

This fact sheet answers the most frequently asked health questions (FAQs) about used mineral-based crankcase oil. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS:** Used mineral-based crankcase oil is also called used engine oil. Exposure to this oil can occur when you change the oil of your car or another type of engine. Exposure to very high levels of used oil can cause skin rashes, headaches and tremors. Used oil has been found in at least 85 of the 1,416 National Priorities List sites identified by the Environmental Protection Agency (EPA).

### What is used mineral-based crankcase oil?

Used mineral-based crankcase oil is the brown-to-black, oily liquid removed from the engine of a motor vehicle when the oil is changed. It is similar to unused oil except it contains additional chemicals from its use as an engine lubricant.

The chemicals in oil include hydrocarbons, which are distilled from crude oil, and various additives that improve the oil's performance. Used oil also contains chemicals formed when the oil is exposed to high temperatures and pressures inside an engine. It also contains some metals from engine parts and small amounts of gasoline, antifreeze, and chemicals that come from gasoline when it burns inside the engine.

The chemicals found in used mineral-based crankcase oil vary depending on the brand and type of oil, whether gasoline or diesel fuel was used, the mechanical condition of the engine that the oil came from, and the amount of use between oil changes. Used oil is not naturally found in the environment.

### What happens to used mineral-based crankcase oil when it enters the environment?

- Used mineral-based crankcase oil enters the air through the exhaust system during engine use.
- It may enter water or soil when disposed of improperly.

- The hydrocarbon components of the oil generally stick to the soil surface.
- Some hydrocarbons evaporate into the air very quickly, and others evaporate more slowly.
- Hydrocarbon components of the oil that enter surface water bind to small particles in the water and eventually settle to the bottom.
- Hydrocarbons from used mineral-based crankcase oil may build up in shellfish or other organisms.
- Some metals in used mineral-based crankcase oil dissolve in water and move through the soil easily and may be found in surface water and groundwater.

### How might I be exposed to used mineral-based crankcase oil?

- When you change the engine oil in your car.
- Breathing a small amount of the chemicals from the oil in exhaust fumes or from burning the oil as heating fuel.
- Touching contaminated soil or drinking contaminated water.

### How can used mineral-based crankcase oil affect my health?

The health effects of used mineral-based crankcase oil vary depending on the brand and type of oil used and the

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

characteristics of the engine it came from.

Mechanics and other auto workers who are exposed to used mineral-based crankcase oil from a large number of cars have experienced skin rashes, blood effects (anemia), and headaches and tremors. However, these workers are also exposed to other chemicals, which may have caused these health effects.

Volunteers who breathed mists of used mineral-based crankcase oil for a few minutes had slightly irritated noses, throats, and eyes. Animals that ate large amounts of this oil developed diarrhea. Thus, people who swallow used mineral-based crankcase oil may also have diarrhea.

Some cows that ate used oil containing metals such as molybdenum and lead in contaminated pastures experienced anemia and tremors. Some of the cows died.

We do not know if exposure to used mineral-based crankcase oil affects the reproductive ability of men or women or whether it causes birth defects.

### How likely is used mineral-based crankcase oil to cause cancer?

Long-term exposure (365 days or longer) of the skin to used mineral-based crankcase oil causes skin cancer in mice. Oils contain PAHs. Some PAHs have been identified as the cancer-causing agents. Animal tests have shown that the higher the PAH content in oil, the more likely for the oil to be carcinogenic.

The **Department of Health and Human Services (DHHS)**, the **International Agency for Research on Cancer (IARC)**, and the **EPA** have not classified used mineral-based crankcase oil with regard to its carcinogenicity in people.

### Is there a medical test to show whether I've been exposed to used mineral-based crankcase oil?

Used mineral-based crankcase oil is a mixture of a large number of chemicals. Its composition depends on the brand of oil and the characteristics of the engine in which it was used. However, there are methods for determining if you have been exposed to some of the chemicals in used oil. These tests aren't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

### Has the federal government made recommendations to protect human health?

The EPA and most states have developed regulations regarding disposal of used oil, its recycling, spraying used oil onto road surfaces for dust control, or burning it as a fuel.

### Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To enter the air as a vapor.

PAHs: Polyaromatic hydrocarbons; a group of chemicals found in oil and other minerals.

### References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Used Mineral-based Crankcase Oil produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

