

Reference Document for AF Form 2766 on Fuel Systems Repair

NOTE: Data in this reference document (1) provides rationale for information recommended in the associated AF Form 2766, (2) provides guidance for when a particular OH clinical exam should be removed from the associated AF Form 2766 (e.g., exam required only when exceeding an exposure limit) or (3) should be considered by the Aerospace Medicine Council Chairman for inclusion in the Notes section of the associated AF Form 2766.

Personnel repair aircraft fuel systems, remove and replace fuel system parts using solvents, JP-8, adhesives, sealers and sealants. Personnel troubleshoot aircraft problems and maintain external fuel tanks for aircraft. Shop is also on the Respiratory Protection Program (RPP) and personnel receive training and fit testing on half-face and full-face respirators annually. Other hazards associated: Inclement weather, hazardous noise, slippery surfaces, flightline hazards, bending/twisting, and lifting/carrying.

Shop name synonyms include Fuel Cell, Aircraft Fuel Systems Repair, and Fuel Systems.

Hazardous Noise

Evaluations

- Pre-Placement:** Audiogram
- Periodic:** Audiogram
- Frequency:** At least annually
- Termination:** Audiogram
- Post-Exposure Emergency:** N/A

Additional requirements

N/A

References

29 CFR 1910.95, AFOSH 48-20 (10 May 2013); DoDI 6055.12

Notes

- (1) Reference audiograms are required within 30 days of the start of any job with a noise hazard exposure that exceeds the limits contained in AFOSHSTD 48-20 (10

May 2013) Table 3 (page 25). Periodic (at least annual) and termination of exposure audiograms are required for all workers with hazardous noise exposure risk. The audiograms should be accomplished in strict compliance with AFOSHSTD 48-20 2.12.7. The decision to place an individual on the HCP will be based on the likelihood of routine exposure exceeding 85 dBA as an 8-hour TWA. Adapt the Fuel Systems Repair AF Form 2766 for local use based on representative noise dosimetry.

- (2) Air Reserve Component (ARC, which includes ANG) members with less than 30 days per year of noise exposure do not require annual audiograms, but are required to comply with all other aspects of the Hearing Conservation Program.
- (3) In the case that a periodic audiogram suggests a Significant Threshold Shift in an ARC member, then initial follow-up audiograms must be completed within 60 days of the annual audiogram. If no follow-up audiograms are completed within 60 days after the annual audiogram, then the Threshold Shift must be considered a Permanent Threshold Shift (PTS) until further follow-up is completed.

JP-8 Fuel

Evaluations

Selection for medical surveillance: All workers with an inhalational or dermal exposure risk to JP-8 should be enrolled in medical surveillance.

Pre-placement: The initial medical surveillance should include a health history and physical exam. The health history should focus on pulmonary, dermal, neurologic, renal, and hepatic systems. The physical exam should focus on the skin.

Periodic: The annual medical surveillance should include a health history and physical exam. The health history should focus on pulmonary, dermal, neurologic, renal, and hepatic systems. The physical exam should focus on the skin.

Frequency: Annual

Termination: Similar to annual exams.

Post-exposure emergency: Symptomatic acute exposure to JP-8 fuel should receive an immediate post-exposure history and examination with as quantitative as possible description of the magnitude of the exposure and route of exposure. Since JP-8 contains some amount of benzene, large respiratory or dermal exposure should include a benzene exposure evaluation IAW 29 CFR 1910.1028.

Additional requirements

N/A

References

AFRL-SA-WP-SR-2012-0002: Interim Base-Level Guide for Exposure to Jet Fuel and Additives (Dec 2011); ATSDR Toxicological Profile for JP-5 and JP-8 (August 1998)

Notes

N/A

Benzene

Evaluations

Selection for medical surveillance: Published literature suggests that JP-8 workers have significant exposure to the components of JP-8 including benzene via the dermal route, even if inhalational exposure is limited by respiratory protection. Fuel system workers should be considered at risk for benzene exposure unless such exposure has been excluded by biological monitoring.

Pre-placement: Medical history: (1) Past work exposure to benzene or any other hematological toxins, (2) a family history of blood dyscrasias including hematological neoplasms (**see Note 3**), (3) a history of blood dyscrasias including genetic hemoglobin abnormalities, bleeding abnormalities, abnormal function of formed blood elements, (4) a history of renal or liver dysfunction, (5) a history of medicinal drugs routinely taken, (6) A history of previous exposure to ionizing radiation, exposure to marrow toxins outside of the current work situation. Conduct a complete physical examination and a complete blood count, including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC). The results of these tests shall be reviewed by the examining physician.

Periodic: (1) A brief history regarding any new exposure to potential marrow toxins, changes in medicinal drug use, and the appearance of physical signs relating to blood disorders. (2) A complete blood count including a leukocyte count with differential, quantitative thrombocyte count, hemoglobin, hematocrit, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC)

Frequency: At least annually

Termination: N/A

Post-exposure emergency: If an employee is exposed to benzene in an emergency situation, the employer shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours. The urine specific gravity shall be corrected to 1.024.

Additional requirements

Where the results of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count

shall be repeated within 2 weeks: (1) the hemoglobin level or the hematocrit falls below the normal limit [outside the 95% confidence interval (C.I.)] as determined by the laboratory for the particular geographic area and/or these indices show a persistent downward trend from the individual's pre-exposure norms; provided these findings cannot be explained by other medical reasons, (2) the thrombocyte (platelet) count varies more than 20 percent below the employee's most recent values or falls outside the normal limit (95% C.I.) as determined by the laboratory, (3) the leukocyte count is below 4,000 per mm³ or there is an abnormal differential count. If the abnormality persists, the examining physician shall refer the employee to a hematologist or an internist for further evaluation unless the physician has good reason to believe such referral is unnecessary

References

29 CFR 1910.1028; Env Health Perspectives 2006; 114:182-5

Notes

- (1) The employer shall make available a medical surveillance program for employees:
 - a. Who are or may be exposed to benzene at or above the action level 30 or more days per year;
 - b. Who are or may be exposed to benzene at or above the PELs 10 or more days per year;
 - c. Who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard (when employed by their current employer); and
 - d. Involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.
- (2) If none of the above conditions apply, remove the associated exam (i.e., benzene surveillance) from your AF Form 2766.
- (3) This requirement of the benzene standard 1910.1028(i)(2)(i)(A)(2) directs the collection of, "A family history of blood dyscrasias including hematological neoplasms." However, this appears to be a violation of the GINA Act (75 FR 68912). This conflict has not been addressed and remains unsettled.
- (4) Performance of medical surveillance for benzene should be based in formal exposure assessment and identification of sufficient exposure to warrant benzene surveillance.

Respiratory Hazards

Evaluations

Pre-placement: (1) OSHA respiratory questionnaire and (2) Medical examination (see Note 1) (3) Spirometry (see Note 2)

Periodic: Respirator fit test at least annually, or upon request of an employee or supervisor. The Respiratory Protection Standard does not require periodic completion of the respiratory questionnaire or medical examination. However, best practice suggests a review of the respiratory questionnaire during the annual medical surveillance evaluation by the health care provider and appropriate medical evaluation if indicated by that review.

Frequency: Annual respirator fit-test

Termination: N/A

Post-exposure emergency: N/A

Additional requirements

N/A

References

29 CFR 1910.134; DoDI 6055.05-M, C4.13 Respirator Clearance; AFOSH Standard 48-137

Notes

- (1) Based on worker responses to the Respiratory Questionnaire, a medical evaluation may be required either if the criteria in 29 CFR 1910.134 (e)(3) are met or at the discretion of the responsible PLHCP. Additional criteria may be established locally.
- (2) Medical examination and spirometry are not requirements of the OSHA Respiratory Protection Standard but may be conducted as a local option. Review paragraph 6.3.2. of AFOSH Standard 48-137 when considering spirometry.

Heat Stress

Evaluations

Pre-placement: Medical history; history of heat illness, cardiovascular conditions that impair heat tolerance, use of medications that impair heat tolerance

Periodic: Occurrence of heat illness or significant symptoms related to heat strain; new or changes in conditions and medications that effect heat tolerance

Frequency: At least annually

Termination: N/A

Post-exposure emergency: Medical evaluation before re-exposure to heat stress

Additional requirements

N/A

References

ACGIH TLVs and BEIs, Thermal Stress, Heat Stress and Strain (2012)

Notes

N/A