

Hot Mix Asphalt Emissions

What is in Asphalt?

Asphalt is used for paving roads, 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 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:

- carbon monoxide
- nitrogen oxides
- sulfur
- volatile organic compounds
- 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 industrial activity. 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 a health hazard?

In Oregon, an asphalt plant must meet emission criteria to receive an operating permit from DEQ. If the criteria are met, emissions are not 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 upon:

- how much has entered your body
- how long you are exposed to asphalt fumes
- how your 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 have the greatest exposure to asphalt fumes. Symptoms reported by workers include irritation of the upper respiratory tract, headache, fatigue, wheezing and shortness of breath dizziness, and nausea.

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?

Helpful websites are listed on the back of this page.

How do I report a problem?

Report an environmental problem at:
www.deq.state.or.us/complaints/dcomplaint.aspx

Alternative formats

Alternative formats of this document can be made available. Contact DEQ's Office of Communications and Outreach in Portland at (503) 229-5696.

Information provided by the Illinois Department of Public Health.



State of Oregon
Department of
Environmental
Quality

Air Quality Division
Western Region

750 Front St. NE Suite 120
Salem, OR 97301
Phone: (503) 378-5408
(800) 452-4011
Fax: (503) 378-4196

Contact DEQ offices:

Portland: 503-229-5582

Salem: 503-378-5305

Coos Bay: 541-269-2721

Medford: 541-776-6010

Bend: 541-633-2012

Pendleton: 541-276-4036

Last Updated: 05/2013
By: Kathy Amidon

Additional Websites for Asphalt Information

The Oregon Health Authority has compiled information odors and possible health effects.

<http://public.health.oregon.gov/HealthyEnvironments/EnvironmentalExposures/ToxicSubstances/Documents/Odors%20and%20Your%20Health.pdf>

Dr. Laura Green, a toxicologist and Senior Scientist and President of Cambridge Environmental, has compiled a summary of possible health effects and frequently asked questions about asphalt plants:

www.siteb.it/download/dossierbitumi/db12.pdf

The Center for Disease Control and Prevention's hazard review *Health Effects of Occupational Exposures to Asphalt*:

www.cdc.gov/niosh/docs/2001-110/#3

U.S. Environmental Protection Agency's *Hot Mix Asphalt Plants Emission Assessment Report*:

www.epa.gov/ttn/chief/ap42/ch11/related/ea-report.pdf

EPA's determination that asphalt concrete manufacturing facilities were not major sources of hazardous air pollution, 2002:

www.epa.gov/ttn/atw/socatlst/fr12fe02.pdf

Asphalt Plant Health Assessment in Nebraska, 1995 – Prepared by the U.S. Department of Health and Human Services, the Agency for Toxic Substance and Disease Registry, EPA and Nebraska DEQ:

www.atsdr.cdc.gov/HAC/pha/omni/omni_pl.html

Asphalt Health Assessment in Arizona, 2002 – An assessment conducted 300-500 yards from residential properties:

www.atsdr.cdc.gov/HAC/pha/brimhallsand/bsg_pl.html

Asphalt Health Assessment in Utah, 2005 – An assessment of residential exposure to volatile organic compounds, polycyclic aromatic hydrocarbons, and airborne particulate matter to determine if these pollutants are present at levels of public health concern:

www.atsdr.cdc.gov/HAC/pha/ValleyAsphaltProductionSite120805/ValleyAsphaltHC120805.pdf

Final environmental impact report for Dutra Haystack Landing Asphalt & Recycling Facility

www.sonoma-county.org/prmd/docs/eir/dutrafeir/index.htm