United States Environmental Protection Agency
Solid Waste and Emergency Response (5502G)
EPA520-F-92-010
Fall 1992

EPA Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Wide Beach Site Profile

Site Description: A small residential community in Brant, New York

Site Size: 55 acres

Primary Contaminants: Polychlorinated biphenyls (PCBs)

Potential Range of Health Risks Without EPA Cleanup: Skin rashes, liver damage and problems of the central nervous system

Nearby Population Affected: 5,000 within 3 miles

Ecological Concerns: Small area of wetlands on site

Year Listed on NPL: 1983

EPA Region: II

State: New York

Congressional District: 31

Success In Brief

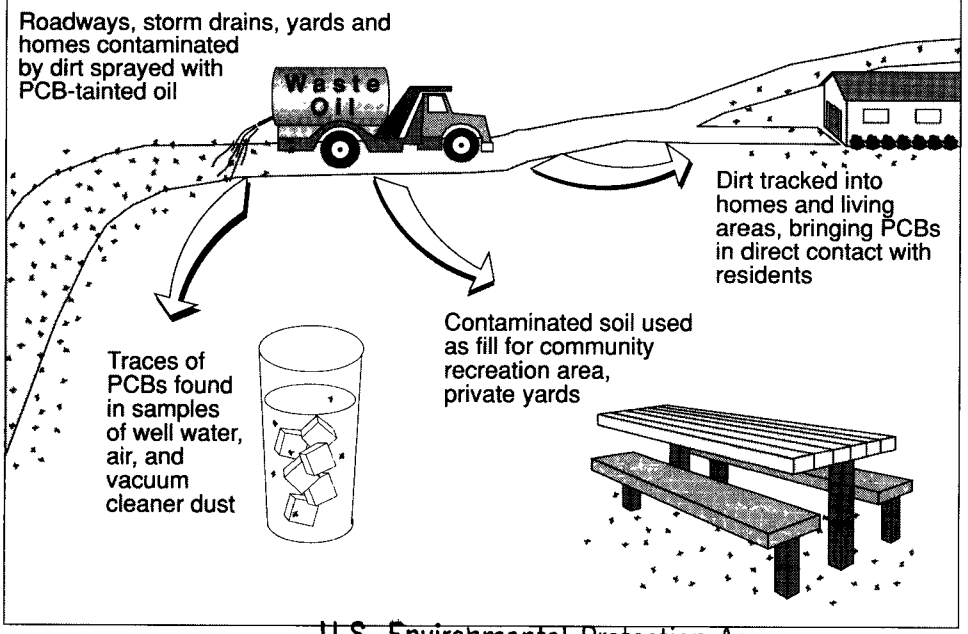
EPA Uses Innovative Technology to Eliminate Wide Beach PCB Threat

Wide-spread contamination of polychlorinated biphenyls (PCBs) threatened the Wide Beach section of Brant, New York, a popular vacation resort. EPA's Superfund program effectively completed a permanent cleanup of Wide Beach in the span of one year. Other highlights included:

- A new and innovative technology to remove PCB contamination;
- Reduction of PCBs to one-fifth of acceptable levels;
- Temporary relocation of residents who were concerned for their health while cleanup activities took place;
- Newly paved roads and driveways, re-landscaped yards, and a new storm sewer system; and
- Restoration of ecologically sensitive wetlands.

EPA's achievements significantly reduced PCB risks at Wide Beach, and left a satisfied community in Brant.

A Chronicle of PCB Contamination at Wide Beach



The Site Today

PCB-contaminated soil has been cleaned up, roads and driveways paved, a new storm sewer system installed, and contaminated soil in neighboring yards replaced and re-landscaped. Over 40,000 tons of contaminated soil have been treated. Construction designs for cleaning up affected wetlands are completed and the area is expected to be fully restored during the fall of 1992. EPA is pursuing legal action to recover cleanup costs from parties believed to be responsible for contamination.

A Site Snapshot

Wide Beach is a 55-acre development located on Lake Erie in Brant, NY. The site was previously used as a summer vacation spot, but now has a year-round population which includes over 60 homes.

Until 1986, the area was served by dirt roads. Contamination within the community occurred from 1968 to 1978, during which time waste oil laced with polychlorinated biphenyls (PCBs) was sprayed on the dirt roads to control dust.

Driveways, yards, storm drains, homes, and interiors of cars were contaminated from dirt tracked or blown in from the roads.

Adverse health effects can result from direct contact with contaminated soils, drinking tainted water, or breathing airborne PCBs. These effects can range from skin rashes to liver damage and problems of the central nervous system.

In 1980, workers excavated soil from around the roadways while installing a sanitary sewer line in the development. Unaware that a PCB problem existed, residents used this excavated soil as fill for their yards and a community recreation area.

Subsequent sampling revealed widespread PCBs in the air, road dust, soil, and vacuum cleaner dust. Traces of PCBs were also found in water samples from private wells.

Lake Erie borders the Wide Beach development on the western side. The site drains through a system of ditches into a stream and marsh wetlands south of the development. This stream flows into Lake Erie, as does surface runoff from the site.

The area around the site is residential and agricultural. All residents of the Wide Beach area receive their water from private wells.

Approximately 5,000 people within a three-mile radius of the site depend on municipal and private wells for drinking supplies.

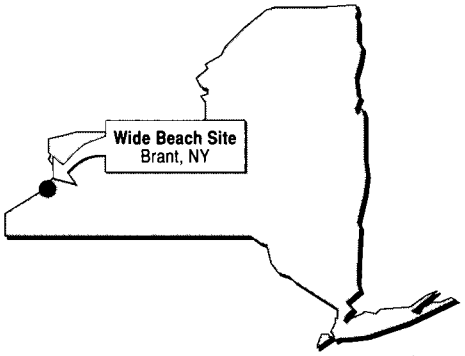
QuickResponse by EPA Removes Immediate Threats to Community

In June and July 1985, in response to the unsafe levels of PCBs found in Wide Beach homes, EPA acted quickly to protect residents from contaminated run-off and dust until a long-term solution could be implemented. This emergency action involved:

Emergency actions mitigated immediate health threats

- Paving over the PCB-contaminated dirt roadways, driveways and drainage ditches;
- Decontaminating homes by vacuuming, rug shampooing, and replacing air conditioner and furnace filters;
- Installing filters on individual wells to protect the population from traces of PCB contamination found in the ground water; and
- Repairing a storm drain to alleviate flooding problems.

These actions, conducted in only two months, mitigated the immediate threats to human health posed by PCB contamination in the Wide Beach development. EPA activities also effectively stopped the further spread of contamination to the rest of the nearby community.



Wide Beach From The Air

This aerial photograph of a section of the Wide Beach community shows the layout of homes and roadways, and includes both dirt and paved roads. The former summer community operated without paved roads until recently. Dust from the community's dirt roads led to oil spraying, which in turn distributed polychlorinated biphenyls (PCBs) into the community. Contaminated soils excavated from the roadsides were later used as fill for community recreation areas and private yards.

EPA Uses Innovative Technology To Reduce Risk

At the same time EPA was eliminating the immediate threats posed by PCB-contaminated dust, a plan for permanent cleanup and removal of the PCB threat was being developed. In September 1985, EPA selected a plan to treat the contaminated soil through an innovative technology, known as Anaerobic Thermal Process (ATP).

This technology chemically destroys PCB molecules and breaks them down into harmless components. The paving that was temporarily laid on the roads to prevent further contact with PCB-contaminated dirt would be removed, and the soil underneath excavated and treated, along with soil removed from yards and driveways. The treated soil would be used as backfill to the extent possible and the roads would then be repaved.

To implement the cleanup plan for the site, EPA conducted bench- and pilot-scale studies to determine the feasibility of chemically treating the PCB-contaminated soils. Both studies produced positive results, indicating that 20,000 tons of soil could be excavated and processed in an on-site reactor.

Soils treated by this pilot process would reduce harmful PCB contamination from more than 1,000 parts per million (ppm) to less than 10 ppm. Based on the success of this study, EPA prepared a design which accommodated a commercially available unit.

After bids were received from contractors to build the unit and complete the cleanup, a contract was awarded. The contractor that was selected submitted a

continued on page 4

Innovative Technology Reduces PCB Risk

continued from page 3

proposal for an alternative technology that allowed for soils to be cleaned to a target level of 2 ppm.

Upon seeing its effectiveness, EPA approved this technology and moved forward with site cleanup.

Using the technology resulted in significant community benefits and the advancement of hazardous waste cleanup practices.

The innovative technology to chemically treat the PCB-contaminated soil also resulted in the following benefits:

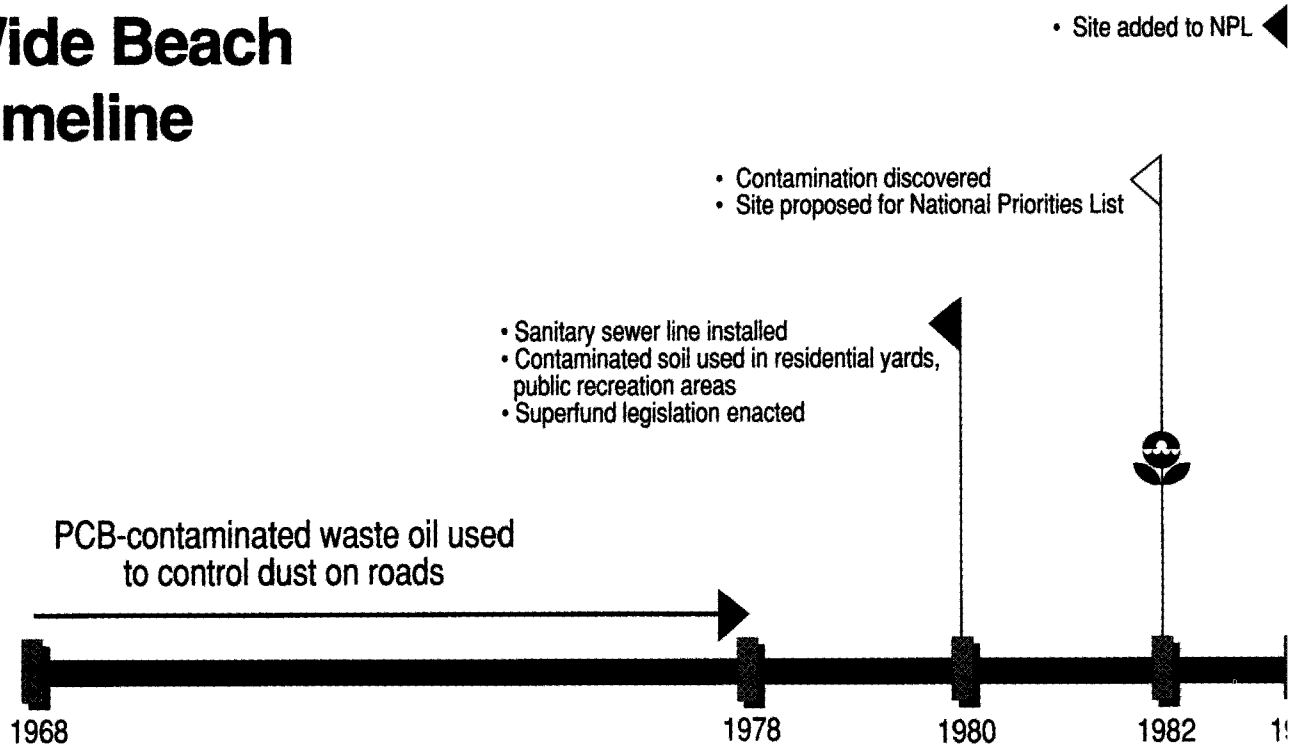
- **Risks Reduced** — It was possible to lower the final level of contamination from 10 ppm to less than 2 ppm;
- **Quick** — Cleanup of all soils on the site lasted only 12 months, from September 1990 to September 1991;
- **Thorough** — Twice as much soil was processed than was originally planned, increasing the amount of treated soil from 20,000 tons to 40,000 tons;

It was possible to lower the final contamination level from 10 ppm to less than 2 ppm

- **Cost Effective** — The new technology was more cost effective because it allowed for more soil to be treated in a shorter period of time;
- **Permanent** — Rather than contain the waste on the sit transport it to another disp facility, EPA chose a cleanu plan that destroyed the PC
- **Safer** —The need for costly dangerous transportation c hazardous materials was el nated because processing o curred on the site itself. By- products of the treatment t nology are also harmless.

Because EPA was able to a an innovative technology to t treatment of the Wide Beach s cleanup was achieved faster a more efficiently. Not only dic community benefit from this cleanup method, but a new p was identified and tested for other PCB sites across the cou

Wide Beach Timeline

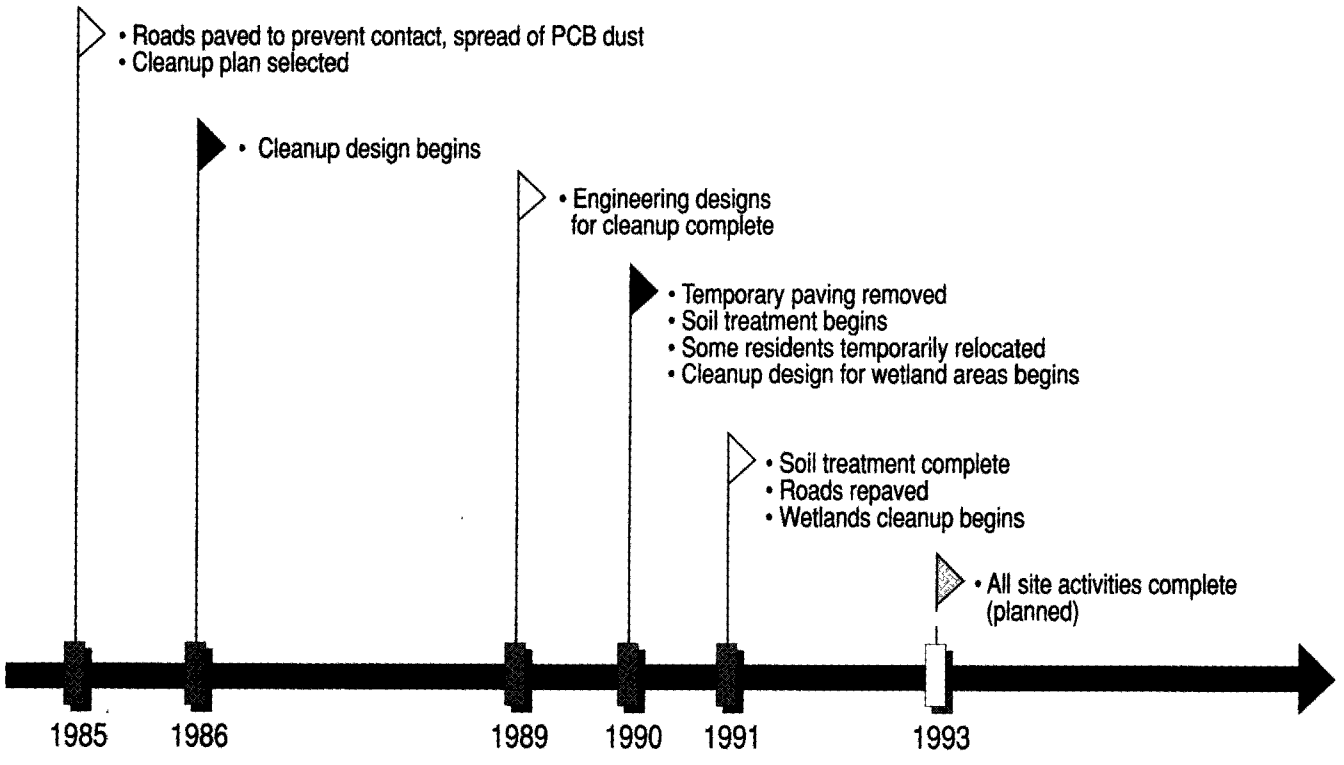


EPA Provides Temporary Relocation During Cleanup Activities

While the dangers posed by PCB contamination during EPA cleanup activities were minimal, some homes became inaccessible for periods of time, due to the fact that roads and driveways were being excavated and rebuilt.

For those who remained convinced that their health would be compromised, and for those who would not have access to their homes during cleanup actions, EPA provided the option of temporary relocation.

Thirteen families chose this option and were relocated to nearby hotels for periods ranging from 4 weeks to 2 months.



Advanced Cleanup Method Provides Permanent Solution to PCB Problem

The Anaerobic Thermal Process (ATP), used at the Wide Beach site, is an innovative approach to hazardous waste cleanup that provides a safe, economically effective alternative to traditional methods of cleanup, such as incineration.

Originally developed to produce crude oil from tar sands and oil shales, this "transfer technology" is intended to recover reusable by-products. Heat is used to vaporize organic contaminants from mixtures of solids and water. This is ideal for Superfund sites where wastes consist of soils, sludges, and sediments. Contaminants that can be vaporized include: polychlorinated biphenyls (PCBs), oil refinery waste, municipal waste, and tires. Separated contaminants form an oily liquid which can be recycled or disposed appropriately. Other products can be disposed as non-hazardous waste.

Contaminants recovered through the process can be recycled

The process is fairly simple. The first part of the process is conducted in an initial preheat zone that evaporates moisture and light oily materials from the contaminated solids. Next, the system moves the contaminated solids into an air-free, high temperature zone where contaminated media are raised to temperatures of approximately 950°-1150° F.

Under these temperatures, the solids become fully decontaminated. Vapors are removed from both heating zones using a

continued on page 7

Innovative Technology At Wide Beach

Dwarfing the chain link fence which surrounds it, the large tubular structure of treatment chambers is visible in the processing plant at the Wide Beach site. A technique originally developed to extract crude oil heats soil to trap contaminants and extracts recyclable materials.

EPA Establishes Open Lines of Communication with Residents

Inevitably, the cleanup of the Wide Beach site was disruptive to the community: during the initial actions, homes had to be entered to be thoroughly decontaminated, roads were excavated and repaved, and some residents were relocated for up to two months. To address both these inconveniences and the related concerns of the community, EPA developed and mailed fact sheets to keep residents informed, held several public meetings, and interacted closely with the Wide Beach Homeowners' Association. The contractors who were actually cleaning the site and treating the contaminated soil also attended the public meetings to give presentations and answer technical questions raised by the community.

EPA interacted closely with the Wide Beach Homeowners' Association

Through these meetings and an on-site demonstration of the soil cleanup process, EPA worked to abate citizen concerns by remaining accessible and responsive to public questions.

Cleanup Method Provides Permanent Solution

continued from page 6

vacuum system. Finally, condensers recover reusable oils and water from the vapor that was removed from the solids. The condensed water, which is similar to wastewater from crude oil refineries, is treated for reuse or disposal. Recovered contaminants can be recycled if, for example, they originate from petroleum refinery wastes.

If the recovered contaminants are unrefinable oils, PCBs, or dioxins, they are disposed in a hazardous waste landfill or sent to a hazardous waste treatment facility.

Furthermore, an optional process feature used at the site chemically destroys PCBs and related compounds, eliminating the need for off-site disposal in certain cases. After treatment, the decontaminated soils can be used for backfilling.

The benefits of this system– developed by SoilTech ATP Systems, Inc. – are significant. The ATP satisfies four common guidelines for waste management:

- **Reduced toxicity**: By removing the contaminants from the larger solid, the volume of hazardous waste is reduced;
- **Reduced mobility**: Removal of hazardous chemicals from the site prevents further mobilization into ground water, the atmosphere and the foodchain;
- **Recycled Materials**: Contaminants such as petroleum can be substantially recovered and reused (from 40 to 80%); and
- **Reduced volume**: Organic contaminants are separated as a greatly reduced volume of liquid for reuse or disposal.

In addition, the system has shown both short- and long-term effectiveness. In the short-term, the decontamination process is very quick—up to 15 tons can be processed in an hour. This high rate of operation allows for timely site cleanup.

The ATP system also offers long-term protection due to the rigorous elimination of hazardous materials from soils, sediments, or other solids in the environment. The results of the process are permanent — no post-treatment is necessary.

In the end, PCB levels were reduced, on average, to between one and ten percent of the EPA-mandated cleanup levels. This high efficiency is unique among alternatives to incineration. The results at this site have proven the ATP system to be an effective, reliable, cost-saving alternative to neutralize PCB-contaminated soils and sediments.

EPA Restores Natural Resources Along Wetlands Expanse

In a complicating twist to the cleanup of the Wide Beach site, EPA discovered that part of the area where cleanup activities were taking place was a wetland.

To be considered a wetland, the soil in that area must remain saturated a certain number of days per year and the area must support vegetation, plant and animal nurseries, and endangered species specific to the area.

Wetlands also provide a natural filtering action for pollutants, an added benefit for habitat and surrounding areas.

Because wetlands play such a vital role in maintaining our planet's ecosystem, EPA's plan calls for complete restoration of this area.

Final restoration and re-landscaping activities will be achieved in March, 1993.

If you wish to be added to our mailing list or to comment on this bulletin's content, length or format, please call (703) 603-8984 or send a letter to *Superfund At Work* (5502G), 401 M Street SW, Washington, DC 20460.

For additional copies of this or other *Superfund At Work* updates, contact the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, telephone (703) 487-4650.

Success at Wide Beach

EPA activities at the Wide Beach hazardous waste site quickly, effectively, and permanently eliminated the threats posed to the community by widespread PCB contamination.

Use of an innovative technology enabled the site to be cleaned up to maximum standards in a very short period of time. EPA involvement at the site also resulted in several other community benefits, including the addition of paved roads and driveways, a new sewer system, re-landscaped yards, and increased property values.

EPA

United States Environmental Protection Agency
5502G
Washington, D.C. 20460

Official Business
Penalty for Private Use $300

First Class Mail
Postage and Fees Paid
EPA
Permit No. G-35

Printed on recycled paper