

Hot Mix Asphalt Emissions

What is in Asphalt?

Asphalt is used for paving roads and parking lots and for roofing. It consists of gravel, sand or stone that is bound together by cement made from crude oil. Petroleum hydrocarbons in the crude oil form a gas that condenses into fine particles as it cools, creating a particulate vapor. This fact sheet will answer some general questions about asphalt fumes.

What chemicals are in asphalt fumes?

Asphalt is a mixture containing thousands of different chemicals. The chemicals in asphalt vary depending on the source of the crude oil, the type of asphalt being made, and the process used. In general, the fumes are a mixture of several different types of chemicals including:

- volatile organic compounds,
- carbon monoxide,
- sulfur,
- nitrogen oxides, and
- polycyclic aromatic hydrocarbons

Many of these chemicals also are emitted by other combustion sources such as cars and trucks, fireplaces and wood stoves, wildfires and industries. All of these chemicals are often found in outdoor air at low levels; however, elevated levels of these chemicals may be found near an operating asphalt plant.

Does living near an asphalt plant pose an increased health hazard?

An asphalt plant must meet emission criteria to receive an operating permit from the Oregon Department of Environmental Quality. If the permit criteria are met, emissions would not be expected to pose a public health hazard. Asphalt plant emissions may lead to odors in the community, but the potential for adverse health effects is expected to be low.

Can odors from the plant cause adverse health effects?

If you smell odors from an asphalt plant, they are not necessarily at levels that would cause adverse health effects. Many of the highly odorous chemicals in asphalt fumes can be smelled at levels below those expected to cause adverse health effects; however, persistent odors may cause symptoms in some people.

What are the health effects of asphalt fume exposure?

The health effects that can be caused by exposure to asphalt fumes depend on:

- how much has entered the body,
- how long you are exposed to asphalt fumes, and
- how the body responds to asphalt fumes.

Fumes created from heating asphalt can be inhaled into the lungs or can condense onto exposed areas of the skin.

People who work in asphalt plants would have the greatest exposure to asphalt fumes. Some of the symptoms reported by workers include irritation of the upper respiratory tract, headache, fatigue, wheezing and shortness of breath, dizziness, and nausea.

These symptoms are from short-term exposure to high levels of asphalt fumes. They are typically mild and rapidly reversible once exposure ends.

Residents living near an asphalt plant also would be more likely to breathe low levels of asphalt fumes for a long period of time. In this setting, exposure to asphalt fumes would depend on the plant emissions and the prevailing winds. Based on sampling conducted near asphalt plants in several states, residents could experience irritation from the odors from asphalt production, but the potential for adverse health effects is expected to be very low. Children may be more sensitive than adults to certain chemicals. No studies have linked residential exposure to asphalt fumes with the development of cancer.

Where can I get more information?

Online:

<http://www.deq.state.or.us/aq/permit/contact.htm>

Or contact a local DEQ office listed to the right.

Alternative formats

Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696.

The information in this fact sheet was provided by the Illinois Department of Public Health.



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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

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