

# Industrial Pollution

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Industrial growth is essential, but it can also pollute and poison the surrounding environment, either directly or indirectly. Air, water, and land pollution from an industrial plant discharging pollutants is known as *industrial pollution*.

## Industrial Pollutants

Over 5.5 billion pounds of toxic chemicals are released by industry into the nation's environment each year, including 75 million pounds of recognized carcinogens. The EPA reports that the most common soil contaminants include:

- lead
- arsenic
- mercury
- zinc
- copper
- cadmium.

All of these are considered to be among the most hazardous industrial pollutants. They're recognized carcinogens and developmental and reproductive toxicants, and they're also suspected to be cardiovascular toxicants, endocrine toxicants, gastrointestinal or liver toxicants, immunotoxicants, kidney toxicants, neurotoxicants, respiratory toxicants and skin or sensory organ toxicants.

## Industrial Land Contamination: Major Cases

On August 17, 1994, the oil company KomiNeft in the Russian Republic of Komi experienced the worst oil disaster ever recorded. The total area devastated by the pollution from KomiNeft was 5,213 acres, about the size of the country of El Salvador.

The case of the Usinsk accident was the poor condition of the pipes that transported the oil from the oil fields to an oil refining plant. While numerous ruptures and spills occurred over a period of time, the federal and local authorities and the oil company KomiNeft attempted to keep it a secret.

In the United States, the Environmental Protection Agency (EPA) ranks the following as the worst industrial land polluters:

- Kennecott Utah Copper Mine Concentrators & Power Plant, Copperton, Utah
- Red Dog Ops, Kotzebue, Alaska
- Barrick Goldstrike Mine, Elko, Nev.

Common Forms of Industrial Waste Disposal and Storage Industrial wastes pose significant threats to public health and the environment if they are not stored, collected and disposed of properly. Before the late 1970s, most industrial waste was disposed of in landfills, stored in lagoons and pits, discharged into surface waters with little or no treatment or burned. Today, three major federal laws guide the management of industrial waste:

- Resource Conservation and Recovery Act
- Comprehensive Emergency Response, Compensation, and Liability Act
- Safe Drinking Water Act.

Industrial solid waste may be sent to municipal and industrial wastewater facilities as well as land disposal facilities like landfills, waste pits and deep underground injection wells. Some wastes are burned in incineration facilities like kilns. A variety of treatment, recycling and other management options—such as stabilization and solidification—also exist for many types of industrial wastes.

### **Severe Industrial Land Pollution: Case Studies**

In some cases, the health consequences for people and the environment from land pollution have been severe. Below are two prominent cases of severe land pollution.

**Tar Creek:** Oklahoma's Tar Creek Superfund Site contains high levels of lead. Lead can adversely affect the emotional and intellectual development of children, and lead poisoning affects the blood, nervous, and immune systems. Pregnant women exposed to lead and zinc run a higher risk of miscarriage and their infants suffer higher rates of health problems. All of these problems are directly related to lead and zinc contamination of the soil and the water caused by mining.

According to the Environmental Protection Agency report, approximately 50 million tons of waste is left over from mining operations at the site. Mine tailings that contain lead and other heavy metals are deposited in hundreds of piles and ponds at the site. Some of the piles approach 200 feet in height. Residential communities are located among the tailings piles and the tailings have been widely used locally as gravel for driveways and roads. Approximately 25 percent of the children living on the site have elevated blood lead concentration levels,

compared to a statewide average of two percent. Researchers have identified approximately 1,600 residential yards containing unsafe concentrations of lead.

After two decades and almost \$100 million spent on cleanup, Tar Creek remains covered with mountains of mining waste. As recently as November 2004, in a report to Congress, the Agency for Toxic Substances and Disease Registry recommended continued testing of children in the Tar Creek area, lead exposure prevention education of area residents, cleanup of residential lands, and evaluation of other potential health risks and physical hazards.

**Hanford Nuclear Reservation:** Hanford is the largest nuclear waste dump in the western hemisphere. It is a serious long-term threat to the Columbia River, which Oregon and Washington depend on for power generation, farm irrigation, fishing, transport and recreation.

Using a line of nuclear reactors along the river, Hanford produced plutonium for nuclear weapons from 1943 to 1987. Water from the river was piped through the reactors to help cool them and then fed back into the river. Spent fuel rods from the reactors were dissolved in nitric acid to separate out the plutonium. The process generated enormous amounts of highly radioactive and chemical waste.

Hanford is owned by the federal government and managed by the US Department of Energy. Hanford is subject to both federal and Washington state environmental laws, and the US Environmental Protection Agency (EPA) and the Washington State Department of Ecology have regulatory powers. Since the production of plutonium ceased, Hanford's only mission has been cleanup.

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