

This fact sheet answers the most frequently asked health questions (FAQs) about three types of jet fuels: JP-5, JP-8, and Jet A. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances 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:** Exposure to JP-5, JP-8, and Jet A fuels occurs mainly in the workplace or from accidents or spills. Studies of military personnel suggest that exposure to JP-8 may affect the nervous system. Studies in laboratory animals suggest that exposure to these jet fuels can also cause damage to the liver, immune system, and the skin. Neither JP-5, JP-8, or Jet A have been found in at least 1,832 National Priorities List sites identified by the Environmental Protection Agency (EPA).

### What are JP-5, JP-8, and Jet A fuels?

JP-5 (jet propellant-5) and JP-8 (jet propellant-8) are kerosene-based fuels used in military aircraft. Jet A is the type of fuel used in civilian aircraft. Jet A is also used in some military aircraft. JP-5, JP-8, and Jet A fuels are colorless liquids that are flammable and smell like kerosene. These fuels are a mixture of many compounds called hydrocarbons. Hydrocarbons are compounds that contain only carbon and hydrogen. Hydrocarbons are found naturally in the earth as crude oil.

### What happens to JP-5, JP-8, and Jet A when they enter the environment?

- Some individual components of the fuels will evaporate to air from open containers or when they are spilled into water or soil.
- Chemicals in JP-5, JP-8, and Jet A in air may be broken down by reacting with sunlight or chemicals in the air.
- Chemicals in JP-5, JP-8, and Jet A may slowly move from the soil to groundwater.
- Other chemicals in the fuels will attach to particles in water and may sink to the bottom sediment.
- Chemicals in the fuels may be broken down by bacteria and other organisms in soil and water.
- Some chemicals in JP-5, JP-8, and Jet A may stay in the soil for more than a decade.

### How might I be exposed to JP-5, JP-8, and Jet A?

- Most people would not be exposed to JP-5, JP-8, or Jet A unless they work with these products or live very close to where they are used or may have been spilled.
- Breathing air in an area where an accident or leak of these jet fuels has occurred.
- Drinking water or touching soil contaminated with JP-5, JP-8, or Jet A. Swimming in waters where jet fuels have been spilled may also result in exposure.
- Working refueling military or civilian aircraft or transporting jet fuels, particularly if protective clothing is not worn.
- Living near a hazardous waste site where these jet fuels are disposed of.

### How can JP-5, JP-8, and Jet A affect my health?

Little is known about the effects of JP-5, JP-8, and Jet A on people's health. Results from a few studies of military personnel suggest that exposure to JP-8 can affect the nervous system. Some effects observed include changes in reaction time and in other tests of neurological function.

People who accidentally ingested kerosene, which is similar in composition to JP-5, JP-8, and Jet A fuels, suffered harmful effects on the respiratory tract, gastrointestinal tract, and nervous system.

# JP-5, JP-8, and Jet A Fuels-ToxFAQs™

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Studies in laboratory animals found that exposure to levels higher than the levels the public may encounter through dermal contact with contaminated water or soil or ingestion of contaminated water resulted in damage to the liver, decreased immune response, impaired performance on neurological tests, impaired hearing, and skin alterations.

## How likely are JP-5, JP-8, and Jet A to cause cancer?

A few studies that examined the possible association between exposure to various types of jet fuels or to kerosene and various types of cancer did not provide conclusive results due to study limitations.

The U.S. Department of Health and Human Services (DHHS) and the EPA have not classified JP-5, JP-8, or Jet A fuels as to their carcinogenicity. The International Agency for Research on Cancer (IARC) has classified JP-5, JP-8, and Jet A as Group 3 carcinogens (not classifiable as to their carcinogenicity to humans).

## How can JP-5, JP-8, and Jet A affect children?

Because exposure to JP-5, JP-8, or Jet A fuels occurs mainly in occupational settings, it is unlikely that children will be exposed to these fuels. No studies examining the health effects of JP-5, JP-8, or Jet A fuels in children were found.

Some of the more commonly reported effects in children who accidentally ingested kerosene include coughing, pneumonia, shortness of breath, vomiting, fever, unconsciousness, drowsiness, and irritability. These effects are similar to the effects seen in adults who ingest kerosene.

Studies in laboratory animals exposed to JP-8 during pregnancy did not find birth defects in the newborn animals. However, some effects on muscle coordination and immune function were found in the offspring.

## Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ on the web: [www.atsdr.cdc.gov/toxFAQs](http://www.atsdr.cdc.gov/toxFAQs)

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.

## How can families reduce the risk of exposure to JP-5, JP-8, and Jet A?

- It is unlikely that you or your family will be exposed to JP-5, JP-8, or Jet A fuels. Jet fuels are not likely to be common contaminants in foods or drinking water.
- If you get JP-5, JP-8, or Jet A fuels on your work clothes, you should change your clothes before leaving your job and returning home.

## Is there a medical test to determine whether I've been exposed to JP-5, JP-8, and Jet A?

Many of the individual chemicals found in JP-5, JP-8, and Jet A and their breakdown products can be measured in blood and urine. However, these chemicals may also come from sources other than the jet fuels, including exposure to gasoline fumes when pumping gas. Therefore, detection of these chemical in the body does not necessarily mean that you were exposed to JP-5, JP-8, or Jet A.

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

The National Institute for Occupational Safety and Health (NIOSH) has set a recommended limit of 100 mg/m<sup>3</sup> for kerosene in workplace air averaged over a 10-hour work day.

## Reference

This ToxFAQs™ information is taken from the 2017 Toxicological Profile for JP-5, JP-8 and Jet A Fuels produced by the Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services in Atlanta, GA.