

# American Cyanamid Superfund Site

Bridgewater Township, Somerset County

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## Site Background

The American Cyanamid Superfund site is located in an industrial/commercial area of Bridgewater Township. The 435-acre site is bounded by Main Street (Easton Turnpike) to the north, the Raritan River to the south and west, and a commercial property and Route 287 to the east. The plant buildings have been demolished and the property fenced to prevent trespassing.

The facility has changed ownership several times since Calco Corporation, a rubber manufacturer, began operating at the property in 1915. American Cyanamid purchased the facility in 1929 and eventually expanded the plant's size to 575 acres. American Home Products purchased the site from American Cyanamid in 1994, ceased manufacturing operations in 1999, and sold the plant to Wyeth Holdings Corporation. Products manufactured during the plant's history included rubber chemicals, dyes, pigments, fungicides, petroleum-based products and pharmaceuticals. In 2009, Pfizer Inc. purchased Wyeth Holdings Corporation and assumed full responsibility for all environmental remediation at the site.

Historical industrial activities at the plant caused areas of soil to become contaminated with volatile organic compounds (VOCs), cyanide, polychlorinated biphenyls (PCBs), and metals, and the shallow and deep ground water aquifers to become contaminated with metals and VOCs. In addition, there were sixteen surface storage units referred to as "impoundments" that contained tars, waste water sludges, iron oxide and general plant debris, and four hazardous waste lagoons that required closure under the Resource Conservation and Recovery Act (RCRA).

The United States Environmental Protection Agency (EPA) added the American Cyanamid site to the National Priorities List of Superfund sites (NPL) in 1983. Remedial activities were begun by American Cyanamid with oversight by the New Jersey Department of Environmental Protection (DEP) and continued with American Home Products and Wyeth. Pfizer is currently conducting the remedial activities with EPA oversight and DEP providing technical support.

## Remediation of Contaminated Soil and Ground Water

A ground water containment system was installed in 1980 to prevent the contaminated ground water in the deep bedrock aquifer from migrating off site. The system operates continuously, pumping 650,000 gallons a day of contaminated ground water from two extraction wells. The ground water is sent to a neighboring sewage treatment facility where it is treated to remove the contaminants before it is discharged into Cuckolds Brook. Pfizer is conducting a site-wide Feasibility Study (FS) to evaluate options to remediate the contamination in the shallow and deep ground water aquifers. Potential contamination in the surface water, sediment and wetlands of Cuckolds Brook and the Raritan River are being evaluated under the federal Natural Resource Damage Assessment program.

A Remedial Investigation to characterize the nature and extent of the contaminated soils across the plant was completed in 1992. Soils contaminated with PCBs were excavated and disposed of at an off-site facility, and soils contaminated with polycyclic aromatic hydrocarbons (PAHs) were excavated and placed in the on-site RCRA permitted facility, or capped. In addition, a geo-textile/soil/vegetative cover was placed over an area of chromium-contaminated soil. Pfizer will revisit the capped areas during its site-wide FS to evaluate treatment options for the contaminated soil.

EPA deleted a 140-acre parcel known as the "Hill Property" from the American Cyanamid Superfund site in 1998 after a separate Remedial Investigation revealed the levels of contaminants in the soil were below DEP's Soil Remediation Standards and ground water contamination in this area was minimal and could be addressed through a ground water Classification Exception Area (CEA). The CEA was later lifted after ground water testing revealed that the levels of contaminants had decreased to below New Jersey Ground Water Quality Criteria. This area was later redeveloped through NJDEP's Brownfields reuse program.

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## Remediation of Surface Impoundments and Lagoons

The sixteen surface impoundments are being addressed in phases based on the nature of their contents. Six impoundments (11, 14, 18, 19, 20 and 26) and two of the lagoons (6 and 7) have been remediated by dewatering and solidifying the waste materials and placing it on-site in a state-of-the-art RCRA Subtitle C facility. Remediation of two other impoundments (15 and 16) is underway and involves recycling the non-hazardous iron oxides and consolidating and capping the remaining waste materials on site. Lagoon 9A has been closed in place, and former Lagoon 8 has been converted to an on-site waste consolidation facility. Final remedies to address Impoundments 3, 4, 5, 13, 17, and 24 are being selected.

Impoundments 1 and 2, which contain acid tar sludge, are located near the Raritan River. Seepage water at the river bank downgradient of the impoundments was tested in late 2010 for a wide range of contaminants, and benzene, a VOC, was detected at 20 parts per million (20 ppm). In the spring of 2011, as a temporary remedial measure and by order of EPA, Pfizer placed bags filled with activated carbon at the seep discharge points along the river to prevent the contaminated water from reaching the river. Sampling of the surface water from the Raritan River conducted in June 2011 showed less than 10 parts per billion (10 ppb) benzene and low levels of semi-volatile organic compounds (SVOCs) and inorganic compounds. Pfizer is also in the process of installing a ground water removal system/collection trench and a containment wall along Cuckolds Brook and the Raritan River as an intermediate measure to further address the seepage. Permanent remedies to address Impoundments 1 and 2 are being evaluated. The carbon bags will remain in place until a final remedy is implemented.

## Hurricane Irene and Tropical Storm Lee

In August and September of 2011, part of the American Cyanamid Superfund site was flooded due to extensive rainfall from these two closely occurring storm events. The ground water containment system was rendered nonfunctional because of a power outage and the submersion/flooding of extraction well pumps. The ground water containment system was back in operation by September 30. The flooding also caused tar-like materials to overflow the berms surrounding Impoundments 1 and 2. Cleanup of the tar-like materials was completed in late September 2011.

EPA and Pfizer collected flood water and surface water samples from the Raritan River in September 2011 for analysis of VOCs, SVOCs, and metals. VOCs and metals were detected in the samples; however, the levels were too low to have a significant impact on water quality. An expedited Feasibility Study is underway to identify methods to permanently remediate Impoundments 1 and 2. DEP has requested that EPA make remediation of the entire site, and Impoundments 1 and 2 in particular, a top priority.

## Glossary

**Aquifer:** An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. The water contained in an aquifer is called *ground water*.

**Classification Exception Area (CEA):** A designation established whenever *ground water* standards in a particular area are not met. It ensures the use of the *aquifer* in that area is restricted until standards are achieved.

**Cleanup:** Remedial measures taken to address a release or potential release of hazardous substances that could affect public health or the environment. The term is often used interchangeably with remedial action.

**Containment:** Actions to limit or prevent discharges or the spread of contamination.

**Downgradient:** A downward slope that causes ground water to move toward lower elevations.

**Extraction Well:** A well from which contaminated ground water or vapors are pumped.

**Feasibility Study (FS):** The process of evaluating remedial alternatives for a Superfund site from technical, environmental and cost perspectives.

**Ground Water:** Subsurface water that fills pores between materials such as sand, soil or gravel.

**Monitor Well:** Monitor wells provide access to *ground water* in order to get information about site conditions, such as the extent and type of ground water contamination, soil types, depth to ground water and direction of ground water flow.

**National Priorities List (NPL):** A list of sites determined by the federal government to have the highest priority based upon a hazard ranking system, making them eligible for federal funding under *CERCLA*. Sites on the NPL are called *Superfund* sites.

**Organic:** Relating to compounds that contain hydrocarbon groups.

**Parts per billion (ppb)/Parts per million (ppm):** Units of concentration used to express the levels of contaminants at a site undergoing a *Remedial Investigation* or a cleanup.

**Polychlorinated Biphenyls (PCBs):** A group of chemicals used in transformers and capacitors as an insulating material, in gas pipeline systems as a lubricant, and other purposes. Due to their toxicity and environmental persistence, sale and new use of these materials was banned in 1979.

**Remedial Investigation (RI):** An in-depth study designed to gather data necessary to determine the nature and extent of contamination at a site and establish criteria for addressing it.

**Resource Conservation and Recovery Act (RCRA):** A federal statute that requires comprehensive regulation of hazardous waste generation, transport, treatment and disposal.

**Semi-Volatile Organic Compound (SVOC):** An organic compound that has a boiling point higher than water and may vaporize when exposed to temperatures above room temperature.

**Superfund:** The common name for the *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*, which was enacted by Congress in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA). CERCLA authorized USEPA to provide long-term remedies at hazardous waste sites and established a fund of special taxes and general revenues to clean up these sites.

**Volatile Organic Compounds (VOC):** Carbon-containing chemicals that evaporate readily at room temperature.