

## What Counts as Military Kerosene?

Most military fuels are kerosene-based:

- JP-8 (U.S. & NATO standard ground/aircraft fuel)
- JP-5 (carrier-safe, high flash point)
- F-34 / F-35 (NATO designations)

Exposures may come from:

- Inhalation of vapors during fueling/maintenance
- Skin contact
- Burn pit smoke
- Exhaust emissions from vehicles/aircraft
- Contaminated soil or enclosed-space accumulation (hangars, tents with heaters)

## Short-Term (Acute) Effects of Kerosene Exposure

### 1. Respiratory irritation

Breathing kerosene vapors or aerosols can cause:

- Coughing
- Throat irritation
- Burning sensation in airways
- Chest tightness
- Headache

High concentrations (common near aviation fuel lines or burn pits) may cause:

- Shortness of breath
- Wheezing / bronchospasm
- Chemical pneumonitis if liquid is aspirated

### 2. Neurological symptoms

Kerosene is a hydrocarbon mixture that can depress the central nervous system.

Short-term symptoms may include:

- Dizziness

- Headache
- Fatigue
- Confusion
- Difficulty concentrating
- Nausea

These are more common in enclosed or poorly ventilated areas.

### **3. Skin and eye irritation**

Kerosene strips oils from the skin and may contain additives.

Effects:

- Redness
- Dermatitis (“fuel rash”)
- Cracking, dryness
- Chemical burns with prolonged contact
- Eye irritation or tearing from vapors

### **4. Gastrointestinal symptoms (if swallowed)**

Accidental ingestion, even small amounts, can cause:

- Nausea, vomiting
- Severe lung injury if aspirated into the lungs

Military guidelines stress that vomiting must not be induced because of aspiration risk.

### **5. Strong odor exposure**

Kerosene odor itself can cause:

- Nausea
- Headache
- Aversion responses

especially after repeated occupational exposure.

## **Long-Term (Chronic) Effects of Kerosene Exposure**

Research on military fuels like JP-8 provides much of what we know.

## **1. Chronic respiratory problems**

- Repeated inhalation can lead to:
- Persistent cough
- Increased airway reactivity (asthma-like symptoms)
- Reduced lung function in long-term exposed personnel
- Heightened susceptibility to respiratory infections

Burn pit smoke exposure compounds these risks because it contains additional toxicants.

## **2. Skin conditions**

Long-term skin contact with kerosene can cause:

- Chronic dermatitis
- Chemical sensitivity

Increased susceptibility to secondary infections from skin barrier breakdown

## **3. Neurocognitive and neurological effects**

Long-term JP-8 exposure has been associated (in occupational studies) with:

- Impaired attention and memory
- Slower reaction time
- Headaches
- Sleep disturbances

Mechanisms involve solvent-like effects on the nervous system.

## **4. Blood and immune system changes**

Some studies have shown:

- Altered immune cell counts
- Mild hematological changes
- Increased inflammation markers

Significance is still debated but appears more pronounced in workers with heavy exposure.

## **5. Reproductive and developmental concerns**

Animal studies and some human occupational data suggest:

- Possible reduced fertility or sperm quality
- Higher miscarriage rates in heavily exposed workers (inconclusive but studied)
- Developmental toxicity in high-exposure scenarios (animals)

These effects are not strongly proven in humans but are considered possible risks.

## **6. Cancer risk**

Kerosene itself is not classified as a proven human carcinogen, but:

- Chronic exposure to hydrocarbon mixtures
- Additives such as benzene traces
- Combustion byproducts (especially from burn pits)

...can increase the risk of:

- Lung cancer
- Blood cancers (leukemia, lymphoma)
- Skin cancers (from chronic dermal exposure)

EPA and military toxicology programs classify JP-8 as “possibly carcinogenic” due to incomplete data.

## **7. Liver and kidney effects**

- High, long-duration exposure may cause:
- Mild liver enzyme abnormalities
- Kidney stress or dysfunction

These effects are more clearly documented in animal studies but have also been suggested in exposed maintenance personnel.

## **Who Is Most at Risk in Military Settings?**

Personnel with repeated or intense exposure, including:

- Aircraft maintainers
- Fuel handlers
- Mechanics
- Ground support crews
- Burn pit operators
- Vehicle maintenance crew
- Occupants in enclosed spaces using kerosene heaters