. Initial work on the FS was begun in 2005 and a draft FS was submitted to regulators in July 2007. A draft final FS revised to include a Solidification/Stabilization Alternative for the former lagoon landfill was submitted to



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

regulators in February 2008.

The Supplemental GW Investigation Report is expected in the summer of 2008. Preliminary results indicate that offsite migration of pesticides extends approximately one half mile to the northeast and one mile to the southwest. A thorough discussion of GW results will be presented in the comprehensive RI Report.

The projected completion of the Final Comprehensive RI Report summarizing all phases of the RI is expected in May 2008. The Final FS for the Central Chemical Site is expected in June 2008. The EPA plans to complete a Proposed Plan for Central Chemical onsite soils (OU-1) in August 2008 followed by the Record of Decision for OU-1 in late September 2008.

In September 2009, EPA issued a Record of Decision which outlines the cleanup methods for contaminated soils and waste at the Site. The ROD includes on-site solidification/stabilization of a former waste lagoon; excavation, consolidation, and capping of contaminated soils; and the installation of a ground water extraction and treatment system.

OPERABLE UNIT 1 (OU-1)

The issued ROD outlines the cleanup methods for contaminated soils and waste at the Site. The remedy includes onsite solidification/stabilization of a former waste lagoon; excavation, consolidation, and capping of contaminated soils; and the installation of a localized ground water extraction and treatment system. In April 2010, a Pre-Remedial Design Investigation (PDI) work plan was submitted to support the remedial design for the selected remedy. PDI activities continued in 2013, which includes active lagoon treatability studies.

OPERABLE UNIT 2 (OU-2)

Groundwater contamination has been confirmed to extend beyond the boundaries of the Central Chemical property. Therefore, further delineation of ground water contamination will be performed. A Groundwater RI work plan was submitted to regulators in March 2009. Results identified that offsite migration of pesticides extended approximately one half mile to the northeast and one mile to the southwest and data gaps for complete contaminant delineation were noted in the report. On August 2, 2011, EPA required that the respondents prepare a RI/FS work plan that adequately addresses groundwater characterization and outstanding data gaps. The final revised RI work plan was submitted



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

in February 2013 and conditional approval was received on March 5, 2013. Site mobilization for the RI fieldwork occurred in June 2013 and is currently ongoing. Completion of the RI is expected in the first quarter 2014. A FS addendum is anticipated once full characterization of the groundwater has been completed.

CURRENT STATUS

Final field activities related to the FS are currently ongoing for OU-1. The Field Pilot Study Work plan was submitted on May 2, 2013 and is currently being implemented. The Field Pilot Study is being performed to demonstrate whether the reagent mix design previously developed and approved by EPA in combination with use of field equipment and procedures will satisfy the performance criteria specified in the ROD.

Field work for the RI OU-2 was initiated in June 2013 and is currently ongoing.

SITE REPOSITORY

Site related documents can be found at the Washington County Free Library, Reference Department, 100 S. Potomac Street, Hagerstown, Maryland 21740.

In addition to the Site Repository, the EPA maintains an online Administrative Records database with electronic versions of documents which make up the Central Chemical NPL Site's administrative record. These documents can be viewed at: http://loggerhead.epa.gov/arweb/public/search_results.jsp?siteid=MDD003061447.



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

DETAILED CHRONOLOGY

Numerous environmental investigations of the Site have been conducted. A summary of the environmental investigations of the Site follows.

1. In the early 1960's, the State of Maryland and Washington County Health Department (WCHD) were notified of complaints by local residents that pesticide odors were migrating from the plant.
2. Air samples collected by the State on October 18, 1962 revealed 7.5 milligrams per cubic meter (mg/m³) of Guthion. This concentration was deemed not to pose a hazard at the time by the State Health Department.
3. Following transfer of pesticide operations to a new location in Elkton, Maryland in 1968, Central Chemical filed an application for registration of the Hagerstown Site as a Fertilizer Manufacturing Plant with the Maryland Department of Health on December 6, 1968.
4. State and county health departments were notified of complaints by local residents concerning emission of dust and smoke for the Number 2 stack at the Central Chemical property in 1970. These emissions were due to oil-burning dryers, which were used in the fertilizer manufacturing operations. (The Number 1 stack emitted waste material from the ammoniator used in the fertilizer manufacturing, and records described it as usually non-visible).
5. On June 8, 1970, the WCHD sent a certified letter to Central Chemical, indicating that the Site had been inspected on May 28, 1970. The WCHD identified on-Site dumping of refuse, and a pool of dark, odorous liquid. The WCHD required Central Chemical to consolidate the on-Site dumped refuse, cover the refuse with two feet of soil, and grade the area to promote surface water runoff away from the "dumping site."
6. On August 5, 1970 the Maryland Department of Water Resources (MDWR) performed a field inspection at the Site. The Water Resources Engineer identified a small "dump" outside of the plant area which contained water and sacks of "Omite" (reportedly a powdered insecticide used for mite control).
7. In response to air quality concerns, Central Chemical signed a Plan for Compliance with the State on April 30, 1971. The Plan stated that Central Chemical would be in compliance with State Air Regulations by December 31, 1971. This compliance included the installation of vibrating bag filters and an economic study of the fertilizer granulator in order to determine whether to cease operation or install



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

emission control equipment. State records indicate that the Plan for Compliance was complete by February 14, 1972. These records indicate that Central Chemical opted to cease operation of the fertilizer granulator.

8. The State of Maryland began monitoring the Site for DDT contamination in 1976, following identification of DDT in sediments of the Antietam Creek during a study of the Potomac River watershed conducted by the U.S. Geological Survey. Sediment sampling conducted in 1976 revealed elevated concentrations of lead and DDT in an unnamed tributary located downstream of surface water drainage from the Site.
9. Samples were collected from Antietam Creek in June 1976. These samples indicated that DDT and lead were migrating to Antietam Creek from the Hagerstown Area. As part of the effort to locate the source of the DDT, soil samples were collected from the Site and vicinity in August and October 1976. The samples revealed DDT concentrations from 0.2 to 1,646.4 parts per million (“ppm”), lead from 14.8 to 395 ppm, and arsenic from 2.2 to 300 ppm. Environmental concerns were addressed by the State through Consent Order C-0-77-432, with subsequent amendments, issued during the period of 1977-1978. As a result of these actions, Central Chemical contracted to have the quarry (“Former Waste Lagoon”) and potential sinkhole areas covered with clay and soil. This action included vegetative stabilization (seeding and mulching of the Site) in order to reduce migration of soils from the Site.
10. Soil samples were collected by the Maryland Water Resource Administration (“WRA”) in August, and October 1976 from surface water drainage areas on-Site or near the Site. The WRA's soil samples revealed elevated concentrations of DDT, arsenic, and lead.
11. Following the identification of elevated concentrations of pesticides and heavy metals at the Site in 1976, a Complaint and Order (C-0-77-432) was issued to Central Chemical Corporation by the WRA in 1977. This action directed Central Chemical to submit a hydrogeologic investigation of the Site. Through Supplemental Orders C-0-77-432A,B,C, the State continued to direct investigation, and stabilization of the Site by Central Chemical to prevent, further migration of contaminated soils. The State issued a Notice of Compliance on December 14, 1979. Pursuant to WRA's Supplemental Order C-0-77-432A, Central Chemical contracted with Baker & Wibberly (“B&W”) to conduct a hydrologic assessment of the Site in 1977. This hydrologic assessment included collection of soil samples, ground water, and ponded surface water from the Site and vicinity. These samples were analyzed for DDT, arsenic and lead.
12. Based on the B&W study, and a consent agreement with the State of Maryland, Central Chemical closed the Former Waste Lagoon, and a potential sinkhole located



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

on-Site by covering those areas with clay and soil, and vegetative stabilization.

13. In March 1987, during the excavation of a trench for a sewer line by a third party, excavation workers unearthed what appeared to be buried chemical materials in the area of the Former Waste Lagoon (located in Domain 2). Soil samples collected at that time revealed pesticides, naphthalene and volatile organic compounds (“VOCs”).
14. After the identification of the on-Site dump in 1987 (during sewer line excavation), MDE began negotiating a Consent Order with Central Chemical. Though Central Chemical did not sign the proposed Consent Order with the State, they did hire Roy F. Weston, Inc. (“Weston”) to undertake some investigatory work at the Site.
15. Following the March 1987 incident, the MDE directed Central Chemical to conduct an environmental investigation of the Site. Central Chemical engaged Weston to perform a Phase I Environmental Investigation, which was completed in 1989. Weston's investigation included aerial photograph analysis, fracture trace analysis, soil sampling, ground water sampling, aquifer tests, and geophysical investigations. The Phase I Environmental Investigation included soil borings into the Former Waste Lagoon. Soil samples collected from the Former Waste Lagoon revealed DDT contamination.
16. The MDE prepared a Screening Site Investigation (“SSI”) for the Site in 1989. The MDE provided oversight of the soil borings that were advanced into the Former Waste Lagoon by Weston.
17. MDE described the contents of the Former Waste Lagoon, as follows: "The borings were drilled as deep as thirty-six (36) feet and encountered, black material, yellow powder, and gray waste material, green seams, black and gray silt and clay, brown sand and silt and white powder. Strong petroleum odors were noted during the drilling." The MDE SSI indicated that VOCs, pesticides, and heavy metals were detected in the soil and ground water at the Site. The highest concentrations of contaminants were present in the Former Waste Lagoon; however, lower contaminant concentrations were also detected off of the Central Chemical property. MDE concluded that the Site represented a threat to public health, and should be further evaluated. Central Chemical was issued a Site Complaint (SC-0-92-185) on May 22, 1992 by MDE. Central Chemical was cited for improper storage of materials, including two 5-gallon containers, which reportedly contained "prohibited pesticides." The materials were subsequently removed and a Notice of Compliance was issued.
18. Federal, State, and local officials requested that Central Chemical install a fence around the quarry (Former Waste Lagoon) in 1992. Central Chemical agreed to



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

construct the fence, which was completed by October 1992. EPA performed an evaluation of the Site in 1992, to determine if a removal action was warranted at the Site. Samples were collected from the monitoring wells, shallow soils, and interior building surfaces (the buildings were not demolished until 2005). Based on the samples collected, EPA determined that removal action was not warranted at that time.

19. The MDE issued a draft Expanded Site Inspection (“ESI”) in 1993. The draft ESI included a review of historical Site data, and soil, ground water, surface water, and sediment sampling. The draft ESI indicated that pesticide soil contamination at the Site posed a risk to trespassers slightly above EPA's acceptable cancer risk range.
20. An EPA contractor conducted soil and sediment sampling on April 14, 1994. Pesticides were detected in six of the seven soil/sediment samples collected. At the request of EPA, the Agency for Toxic Substances and Disease Registry (“ATSDR”) reviewed the Site data and made the following recommendations:
 - a. Since a large discrepancy exists between MDE and EPA data for samples collected outside the fence line, additional surface soil sampling (0 to 3 inches) should be conducted at this location to determine if pesticides are present at levels of health concern.
 - b. Restrict dirt biking and other activities on the western part of the Site until surface soil contamination has been adequately characterized.
 - c. Given the proximity of the encroaching housing development on the northeast border of the Site, consider collection of off-Site surface and subsurface soil samples at this location to determine if migration of Site related contaminants has occurred at levels of health concern.
 - d. Determine if subsistence fishing is occurring at Antietam Creek. If so, consider fish sampling for analysis of DDT concentrations in the edible portion of the fish.
21. To address the issues identified by ATSDR, the MDE prepared an ESI in 1996. The ESI included additional soil and fish-tissue sampling. The ESI determined that pesticides in surface soils on and near the Site do not pose a significant increase in cancer risk to adult or child pedestrians walking or playing in the area. A slightly increased risk of adverse health effects was identified, however, for young children who play frequently along the footpaths along the fence near the railroad tracks (west side of Site). The fish tissue data revealed the presence of DDT (Site-related pesticide) and DDD/ Dichlorodiphenyldichloroethylene (“DDE”) (DDT breakdown



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

products), however, the concentrations present were not of immediate health concern.

22. An EPA contractor collected 45 soil samples to the northwest of the Central Chemical property in August 1996. In 1996, that property was an open field, which was subsequently developed by residential housing. EPA collected samples parallel, to the existing Central Chemical fence line in sampling lines 3 feet, 13 feet, and 40 feet from the Central Chemical fence. DDT contamination was identified in the 3 feet, and 13 feet sampling lines. In February 1997, EPA and Central Chemical entered into an Administrative Order on Consent (“AOC”) for Removal Response Action, Docket No. 111-97-08-DC, to construct a fence beyond the existing fence that would result in DDT contaminated soil being present within the Central Chemical fence line. Central Chemical complied with the order and extended the fence to contain the contaminated soils on approximately February 28, 1997.
23. An EPA contractor performed confirmation sampling of soils located outside the extended Central Chemical fence in February 1997. A total of 15 confirmation soil samples were collected. DDT, DDD, and DDE were detected in the confirmation soil samples, albeit at concentrations below removal action levels. MDE reviewed the soil sample results and concluded that the current concentrations of pesticides in the surface soil near the Central Chemical property did not pose a significant increase in cancer risk to construction workers, adults or children from incidental ingestion of soil. A slight potential increase for noncarcinogenic health effects for children from incidental ingestion of soil was noted. MDE concluded that because the soil samples which exhibited elevated contaminant concentrations were now within the Central Chemical fence, access to this area should be limited, reducing the potential for adverse health effects to children.
24. An MDE contractor performed additional soil sampling outside of the Central Chemical fence line to the northwest of the Site in June 1997. A total of eight soil samples were collected outside of the Central Chemical fence to the northwest of the Site. DDT, DDD, and DDE were detected in the soil samples at low concentrations. MDE determined that the contaminant concentrations did not represent a carcinogenic risk above EPA's, acceptable cancer risk range. The Site was proposed to the CERCLA National Priorities List on June 17, 1996, and was listed as Final on the National Priorities List on September 25, 1997.
25. A group of Potentially Responsible Parties (“PRPs”) for the Site, known as the Central Chemical Site Participation Group (“CCSPG”), performed a Remedial Investigation (“RI”) / Feasibility Study (“FS”) at the Site. The RI/FS was completed in 2009. In 2002, two areas were identified on the Site where elevated concentrations of pesticides were present. The first area included a pile of light brown powdery pesticide material. A second area consisted of a tarry residue that was present on the



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015

ground surface. These two areas were excavated and the materials were shipped offsite for disposal by incineration. The amount of material involved in this voluntary action was approximately 3.2 tons.

26. In 2003, an interim remedial measure was performed to reduce the mobility of site constituents that could be subject to transport in rainfall runoff. The interim measure consisted of installing silt fencing along the Mitchell Avenue frontage of the site and the installation of a clean gravel drive area at the Site entrance.
27. In 2005, the CCSPG removed all remaining structures from the Site at a cost of approximately \$3,000,000. Although the demolition of the Site buildings would have typically been performed as part of the Site remedial action and not the RI/FS, the Group elected to perform this interim action.
28. In 2006, the CCSPG provided EPA with early portions of the Feasibility Study (FS), which evaluates the best cleanup options for the site. The following year the first draft of the feasibility study was completed and provided to EPA.
29. In 2009, a Proposed Plan, describing EPA's preferred cleanup alternative for the site soils and wastes, was issued. After receiving public comments on the Proposed Plan, EPA issued a Record of Decision (ROD) in September 2009 for contaminated soils and waste at the site. The ROD includes on-site Solidification/Stabilization (S/S) of a former waste lagoon; excavation, consolidation, and capping of contaminated soils; and the installation of a ground water extraction and treatment system.
30. In 2011, the PRP's began fieldwork for the OU-1 PRD investigation, which included trenching in areas of concern, investigation of the liquid pesticide building and other hot spots; characterization of the former lagoon landfill for the S/S Treatability Study; and installation of monitoring and recovery wells around the former lagoon in preparation for aquifer pump tests.
31. In 2014, Remedial Design activities for the OU-1 remedy began. The OU-2 investigation of the bedrock groundwater is in progress.



Maryland Department of the Environment
1800 Washington Boulevard | Baltimore, MD 21230-1718 | www.mde.maryland.gov
410-537-3000 | 800-633-6101 | TTY Users: 800-735-2258
Larry Hogan, Governor | Boyd Rutherford, Lt. Governor | Ben Grumbles, Secretary

Harp/Land Restoration Program/August/2015