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United States Environmental Protection Agency

Solid Waste and Emergency Response (5502G)

EPA 520-F-92-017
Fall 1992

EPA

Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Ciba-Geigy Site Profile

Site Description: An industrial park in McIntosh, Alabama, surrounded by farm and forest land, and bordered by a floodplain

Site Size: 1,500 acres

Primary Contaminants: DDT, lindane and herbicides

Potential Range of Health Risks Without EPA Cleanup: From chronic health effects to cancer, resulting from ingestion of contaminated ground water

Nearby Population Affected: 250 in the town of McIntosh; 500 within greater municipal area

Ecological Concerns: Contamination of Tombigbee River and associated wetlands. Potential effects on area wildlife.

Year Listed on the NPL: 1983

EPA Region: IV

State: Alabama

Congressional District: 1

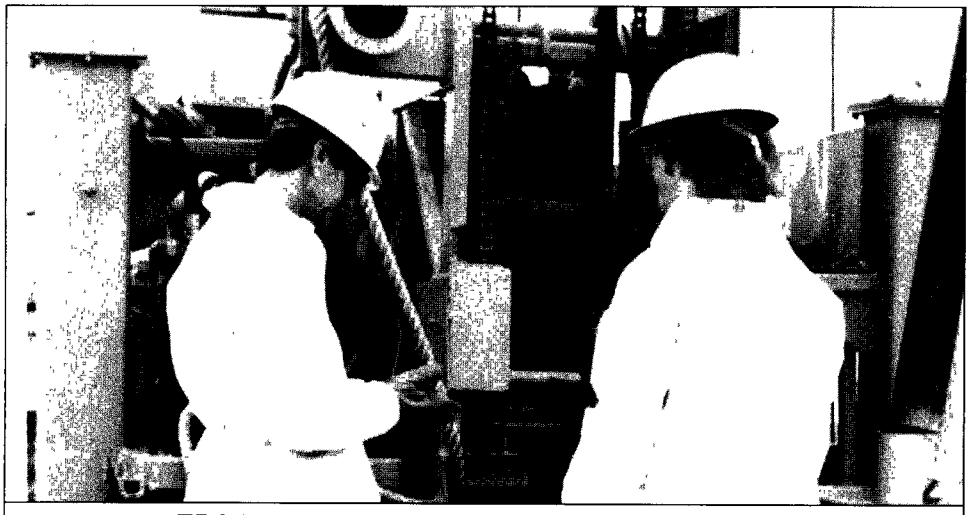
Success In Brief

EPA Wins Ciba-Geigy's Full Cooperation to Clean Up Alabama Site

On March 31, 1992, the U.S. Environmental Protection Agency (EPA) reached an agreement with Ciba-Geigy Corporation in McIntosh, Alabama to clean up soil and ground water contaminated by DDT, herbicides, and chemicals. This agreement is one of the largest private party settlements in Superfund history, valued at approximately $120 million. EPA activities at the site included:

- Conducting preliminary contamination investigations jointly with the Alabama Environmental Health Administration, beginning in 1979;
- Designing a multi-phased cleanup that is responsive to the complex nature of the contamination and reduces potential risk to the local population and environment; and
- Awarding a grant to a community group to help them participate in cleanup decisions.

Ciba-Geigy, like EPA, has made consistent efforts to build and maintain good relations with the community. The public participates in decisions regarding the cleanup process, and maintains a dialogue with EPA about changing site conditions. These efforts demonstrate the increasing trend toward cooperation between industries, local communities, and EPA at Superfund sites.



EPA Launches Soil Cleanup at Ciba-Geigy Site
EPA's most recent cleanup plan involves the excavation and treatment of approximately 130,000 cubic yards of DDT-contaminated soil. Workers pictured above use a rotary rig to collect soil samples.

The Site Today

The first phase of cleanup — ground water treatment — is operating and significantly reducing contamination. The company continues to monitor ground water to ensure contaminants do not migrate from the site. Ciba-Geigy is presently drafting a cleanup design workplan for the second phase of work to remove and treat approximately 130,000 cubic yards of contaminated soil. Sampling and analysis for a third phase of work has also begun to address the extent of remaining

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A Site Snapshot

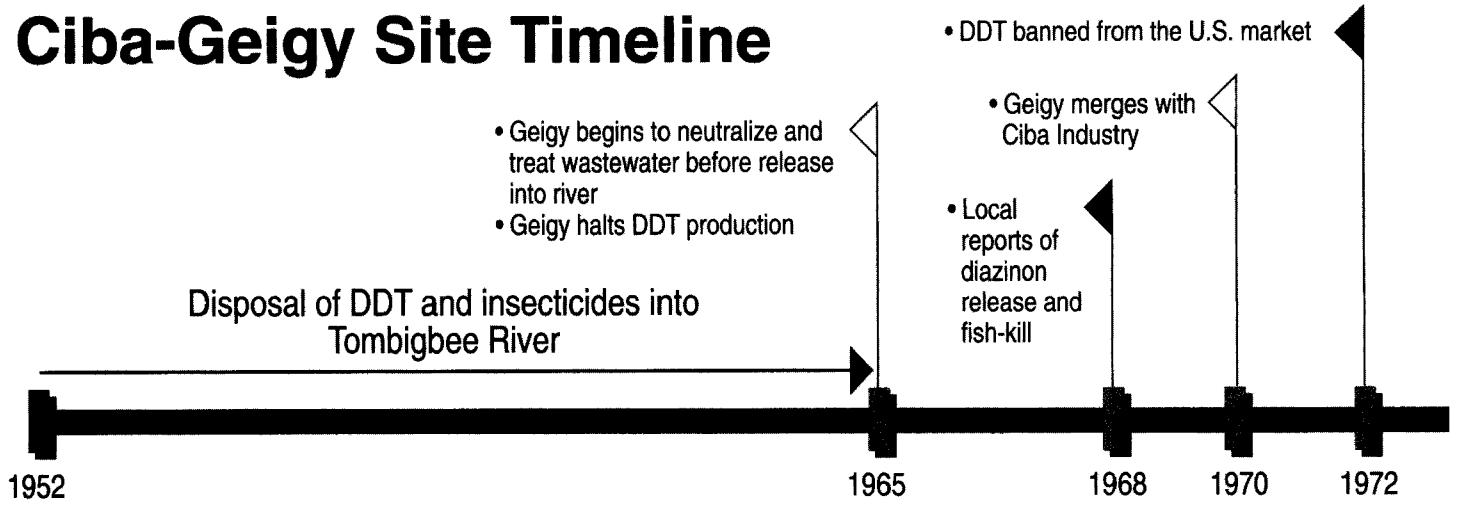
The Ciba-Geigy Superfund site is located on 1,500 acres in McIntosh, Alabama, approximately 50 miles north of Mobile. The actual contamination is confined to 20 acres of the actual site. Some 250 people live in McIntosh, but the municipal area serves over 500 residents. The surrounding area is forested, providing a habitat for wildlife and a livelihood for loggers. The southeastern portion of the property is located along the floodplain of the Tombigbee River, which flows into the Gulf of Mexico. Immediately east of the site is a 185,000-acre wetland and forest area, containing several habitat types and supporting a variety of protected and endangered species, including the American alligator and various migratory birds.

Geigy Chemical Corporation began operations in 1952, first producing the pesticide DDT, and later brighteners, herbicides, insecticides and other agricultural and industrial products. In 1970, Geigy merged with Ciba Industry, forming Ciba-Geigy Corporation. The company ceased producing DDT in the mid-1960s. The suspected carcinogen was banned by EPA in 1972. Ciba-Geigy currently produces resins and additives for the plastics industry, as well as other chemical products. Adjacent to the Ciba-Geigy property is another chemical manufacturer, Olin-Mathieson, which began producing chlorine and caustic soda in 1953. Olin-Mathieson is itself a Superfund site because of mercury contaminated soil, ground water and surface water. Together, Ciba-Geigy and Olin-Mathieson are major employers in Washington County, providing over half of the jobs for people in the McIntosh area.

Prior to 1965, Geigy discharged its wastewater directly into the Tombigbee River. After 1965, the company began neutralizing its wastewater before discharging it into the river in accordance with state and federal standards. Ciba-Geigy also disposed of its waste in several on-site areas, resulting in extensive soil and ground water contamination. As a result of these disposal practices, the Tombigbee River floodplain may also be affected. The primary contaminants include: chlorinated pesticides (including DDT), manufactured pesticides (lindane, atrazine, and some volatile organic compounds), heavy metals (including lead, chromium, copper and arsenic), and cyanide.

Potential contamination of the Tombigbee River floodplain poses an undetermined threat to local wildlife and their habitat. Pathways of potential exposure to hazardous substances include drinking contaminated ground water, eating the meat of wildlife that feed in the affected area, and contamination of workers at the site through direct contact. Although the aquifer beneath the contaminated soil is not a current source of drinking water, its future use could be endangered if contaminated soil is not permanently cleaned up.

Ciba-Geigy Site Timeline



Ciba-Geigy: Commitment to Cleanup

Cleanup at the Ciba-Geigy site represents a huge effort on the part of the company, which has complied with EPA requirements at all stages of the process. Successful decontamination of the site represents an equally strong effort on the part of EPA's Superfund program. Throughout the process, channels of communication between EPA, Ciba-Geigy and the community have been open, enabling the complex cleanup to proceed smoothly.

Site Discovery Leads to EPA Action

From the mid-1950s to the early 1960s, some McIntosh residents detected fumes emanating from the Geigy site. They were reassured by plant personnel that the fumes were not harmful. In 1968, community members also noted a large fish-kill resulting from an accidental release of diazinon, a widely used pesticide, into the Tombigbee River. At that time, people were unaware of the risks associated with most chemicals.

In the late 1970s and early 1980s, several members of the McIntosh community became concerned about potential health risks associated with ground water contamination. Some felt they lacked sufficient information on contamination of this potential drinking water source to satisfy their concerns. In 1979, when mercury poisoning from the Olin-Mathieson Company was discovered in local fish, EPA and the State Health Administration began sampling ground and surface water. Through this preliminary investigation, a variety of hazardous chemicals other than mercury were detected, implicating Ciba-Geigy as the source of contamination. DDT, chloroform and chlorobenzene were found in nearby surface and ground water.

In August 1982, EPA conducted another investigation of the Olin-Mathieson Company. As part of this investigation, EPA sampled a water well on Ciba-Geigy property. These studies indicated the presence of hazardous substances that warranted

Site Today

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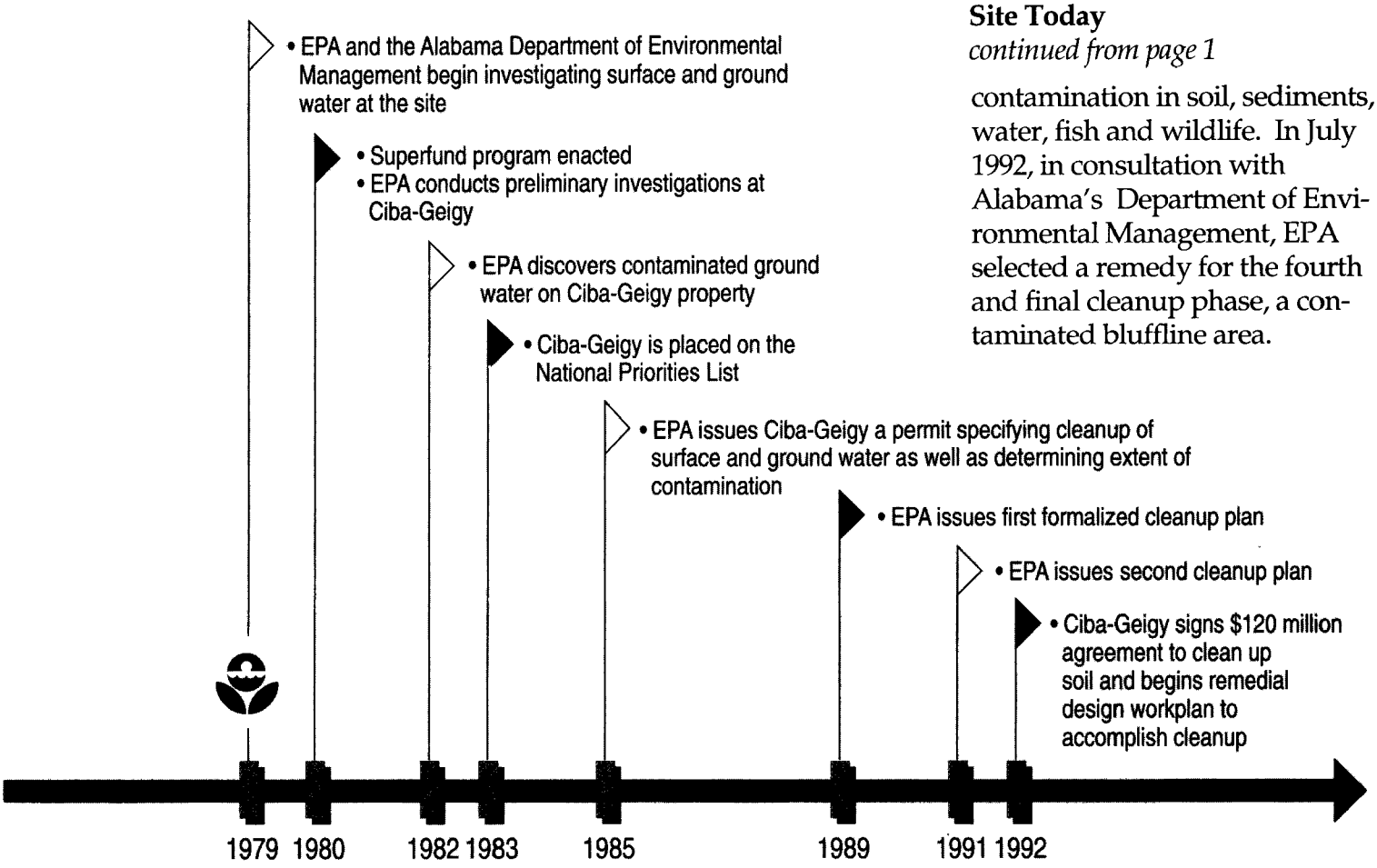
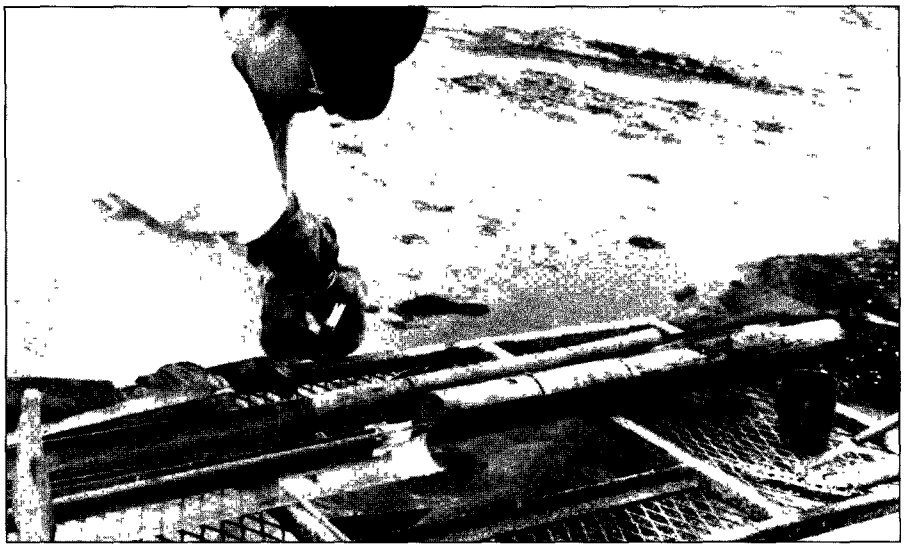
contamination in soil, sediments, water, fish and wildlife. In July 1992, in consultation with Alabama's Department of Environmental Management, EPA selected a remedy for the fourth and final cleanup phase, a contaminated bluffline area.



at Ciba-Geigy. In September 1983, the site was added to the National Priorities List (NPL), a roster of the nation's waste sites eligible for comprehensive cleanup under the Superfund program.



Technician uses a splitspoon sampling device to collect soil samples along the floodplain of the Tombigbee River.

EPA Uses Two Environmental Statutes to Regulate Cleanup

Generally, Superfund sites are subject to the guidelines of one statute, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly known as Superfund. CERCLA regulates the cleanup of waste generated in the *past*, by both active and inactive facilities. Prior to the enactment of CERCLA in 1980, the Resource Conservation and Recovery Act (RCRA) of 1976 served as the regulatory standard for tracking hazardous substances from generation to disposal. RCRA requires procedures to be used in treating, storing, and disposing of hazardous wastes at currently operating facilities.

EPA evaluated various cleanup alternatives at the Ciba-Geigy site and decided to control contamination through both RCRA and CERCLA. RCRA laws govern the cleanup standards for ground water (since production at the facility is on-going), and CERCLA provides the federal standard for soil, sludges and chemical residues from past disposal activities.

Contaminated Ground Water is the First Focus of Cleanup

Cleanup at the site began in October 1985, when EPA issued Ciba-Geigy a RCRA permit and corrective action plan, directing them to: (1) clean up contaminated surface and ground water; (2) conduct a detailed investigation to determine the scope of soil contamination; and (3) close ten waste holding and transport units at the site.

In 1987 and pursuant to the 1985 corrective action plan, Ciba-Geigy installed a $3 million pumping system for the interception and removal of contaminated ground water from the shallow aquifer underneath the site. Also in 1987, Ciba-Geigy began using an above-ground waste water treatment system, valued at $73 million, which involves the use of bacteria and other biological organisms to treat waste water. In 1988, Ciba-Geigy began using an innovative ground water treatment, involving the use of bacteria and other biological organisms, to control ground water contamination. The waste water treatment system also treats process water from the operating facility as well as the first inch of storm flow runoff from the site. The company installed four corrective action monitoring wells downstream of the pumping wells to monitor the effectiveness of the removal system. Today, the ground water treatment system continues to significantly reduce contaminants in the water.

EPA Undertakes a Multi-Faceted Soil Cleanup

In 1989, EPA Superfund issued its first technical plan, endorsing the continuation of the treatment system for the shallow aquifer. In addition, EPA evaluated the alternatives and risks posed by the contaminants as they relate to the Superfund portions of the site (i.e., those areas no longer in active use by Ciba-Geigy), and outlined three future cleanup activities for the site. These activities will address:

- Contamination of soil at ten of the eleven former waste management areas;
- Contamination within the floodplain of the Tombigbee River close to the site; and
- Contamination of soil in former waste management Area #8, which was addressed separately. The debris at this location and a separate bluffline required a different technical approach.

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Cleanup Commitment

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Throughout 1990 and into 1991, EPA, the State of Alabama and Ciba-Geigy worked together to develop a comprehensive cleanup plan for approximately 130,000 cubic yards of contaminated soil.

In September 1991, following a period of public comment, EPA formalized this cleanup strategy by issuing its second technical plan. EPA's goals for this phase of soil cleanup were to: (1) reduce or eliminate the threat of direct contact with contaminants by removing the first 12 inches of contaminated soil; (2) remove contaminated soil that endangers the aquifer; (3) develop a flexible strategy, including thermal treatment, to clean up soil with varying levels of contamination, and at varying depths above and below 20 feet; and (4) restrict future land and ground water use at and around the site. EPA and the company are now finalizing the engineering plan and detailed designs.

Once soil is excavated, it will be treated by different methods, depending on the type and severity of contamination. EPA has left its treatment plan flexible to accommodate the use of innovative technologies such as bioremediation and vacuum extraction. Bioremediation involves the use of microorganisms to consume toxic compounds. Vacuum extraction removes contaminants from the soil by means of a vacuum or forced air device, and is generally used with other technologies.

Excavated soil and sludge with high levels of contamination — approximately 65,000 cubic yards — will be thermally treated on-site. An additional 62,000 cubic yards of moderately contaminated soil and sludge will be treated by stabilization/solidification. This process involves mixing the soil with hardening agents, such as cement, to immobilize the contaminants. Treated soil and ash from the thermal treatment process and treated material from any other process will be disposed of at an on-site, approved facility. Sampling and analysis of the floodplain began in May 1992. At this time, EPA's proposed cleanup for Area #8 was also presented to the McIntosh community.

Largest Single Private Party Agreement in Superfund History

On March 31, 1992, Ciba-Geigy signed an agreement to perform the second phase of work, and to pay for 100% of EPA's past costs. This single agreement, presently valued at approximately $120 million, represents the largest single private party settlement in Superfund history. The company has already spent $75 million for ground water treatment. In addition, Ciba-Geigy will reimburse EPA for oversight costs and will pay for all future expenses associated with the site, including $50 million for the cleanup of Area #8. The cost of the third phase of cleanup (the floodplain), if required, has yet to be determined.

EPA and Ciba-Geigy Promote Strong Community Relations

The Ciba-Geigy site provides an encouraging example of a local population and an industry who are successfully bridging their differences. EPA facilitates communication links between the company and the neighboring community.

In 1970, Ciba-Geigy began publishing a monthly newsletter for employees and community neighbors about company operations. During the 1970s, Ciba-Geigy held open houses, inviting groups to tour the plant facilities. Ciba-Geigy holds regular, advisory meetings with McIntosh community members to discuss the on-going cleanup process. Ciba-Geigy kept McIntosh residents and elected officials informed through regular informational mailings.

EPA has a vigorous community relations program in McIntosh which aims at keeping the residents as well-informed as possible. Toward this end, EPA holds regular meetings with citizens, city council members, and other elected officials. As part of these meetings, EPA invites local residents to comment on cleanup plans. In addition, EPA uses local newspapers, radio, and direct mail to announce events.

EPA Technical Assistance Grants Give Communities Greater Access to Information

In May 1992, the McIntosh Community Action Committee was awarded a Technical Assistance Grant (TAG), and is now in the process of hiring a technical advisor to assist them in understanding the actions taken at the site. They will be better equipped to make an informed assessment of the potential health and environmental effects associated with the on-going cleanup activities at the site.

What is a Technical Assistance Grant (TAG)?

As part of the Superfund Amendments and Reauthorization Act (SARA) of 1986, EPA identified the need to involve communities affected by Superfund sites. The TAG Program provides up to $50,000 in funds to assist qualified local groups in hiring independent technical advisors. These advisors help residents interpret technical elements of hazardous sites, so that they may comment on a range of cleanup decisions that directly affect their community. The group contributes 20 percent of the total cost of the project in matching funds, and will typically manage the TAG for an average of three years. Only one TAG is awarded per Superfund site.

Detailed information on applications and eligibility requirements is outlined in the *Superfund Technical Assistance Grant Handbook* and *The Citizens' Guidance Manual for the Technical Assistance Grant Program*, both available through EPA Regional Superfund or Grants offices.

Success at Ciba-Geigy

The Ciba-Geigy McIntosh Plant site provides a positive example of how the Superfund program is designed to work — namely, getting private parties to voluntarily clean up hazardous waste sites. EPA and Ciba-Geigy have successfully coordinated efforts to communicate with the affected community and build an atmosphere of trust.

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