

AFFF (AQUEOUS FILM FORMING FOAM)

EXPOSURE IN NAVY AVIATION:

SHORT- AND LONG-TERM HEALTH EFFECTS

=====

Aqueous Film Forming Foam (AFFF) has been widely used in Navy aviation for:

- Flight deck and hangar fire suppression
- Crash and rescue firefighting (ARFF)
- Fuel spill fires (JP-5 and other fuels)
- Firefighting training exercises and equipment testing

Many legacy AFFF formulations used by the U.S. military contained per- and polyfluoroalkyl substances (PFAS), including PFOS and PFOA. PFAS are highly persistent in the environment and the human body (“forever chemicals”) and are associated with multiple long-term health concerns.

Exposure routes for aviation personnel include:

- Skin contact with liquid foam and foam concentrate
- Inhalation of aerosols, mists, and vapors during firefighting or training
- Ingestion of contaminated water or incidental hand-to-mouth contact
- Contact with contaminated gear, clothing, and equipment

=====

SHORT-TERM (ACUTE) HEALTH EFFECTS

=====

In the short term, most AFFF-related symptoms are due to the surfactants, solvents, and irritation rather than PFAS itself.

1. Skin and Eye Irritation

- Redness, itching, or burning of the skin
- Dryness or mild dermatitis after repeated contact

- Eye irritation, tearing, or burning if splashed or exposed to foam mist

2. Respiratory Irritation

Inhalation of foam mist or vapors during use or training can cause:

- Coughing
- Throat irritation
- Shortness of breath
- Chest tightness

Symptoms are more common in enclosed hangars or below-deck shipboard spaces with poor ventilation.

3. Gastrointestinal Symptoms

Accidental ingestion (for example, contaminated hands or water) can result in:

- Nausea
- Vomiting
- Stomach upset

4. Slip and Fall / Physical Hazards

AFFF makes decks and hangar floors extremely slippery, which can cause:

- Falls
- Impact injuries

These are indirect but common safety hazards during foam use.

Generally, acute reactions from a single exposure are mild to moderate, but repeated or high-concentration exposures (especially without PPE) increase irritation and inflamed skin or airway reactions.

=====

LONG-TERM (CHRONIC) HEALTH EFFECTS

=====

The main long-term health concerns from AFFF stem from PFAS chemicals (such as PFOS and PFOA) in older military foams. PFAS:

- Persist in the body for years
- Accumulate with repeated exposure
- Can be measured in blood for long periods after exposure

Epidemiologic and toxicologic studies have associated PFAS exposure with several chronic health outcomes.

1. Cancer Risk

Long-term PFAS exposure has been linked to increased risk of certain cancers, particularly:

- Kidney cancer
- Testicular cancer

Some studies also suggest possible associations with other cancers, though evidence is strongest for kidney and testicular cancer.

2. Immune System and Vaccine Response

PFAS exposure has been associated with:

- Reduced antibody response to vaccines
- Possible increased susceptibility to infections
- Changes in some immune markers

3. Liver Effects

Long-term exposure may cause:

- Elevated liver enzymes
- Liver cell changes
- Fatty liver changes in some individuals

4. Cholesterol and Metabolic Effects

PFAS exposure is consistently linked to:

- Increased total cholesterol
- Increased LDL ("bad") cholesterol
- Possible contribution to metabolic syndrome and cardiovascular risk

5. Thyroid and Hormonal Effects

PFAS can interfere with hormone regulation and may cause:

- Thyroid disease (hypothyroidism or other dysfunction)
- Changes in thyroid hormone levels
- Possible effects on other endocrine systems

6. Pregnancy and Developmental Effects

For those exposed during pregnancy, studies have associated PFAS with:

- Pregnancy-induced hypertension or preeclampsia
- Lower infant birth weight
- Some developmental and growth effects in children

7. Kidney Function

Some research indicates:

- Possible reduced kidney function
- Subtle changes in kidney markers with long-term PFAS exposure

8. Other Possible Effects

Long-term PFAS exposure has also been studied in relation to:

- Ulcerative colitis
- Some autoimmune or inflammatory conditions
- General fatigue and nonspecific symptoms

=====

NAVY AVIATION ROLES AT HIGHEST RISK

=====

Personnel most likely to have significant AFFF exposure include:

- Aviation Boatswain's Mates (ABH/ABF) – flight deck and hangar firefighting
- Crash and Salvage / ARFF crews
- Aviation Firefighters and Damage Control personnel
- Flight deck crew involved in fuel spill response using AFFF
- Maintenance personnel who tested, serviced, or cleaned AFFF systems
- Sailors stationed on carriers or amphibious ships where AFFF systems were routinely exercised

Repeated training, system testing, and uncontained spills in hangars, decks, and bilges increased the likelihood of chronic PFAS exposure.

=====

VA DISABILITY CLAIM WRITEUP EXAMPLE

=====

****Statement in Support of Claim: AFFF / PFAS Exposure – Navy Aviation****

I am submitting this statement in support of my claim for service-connected disability due to long-term exposure to Aqueous Film Forming Foam (AFFF), including PFAS-containing formulations, 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 various naval air stations. My duties regularly involved working with and around AFFF in the performance of flight deck and hangar safety operations, including:

- Participating in or supporting crash and rescue firefighting drills and live responses
- Using AFFF to respond to JP-5 and other fuel spills on the flight deck and in hangars
- Operating and cleaning AFFF hose lines, nozzles, and proportioning equipment
- Working in spaces where AFFF systems were periodically tested, causing foam to spread across decks and equipment

During many of these operations, personal protective equipment such as respirators and full chemical-resistant gear was not consistently provided or enforced. As a result, I often had direct skin contact with AFFF and inhaled foam mist and vapors, especially in enclosed or poorly ventilated spaces. After these exposures, I experienced symptoms such as skin irritation, coughing, headaches, and nausea, but was expected to continue working in the same environments.

Since separating from the Navy, I have developed ongoing health problems that are consistent with long-term PFAS exposure from AFFF, including [E.G., KIDNEY CANCER / TESTICULAR CANCER / THYROID DISEASE / HIGH CHOLESTEROL / LIVER ENZYME ABNORMALITIES / IMMUNE OR AUTOIMMUNE ISSUES / OTHER]. These conditions were diagnosed years after my service, and I had no significant known PFAS exposure before or after my time in the Navy apart from my duties around AFFF.

Given:

- The well-documented use of PFAS-containing AFFF in Navy aviation during my period of service,
- My direct and repeated contact with AFFF in the line of duty,
- The enclosed, shipboard and hangar environments in which these exposures often occurred,
- And the development of [LIST CONDITIONS] after my service,

I believe that my current medical conditions are directly related to my occupational exposure to AFFF and PFAS while serving in Navy aviation. I respectfully request that the Department of Veterans Affairs recognize these conditions as service-connected and evaluate my claim for disability compensation accordingly.

Signed,

[Veteran Name]

[Date]