

## Polycyclic Aromatic Hydrocarbons

Human Health Risk	L
Ecological Risk	M - L
Socioeconomic Risk	M

Polycyclic Aromatic Hydrocarbons (PAHs) are chemical compounds containing hydrogen and carbon that result from incomplete burning of organic material, such as cigarettes, wood, food, and fossil fuels. PAHs are found nearly everywhere in the environment, both naturally and as a result of human activities. There are many individual PAHs; of particular concern are those that cause cancers, including skin, bladder, lung, and possibly gastrointestinal tract cancers. Other effects of long term exposure may include eye irritation and light sensitivity. Exposure to PAHs may occur via inhalation, ingestion of smoked or charbroiled foods, or as a result of skin contact with contaminated soils, coal tars in shampoos, or psoriasis treatment.

### What's at risk?

All New Jersey residents and ecosystems have been and continue to be exposed to PAHs, however, the degree of exposure from these sources can vary greatly from region to region, with higher levels in urban areas. In addition, personal lifestyle choices such as smoking and ingestion of smoked and charbroiled foods contribute to an individual's body burden. PAHs must be acted upon by the body's metabolic processes in order to become carcinogenic. Children and adolescents may be at increased risk due to higher rates of metabolism. Additional groups at risk include roofers and coke oven workers, and individuals living near creosote and coal tar manufacturers.

### What are the human health impacts in New Jersey?

There are insufficient exposure data available to quantify the number of illnesses in New Jersey.

### What are the ecological impacts in New Jersey?

PAH levels above the normal background amounts may cause acute or chronic toxicity, leading to changes in the composition, diversity, and function of normal plant and animal populations and communities. There is little data on the effects of PAHs on amphibians and reptiles, but tests on earthworms have shown toxicity, as do tests on fish and benthic macroinvertebrates, the bottom-dwelling animals that are a food

source for fish and other animals. PAHs have been shown to reduce plant health and reproduction, and increase illness and death in bird embryos. Benthic macroinvertebrates in urban and industrial areas or adjacent to PAH-contaminated sites are at increased risk, as are plant and animal communities near these sites.

### What are the socioeconomic impacts in New Jersey?

The health care costs of cancers associated with PAHs are difficult to determine, in part because exposure to tobacco smoke contains a number of carcinogens, including PAHs. Over 10,000 cases of bladder cancer were diagnosed in New Jersey in 1997, and the contribution of PAHs to that number is unknown. Other socioeconomic impacts include a reduction in property values near hazardous waste sites, and worry about living near the sites, but again, PAHs are present with other toxic materials, and the direct effect of PAHs on property values and worry is unknown. While PAHs do have some ecological impact, it is unlikely that significant job losses will occur as a result.

### What's being done?

Emissions from industrial facilities are regulated, industrial hazardous waste sites are undergoing mandatory cleanup, and protective clothing is being used in occupational settings to reduce risk.