

GRADE 4 SOLVENT (NAVY AVIATION CLEANER/DEGREASER)

EXPOSURE IN NAVY AVIATION:

SHORT- AND LONG-TERM HEALTH EFFECTS

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In U.S. Navy aviation, “Grade 4” refers to a petroleum-based cleaning and degreasing solvent used for:

- Aircraft part cleaning
- Removing oils, hydraulic fluid, and grease
- Corrosion control preparation
- Cleaning wheel wells, engine bays, and mechanical compartments
- General-purpose aircraft maintenance cleaning tasks

Grade 4 solvent typically contains:

- Aliphatic hydrocarbons
- Aromatic hydrocarbons (trace amounts)
- Petroleum distillates
- Additives and stabilizers
- Potential trace benzene (older formulations)

Exposure typically occurs from inhalation of fumes, skin contact, and use in enclosed or poorly ventilated aircraft spaces.

SHORT-TERM (ACUTE) EFFECTS OF GRADE 4 EXPOSURE

1. Respiratory Irritation:

- Burning throat or nose
- Coughing
- Chest tightness
- Shortness of breath
- Headaches

More severe in enclosed spaces such as hangars or aircraft bays.

2. Central Nervous System Effects:

Petroleum solvents depress the CNS.

Symptoms include:

- Dizziness
- Headache
- Drowsiness
- Slowed reaction time
- Fatigue

High vapor concentrations may cause confusion or fainting.

3. Skin and Eye Irritation:

- Skin redness, dryness, or cracking
- Chemical dermatitis
- Eye redness, watering, or burning

4. Gastrointestinal Symptoms:

- Nausea
- Vomiting
- Chemical taste

Accidental ingestion or aspiration may cause chemical pneumonitis.

5. Increased Fire/Vapor Hazards:

Highly flammable vapors increase inhalation risks when heated or aerosolized.

LONG-TERM (CHRONIC) EFFECTS OF GRADE 4 EXPOSURE

1. Chronic Dermatologic Damage:

Repeated skin contact can cause:

- Persistent dermatitis

- Cracking/bleeding skin
- Chemical sensitivity

2. Chronic Neurological Effects:

Long-term solvent exposure may contribute to:

- Memory problems
- Difficulty concentrating
- Chronic headaches
- Irritability or mood changes
- Sleep disturbance

3. Peripheral Neuropathy:

Long-term high exposure may cause:

- Tingling/numbness in hands/feet
- Burning sensations
- Reduced coordination

4. Respiratory Conditions:

Chronic exposure may contribute to:

- Persistent cough
- Reactive airway disease
- Worsening asthma
- Reduced lung function

5. Liver and Kidney Stress:

Long-term solvent absorption can contribute to:

- Elevated liver enzymes
- Kidney irritation or reduced filtration performance

6. Possible Carcinogenic Risk:

Older formulations may contain trace benzene or aromatics.

Long-term exposure increases risk of:

- Leukemia
- Lymphoma
- Lung cancer (especially with co-exposures like JP-5, MEK, paint fumes)

NAVY AVIATION ROLES AT HIGHEST RISK

- Aviation Structural Mechanics (AM)
- Aviation Machinist's Mates (AD)
- Aviation Electronics Technicians (AT)
- Corrosion control teams
- Airframe and engine bay maintenance personnel
- Fuel and hydraulic spill cleanup personnel
- Depot-level cleaning and refurbishment shops

Confined working areas increase solvent vapor concentration.

VA DISABILITY CLAIM WRITEUP EXAMPLE

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****Statement in Support of Claim: Grade 4 Solvent Exposure – Navy Aviation****

I am submitting this statement in support of my claim for service-connected disability related to long-term exposure to Grade 4 solvent during my service in the United States Navy.

From [YEAR] to [YEAR], I served as an Aviation [RATE/MOS] assigned to the USS [SHIP] and several naval air stations. My daily responsibilities included cleaning and degreasing aircraft components, preparing surfaces for maintenance, and removing hydraulic fluid, fuel residue, and corrosion deposits using Grade 4 solvent. Many of these tasks were performed in enclosed aircraft bays, wheel wells, engine compartments, or hangars with limited ventilation.

Proper protective equipment such as respirators and chemical-resistant gloves was not consistently provided or enforced. As a result, I regularly inhaled Grade 4 vapors and experienced immediate symptoms including headaches, dizziness, throat irritation, nausea, and fatigue. My hands and

forearms were frequently exposed, leading to chronic dryness, redness, and irritation.

Since leaving the Navy, I have experienced persistent health issues consistent with long-term solvent exposure, including chronic headaches, memory and concentration difficulties, respiratory irritation, ongoing fatigue, and chronic dermatitis. Medical evaluations have documented [NEUROLOGICAL SYMPTOMS / CHRONIC DERMATITIS / RESPIRATORY CONDITION / OTHER], conditions historically associated with repeated exposure to petroleum-based solvents such as Grade 4.

Given the nature of my duties, the frequency and duration of exposure, the lack of adequate protective measures, and the persistence of symptoms after service, I believe my conditions are directly related to my military occupational exposure. I respectfully request that the VA recognize these disabilities as service-connected.

Signed,

[Veteran Name]

[Date]