



# Environmental Update #4

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## Environmental Overview of the Concrete and Cement Industries

The construction boom of the late 1990s brought about an increased use of concrete and cement to construct buildings, roadways, and homes. Manufacture of these materials can release toxic substances into soil, air, and water if proper controls are not implemented. For this reason, government authorities have closely reviewed these materials' potential for degrading environmental quality in communities. This fact sheet provides an overview of the cement and concrete industries, their potential environmental impacts, and the status of a major court case to stop a cement plant from being sited near an environmentally troubled New Jersey community.

### What is the difference between concrete and cement?

*Cement* is a powder produced from several materials, including alumina, silica, limestone, clay, and iron oxides. Cement is used as a binding agent, most often with concrete. *Concrete* is a product formed by mixing aggregate and paste. Aggregate may consist of sand, gravel, crushed stone, or slag. Paste is composed of cement and water, sometimes mixed with air.

### What pollution threat is posed by cement manufacturing?

Cement manufacturing produces a variety of solid process wastes, air emissions, and wastewater streams, but most of its contaminants are released in cement kiln dusts (CKD). In 1999, the Environmental Protection Agency (EPA) estimated that the cement industry disposed of an estimated 3.3 million metric tons of CKD from 110 plants in 38 states. The main components in kiln dusts are alumina, silica, clay, and metallic oxides, but they also may contain trace amounts of dioxins and furans, cadmium, lead, selenium, and radionuclides. Cancer risks of concern are mainly caused by exposure to arsenic in CKD, and there is also a possible cancer threat in kiln dusts that contain dioxins.

With proper management, CKD is not hazardous to human health, and EPA believes that these dusts pose little threat to human health through direct ingestion of drinking water. But the agency says that contaminants in kiln dusts can pose indirect threats to human health through air particulates and polluted groundwater. The latter problem occurs when landfills are not adequately lined or CKD is left in open waste piles.

### What are the pollution outputs of concrete manufacturing?

Concrete manufacturing generates air particulate emissions from cement and aggregate dusts. The threat of cement dusts is described in the previous section. Other sources of contamination in concrete plants are solvents used in cleaning operations and the application of finishes to completed products. Solvents can threaten water quality in nearby communities when they are released and seep into groundwater.

## **How have cement and concrete issues been dealt with in court?**

Proposals to build new cement or concrete plants near communities have caused considerable controversy. A recent U.S. District Court case involving a New Jersey cement manufacturer and distributor illustrates the strong impact that environmental justice concerns can have, even in the face of economic development benefits.

The Waterfront South Community in Camden, New Jersey, is battling the New Jersey Department of Environmental Protection (NJDEP) and a manufacturer and distributor of cement products over the location of a new cement facility in the neighborhood. This area of 2,100 residents already contains a sewage treatment plant, a trash-to-steam plant, two U.S. EPA Superfund sites, and 15 known contaminated sites identified by the NJDEP. The Technical Outreach Services to Communities (TOSC) program at the Northeast Hazardous Substance Research Center has helped the Waterfront South Community to review technical documents involved in the cement facility siting case.

The estimated impact on the community from the new plant is significant: the facility will emit dust, mercury, lead, nitrogen oxides, and volatile organic compounds into the air, and approximately 35,000 inbound truck deliveries and 42,000 outbound truck departures are expected to occur each year. In July 2000, the cement manufacturer received a draft air permit for the facility, and the NJDEP held a public hearing on the permits. After the hearing, the citizens of Waterfront South filed several complaints asking the courts to stop any further activity at the site based on a violation of civil rights law. The complaints stated that, in approving the permits, the NJDEP did not consider the current number of pollutants already in the neighborhood, the existing poor health of the residents, the racial and ethnic composition of the area, or the cumulative environmental burden already shouldered by the citizens. The U.S. District Court agreed with the community group, granting the injunction to stop the cement company from operating its facility and voiding the air permits. However, recent developments in related cases have caused the court dissolve the injunction until additional issues in the case can be decided.

The decision by the court in the cement plant siting case is anxiously awaited. The outcome will have strong potential implications for the environmental justice movement, Waterfront South, and communities facing similar challenges throughout the country. If you or your community have questions about a cement or concrete contamination problem, contact Bob Schmitter, director of the South & Southwest TOSC program, at 404/894-8064 or by e-mail at: [bob.schmitter@gtri.gatech.edu](mailto:bob.schmitter@gtri.gatech.edu).