

This fact sheet answers the most frequently asked health questions (FAQs) about jet fuels JP-4 and JP-7. 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.

**SUMMARY: JP-4 and JP-7 are liquid mixtures produced from petroleum and used by the U.S. Air Force as aircraft fuels. Breathing large amounts of the vapors from these fuels may cause nausea and nervous system effects. JP-4 has been found in at least 4 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). JP-7 has not been found at any sites.**

### What are jet fuels JP-4 and JP-7?

(Pronounced jĕt fyōō'əlz JP-4 and JP-7)

Jet fuels JP-4 and JP-7 (jet propellant-4 and jet propellant-7) are flammable, colorless to straw-colored liquid mixtures that come from crude petroleum. They smell like kerosene. Jet fuels are blends of other chemicals made according to U.S. Air Force standards for use as aircraft fuels.

Although JP-4 and JP-7 are liquids at room temperature, they also evaporate easily.

### What happens to JP-4 and JP-7 when they enter the environment?

- ❑ JP-4 and JP-7 enter the environment when they are spilled or leak into water or soil during their manufacture, storage, disposal, or release from jets during flight.
- ❑ Some chemicals found in JP-4 may dissolve in water, while others may evaporate into the air.
- ❑ Some chemicals found in JP-4 may stick to particles in water, which will eventually cause them to settle to the bottom sediment.
- ❑ Some of the chemicals found in JP-4 may be broken down slowly in air, water, and soil by sunlight or small organisms.

- ❑ There is no information about what happens to JP-7 when it enters the environment, but it probably acts similarly to JP-4.
- ❑ There is no information on whether JP-4 and JP-7 build up significantly in plants and animals.
- ❑ It is likely that some of the chemical components of JP-4 and JP-7 build up in plants and animals.

### How might I be exposed to JP-4 and JP-7?

- ❑ Exposure to JP-4 occurs primarily in workers who manufacture, transport, or use jet fuels.
- ❑ Exposure to JP-4 is most likely to occur through skin contact or breathing contaminated air.
- ❑ You may be exposed to JP-4 by breathing some of the chemicals that evaporate from a spill or leak site.
- ❑ You may also be exposed through drinking or swimming in water that has been contaminated with JP-4, or from touching soil contaminated from a spill or leak.
- ❑ There is no information about how individuals may be exposed to JP-7, but it is reasonable to assume that you could be exposed in the same ways as for JP-4.

### How can JP-4 and JP-7 affect my health?

Little information is available about the health effects

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

that may be caused by JP-4 and JP-7. Inhaling large amounts of JP-4 vapor may cause painful breathing and a feeling of suffocation, as well as headache, dizziness, nausea, depression, anxiety, memory loss, and irritability.

Animal studies have shown that inhaling extremely large amounts of JP-4 or JP-7 vapor does not cause death. However, animals breathing high levels of JP-4 vapor for short periods exhibited poor coordination and convulsions. A depressed activity level has been seen in animals breathing low levels of JP-4 vapor. Other effects seen in animals breathing JP-4 or JP-7 vapor have been skin and eye irritation, changes in liver cells, and decreased numbers of white blood cells.

We do not know whether JP-4 or JP-7 can cause birth defects or if they affect reproduction in people.

### How likely are JP-4 and JP-7 to cause cancer?

The International Agency for Research on Cancer (IARC) has stated there is not enough information to determine how likely JP-4 and JP-7 are to cause cancer in humans.

Studies with mice and rats have suggested that skin contact with JP-4 may cause skin cancer, although this is not certain. There is also no clear evidence that breathing, eating, or drinking JP-4 or JP-7 causes cancer in animals.

### Is there a medical test to show whether I've been exposed to JP-4 and JP-7?

There is no medical test that shows if you have been exposed to JP-4 and JP-7. Tests are available to determine if some of the chemicals commonly found in jet fuels are in your blood. However, the presence of these chemicals in blood may not necessarily mean that you have been exposed to JP-4 or JP-7.

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

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 500 parts of petroleum distillates per million parts of air (500 ppm) for an 8-hour workday, 40-hour workweek.

The Air Force Office of Safety and Health (AFOSH) has set an exposure limit of 400 ppm petroleum distillates for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 350 milligrams of petroleum distillates per cubic meter of air (350 mg/m<sup>3</sup>) for a 40-hour workweek.

The Department of Transportation (DOT) lists JP-4 and JP-7 as hazardous materials and, therefore, regulates their transportation.

### Glossary

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or a gas.

Milligram: One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

### References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for jet fuels JP-4 and JP-7. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**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.

