

TRICHLOROETHANE (TCA / 1,1,1-TCA)

EXPOSURE IN NAVY AVIATION:

SHORT- AND LONG-TERM HEALTH EFFECTS

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Trichloroethane (commonly 1,1,1-TCA) was widely used in Navy aviation maintenance for:

- Cleaning avionics components
- Degreasing mechanical parts
- Preparing surfaces for sealants and adhesives
- Cleaning hydraulic and fuel system residue
- Paint preparation and corrosion control

TCA evaporates quickly and produces high vapor concentrations, especially in enclosed aircraft spaces, hangars, or support equipment shops.

SHORT-TERM (ACUTE) EFFECTS OF TRICHLOROETHANE EXPOSURE

1. Neurological Effects (Primary Acute Hazard):

- Headaches
- Lightheadedness
- Dizziness
- Fatigue
- Confusion or slowed reactions
- Loss of coordination

High exposures may cause fainting or temporary loss of consciousness.

2. Respiratory Symptoms:

- Throat irritation
- Coughing
- Chest tightness

- Shortness of breath

3. Skin and Eye Irritation:

- Burning or watery eyes
- Redness or irritation
- Dry, cracked, or chemically burned skin with prolonged contact

4. Cardiac Sensitization:

TCA can increase the heart's sensitivity to adrenaline, which may cause:

- Irregular heartbeat
- Palpitations
- Potential arrhythmias under physical stress

5. Nausea and Gastrointestinal Symptoms:

- Nausea
- Vomiting
- Chemical taste in mouth

6. Asphyxiation Risk:

High vapor levels can displace oxygen in enclosed spaces, leading to:

- Confusion
- Blue lips or fingertips
- Loss of consciousness

LONG-TERM (CHRONIC) EFFECTS OF TRICHLOROETHANE EXPOSURE

1. Chronic Neurological Effects:

Long-term exposure is associated with:

- Memory problems
- Difficulty concentrating
- Chronic headaches

- Mood changes (irritability, anxiety, depression)
- Sleep disturbances

2. Peripheral Neuropathy:

Symptoms may include:

- Numbness or tingling in hands or feet
- Burning sensations
- Weakness or poor coordination

3. Liver and Kidney Toxicity:

TCA is metabolized by the liver and excreted through the kidneys.

Chronic exposure may cause:

- Elevated liver enzymes
- Fatigue
- Kidney irritation or reduced filtration efficiency

4. Respiratory Damage:

Repeated inhalation can lead to:

- Chronic cough
- Worsening asthma
- Airway sensitivity
- Reduced lung function

5. Reproductive Effects:

Some studies have linked TCA exposure to:

- Reduced fertility
- Menstrual irregularities
- Developmental toxicity in high-exposure scenarios

Human data is mixed but risk is recognized.

6. Potential Cancer Link:

Although 1,1,1-TCA is not classified as a proven carcinogen, long-term exposure to chlorinated solvents is associated with:

- Increased risk of liver cancer
- Increased risk of kidney cancer
- Increased risk of lymphoma

NAVY AVIATION ROLES AT HIGHEST RISK

- Aviation Electronics Technicians (AT)
- Aviation Structural Mechanics (AM)
- Aviation Machinist's Mates (AD)
- Corrosion control teams
- Fuel system technicians
- Avionics cleaning personnel
- Depot-level artisans performing degreasing operations

VA DISABILITY CLAIM WRITEUP EXAMPLE

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****Statement in Support of Claim: Trichloroethane Exposure – Navy Aviation****

I am submitting this statement in support of my claim for service-connected disability due to long-term occupational exposure to Trichloroethane (TCA) 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 naval air stations. My duties required frequent use of Trichloroethane-based cleaners for aircraft maintenance, including degreasing parts, cleaning avionics components, corrosion control, and preparing surfaces for inspection and repair. Much of this work occurred in enclosed spaces such as hangars, engine bays, wheel wells, and avionics compartments with limited ventilation.

Personal protective equipment was not consistently provided or enforced. Because of this, I regularly inhaled TCA vapors and experienced immediate symptoms including dizziness, headaches, throat irritation, nausea, and episodes of confusion or impaired coordination. My skin was also frequently exposed, leading to irritation and dryness.

After leaving the Navy, I began experiencing chronic symptoms consistent with long-term exposure to chlorinated solvents such as Trichloroethane. These symptoms include persistent headaches, memory and concentration difficulties, chronic fatigue, respiratory irritation, and numbness or tingling in my extremities. Medical evaluations have documented [NEUROPATHY / LIVER FUNCTION ABNORMALITIES / RESPIRATORY CONDITION / COGNITIVE IMPAIRMENT / OTHER], all conditions associated with chronic exposure to TCA.

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

Signed,

[Veteran Name]

[Date]