

ORDER

3900.19B

**FAA OCCUPATIONAL SAFETY AND HEALTH
PROGRAM**



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**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

FOREWORD

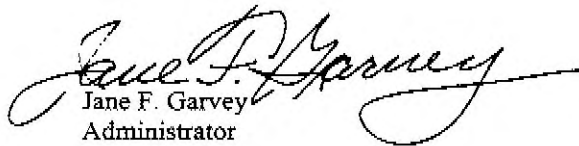
This order establishes the policy framework and assigns responsibility for an effective agencywide employee safety and health program. The goal of the program is to ensure that FAA employees are provided with places and conditions of employment that are free from recognized hazards that cause or are likely to cause death or serious physical harm.

In accordance with the terms agreed to during the 1994 realignment of the FAA occupational safety and health program, detailed implementation guidance will be provided separately by the Airway Facilities Service to serve the day-to-day management and operation of the program.

This order plus AAF-generated implementation guidance are intended to meet the requirements established by the Occupational Safety and Health Act, which was passed by Congress on December 29, 1970. The FAA Administrator is required by law to establish and maintain an agencywide occupational safety and health program that is consistent with the legal requirements of Public Law 91-596, Occupational Safety and Health Act of 1970; Executive Order 12196, Occupational Safety and Health Programs for Federal Employees; 29 CFR Part 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs; and DOT Order M 3902.7B, Occupational Safety and Health Management Manual.

It should be noted that some of the procedures contained within this order may appear to be implementation guidance (e.g., paragraph 901, Employee Report of Hazardous Condition). However, 29 CFR Part 1960 requires that certain basic programmatic procedures be incorporated into any Federal agency occupational health and safety program as policy. Such procedures were added in this document to meet the Federal requirements.

If problems arise that may not be sufficiently described in this order, consult the FAA Office of Environment and Energy for further assistance.



Jane F. Garvey
Administrator

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CHAPTER 1. GENERAL

1. PURPOSE. This order establishes broad roles, responsibilities, and accountability for operating an Occupational Safety and Health (OSH) Program in the Federal Aviation Administration (FAA). This order assigns requirements of the Occupational Safety and Health Act, Public Law 91-596; Executive Order 12196, Occupational Safety and Health Programs for Federal Employees; and 29 Code of Federal Regulations Part 1960, Basic Program Elements for Federal Occupational Safety and Health Programs. This order implements DOT (Department of Transportation) 1000.17, Administrative Services Policy Functions.

2. DISTRIBUTION. This order is distributed to the director level in the Washington headquarters, regions, and centers; to the division level in the NAS Transition and Integration; to the division level in regional Air Traffic, Flight Standards, Human Resource Management, and Aviation Medical Divisions; to the branch level in the regional Airway Facilities Divisions; to the Environmental, Safety, and Emergency Management and Human Resource Management Divisions at the Aeronautical Center; and the Facilities Services and Engineering and Human Resource Management Divisions at the Technical Center; and a limited distribution to all field offices and facilities.

3. CANCELLATIONS.

a. Order 3900.6A, Occupational Safety Program for Airway Facilities Personnel, dated January 21, 1972.

b. Order 3900.14C, Safety Climbing Equipment at Existing NAS Facilities, dated February 23, 1972.

c. Order 3900.19A, Occupational Safety and Health, dated July 20, 1982.

d. Order 3900.23, Report of AF Occupational Safety Program, dated February 22, 1971.

e. Order 3900.24A, Accident and Fire Reporting, dated February 27, 1976.

f. Order 3900.49, Control of Hazardous Energy During Maintenance, Servicing, and Repair, dated July 17, 1992.

g. Order 3910.2A, Occupational Health Programs, dated January 5, 1973.

h. Order 3910.3A, Radiation Health Hazards and Protection, dated October 19, 1983.

i. Order 3910.5, Asbestos Control, dated February 19, 1986.

4. BACKGROUND. The occupational safety and health regulations of Federal, state, and local governments have become increasingly stringent over the past several years. Effective June 1993, the FAA Executive Board agreed to consolidate the occupational safety and health policy and implementation functions, with realignment of functions to the Office of Environment and Energy (AEE) and the NAS Transition and Integration (ANS).

5. EXPLANATION OF CHANGES. The order has been revised to include:

- a.** New roles and responsibilities to reflect the current FAA organizational structure and assignment of program responsibilities.
- b.** Updated chapters containing program elements necessary to the establishment and implementation of an agencywide occupational safety and health program in accordance with current standards and issuances of the Occupational Safety and Health Administration (OSHA). See paragraph 9, Standards.
- c.** Details on establishing and conducting an occupational safety and health committee have been removed and are now incorporated in a charter available through AEE. See paragraph 10a(2).
- d.** Authority for clearing changes or adding new chapters to this order. See paragraph 7.
- e.** Consolidation of previously separate occupational safety and health orders into this order. For example, FAA Order 3910.3A, Radiation Health Hazards and Protection, and FAA Order 3910.5, Asbestos Control, were canceled, the policies updated, and added to this order as chapters 14 and 15, respectively.

6. FORMS. FAA Form 3900-6, FAA Mishap Report, is included in Chapter 7, Accident Reporting and Investigation, as Figure 7-1.

7. AUTHORITY TO ISSUE CHANGES TO THIS ORDER. The Director of AEE has the authority to add new chapters or change existing chapters after appropriate coordination with stakeholder organizations. The Administrator reserves the authority to establish or change policy, delegate authority, or assign responsibility as necessary.

8. POLICY. This order sets the policy for the framework of the overall agency OSH program.

a. General. The FAA is committed to providing for the occupational safety and health of employees, preventing accidental loss of material resources, avoiding facility interruptions due to accident or fire, and enforcing a system of formal accountability. The FAA OSH program shall have top management commitment and support. The program shall integrate activities at all levels into FAA day-to-day operations.

b. Program Management. An OSH program must include, at a minimum, the following elements: program/project planning, forecasting requirements, budgeting, general and specific training, inspections and followup, including abatement, and developing evaluation standards to measure progress.

9. STANDARDS.

a. Occupational Safety and Health Standards. DOT and FAA have adopted the OSHA standards published in 29 CFR Part 1910, "Occupational Safety and Health Standards for General Industry," and 29 CFR Part 1926, "Safety and Health Regulations for Construction." The standards apply to FAA workplaces. Variances from OSHA standards may be sought, as covered in Chapter 2, Workplace Inspections, Abatement Programs, and Variances.

b. Existing FAA OSH Orders. This FAA OSH program and related FAA orders shall be periodically reviewed for currency with OSHA standards and FAA organizational changes. The FAA OSH Program Manager for Policy (OSHMP/P), located in the Office of Environment and Energy (AEE), shall conduct the review. Orders not meeting OSHA standards shall be revised or revoked. For FAA orders found to be inconsistent due to changes in OSHA standards, the most current OSHA standard shall apply.

(1) The OSHPM/P shall attempt to resolve any conflicts with standards of another agency/jurisdiction involving FAA employee operations.

(2) The FAA OSHPM/P shall elevate unresolved conflicts to the FAA's Designated Agency Safety and Health Official (DASHO), and finally to the appropriate DOT office for resolution.

c. Consensus Standards. FAA will apply OSHA standards and other non-FAA regulatory or current industry/consensus standards to equipment, operations, or workplaces. Non-FAA regulatory or consensus standards include, but are not limited to, those published by the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), DOT, Environmental Protection Agency (EPA), and National Fire Protection Association (NFPA).

10. OCCUPATIONAL SAFETY AND HEALTH PROGRAM REQUIREMENTS. The FAA OSH Program shall include the following:

a. Program Elements. The elements of an occupational safety and health program include:

(1) A safety and health organization encompassing a comprehensive headquarters, regional, and center program, consistent with this order and with OSHA regulations. (Chapter 3, Safety and Health Organization)

(2) Safety and health committees at the national, regional, and field level. Occupational Safety, Health, and Environmental Compliance Committees (OSHECCOM) were established by charter on March 17, 1996. These committees advise and assist management in implementing and monitoring safety and health programs and provide a forum for information exchange.

(3) Qualified safety and health professionals with equipment, competence, and training available to recognize and evaluate workplace hazards and to suggest means to abate those hazards. (Chapter 4, Professional Qualifications and Training of OSH Staff)

(4) A safety awards program aimed at promoting positive employee response and personal accountability in safety and health activities.

(5) Written policies, programs, and procedures that provide appropriate direction, guidance, and program requirements.

(6) Budgets and plans at each operating level, ensuring appropriate financial and other resources are requested for OSH program implementation and administration.

(7) A safety and health management information system to record and track accidents, injuries, and illnesses. (Chapter 5, Safety and Health Management Information System)

(8) A program to transmit information on pending safety and health legislation or new regulations to appropriate staff; e.g., use of intranet homepages.

b. Training. A comprehensive occupational safety and health training program shall be established to incorporate general and job-specific training based on an individual's duties and the workplace. (Chapter 6, Training and Awareness Programs)

c. Workplace inspection and abatement. Formal facility inspections and informal self-assessments will be conducted annually. Formal procedures for hazard abatement and accident investigations of injuries, incidents, and illnesses will be established. (Chapter 1, General; and Chapter 7, Accident Reporting and Investigation)

d. Measures of effectiveness. Measures to evaluate OSH program effectiveness will be established within the FAA. The OSH program will be audited and evaluated to track its success quantitatively and to identify areas requiring increased attention.

e. Dissemination of occupational safety and health program information. A copy of this order and related headquarters or region/center OSH orders and implementation guidelines shall be made available for inspection to each supervisor, OSHECCOM committee members, employee representatives, and employees. These shall also be made available to the Secretary of Labor or designee upon request.

11. DEFINITIONS.

a. Center refers to the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center.

b. Designated Agency Safety and Health Official (DASHO) is the individual responsible for the management and administration of the safety and health program in the agency, as designated or appointed by the head of the agency. At the headquarters level, the DASHO is the Assistant Administrator for Policy, Planning, and International Aviation, API-1. In the regions and centers, the Regional Administrator or Center Director will appoint a Designated Region/Center Safety and Health Official (DR/CSHO) based on respective region/center needs and preferences.

c. Facility is a single physical location where agency business is conducted or where services or operations are performed. Where distinctly separate activities are performed at a single physical location, each activity shall be treated as a separate establishment. Typically, an “establishment” as used in this order refers to a field activity, regional office, center, installation, or site.

d. Management Representative is a supervisor or management official as defined in a labor management relations program.

e. Region/Center Occupational Safety and Health Manager (ROSHM/COSHM) is the technical person responsible for the employee safety and health program at the regional and center level. The ROSHM/COSHM serves as advisor to the RPMES and management on occupational safety and health issues and is a permanent voting member of the regional or center OSHECCOM.

f. Regional Program Manager for Environment and Safety (RPMES) serves as the regional and center associate program manager in performing the environmental compliance and occupational safety and health program implementation responsibilities and providing implementation guidance for compliance at regional division levels. The RPMES maintains copies of field OSHECCOM minutes and reports and is a permanent, voting member of the regional or center OSHECCOM.

g. Reprisal is any act of restraint, interference, coercion, or discrimination against an employee for exercising rights under E. O. 12196 and 29 CFR 1960 or for participating in the agency’s safety and health program.

h. Technically Qualified Safety Personnel:

(1) **OSH Professionals:** safety specialists, safety managers, safety engineers, or industrial hygienists; or equally qualified agency, military, or non-Government personnel who meet the basic qualifications of the above classifications as defined by AHR standards and recommended by the region/center occupational safety and health manager.

(2) **Collateral Duty Safety and Health (CDSH) Personnel:** personnel having sufficient OSH training and experience to perform general workplace safety inspections.

12. RESPONSIBILITIES OF HEADQUARTERS OFFICES.

a. The Operations Center (ADA-30) in the Office of the Deputy Administrator shall notify the OSHPM/P within 4 hours of all incidents covered by OSHA reporting requirements. These incidents include fatalities and/or when three or more employees are involved in an accident and hospitalized on an in-patient basis.

b. The Assistant Administrator for Policy, Planning, and International Aviation (API) shall:

(1) Serve as the DASHO to assist the Administrator in ensuring a comprehensive OSH program for FAA employees.

(2) Develop agency OSH policies, issue directives, and make recommendations.

(3) Initiate programs and actions to ensure compliance with applicable standards, policies, and requirements.

(4) Serve as a member of the FAA National OSHECCOM as defined in the OSHECCOM Charter. Also, act for the Administrator in interdepartmental safety and health matters.

c. The Office of Environment and Energy (AEE) within API shall:

(1) Establish OSH program policies consistent with OSH regulations and standards.

(2) Review guidelines and directives produced by other FAA organizations to implement OSH policies.

(3) Serve as FAA's focal point for OSH policy issues for internal and external organizations, and provide OSH program liaison services for the FAA. Serve as the official point of contact for all OSH Freedom of Information Act (FOIA) inquiries. Provide these services for interactions with OSHA, National Institutes for Occupational Safety and Health (NIOSH), Environmental Protection Agency (EPA), the unions, and other regulatory or advisory agencies.

(4) Interpret OSHA regulations and industry/consensus standards.

(5) Conduct OSH program oversight assessments throughout the agency. (Chapter 8, Evaluation of the OSH Program.)

(6) Identify the training required to comply with all Federal Occupational Safety and Health and Environmental Compliance regulations, and provide a general definition of who should receive the training.

(7) Sponsor and oversee the FAA OSHECCOM as identified in the OSHECCOM Charter.

(8) Provide AEE budget needs to ANS and participate in budget discussions, as appropriate, to provide clarification of these needs for the national FAA Occupational Safety and Health Program.

(9) Develop and administer the FAA OSH Mishap Reporting and Safety Management Information System (SMIS), including trend analysis and data tracking.

(10) Track and initiate appropriate action for all employee allegations of discrimination, reprisal, or restraint as a result of his or her participation in the FAA Occupational Safety and Health Program.

d. The Office of the Chief Counsel (AGC) shall:

(1) Provide top management commitment and support of the OSH program per E.O. 12196.

(2) Determine the legal sufficiency of FAA occupational safety and health contracts, procedures, and correspondence.

(3) Provide legal advice and guidance on OSH implementation and compliance issues.

e. All Associate/Assistant Administrators shall:

(1) Provide top management commitment and support for the OSH program.

(2) Implement OSH policies within their respective organizations.

(3) Ensure that Washington headquarters and regional subordinate managers are aware of OSH requirements with which they must comply, and that they implement the agency OSH policies.

(4) Ensure adequate funds and resources are requested to comply with applicable OSH policies and regulations, such as training, travel, personal protective equipment (PPE), etc. These requests should be made according to the 2500 budget series orders.

(5) Ensure that their policies, procedures, and directives are updated as new occupational safety and health policies are issued.

(6) Designate an OSH person (as defined in paragraph 11h) for their respective line of business (LOB) who will serve as the point of contact to coordinate OSH issues with ANS and assist in the implementation of the agency OSH program.

(7) Ensure that OSH training needs are identified and addressed.

(8) Ensure that written procedures are in place to protect employees from discrimination, reprisal, or restraint as a result of their participation in the FAA Occupational Safety and Health Program.

f. The Assistant Administrator for Financial Services (ABA) shall ensure that the agency's budget request includes adequate funding for OSH program needs.

g. The Assistant Administrator for Human Resource Management (AHR) shall:

(1) Serve as the agency's focal point for the Office of Workers' Compensation Program (OWCP), including claims processing, case management, and reassigning workers on light duty assignments.

(2) Ensure that all FAA OSH policies, training, and procedures are compatible with established labor and employee practices and meet regulatory requirements.

(3) Ensure that all FAA OSH program policies are consistent with affirmative action employment programs for minorities, physically challenged, veterans, and other special emphasis groups.

(4) Ensure that OWCP information is coordinated with OSH program managers and the Federal Air Surgeon for the purpose of measuring program effectiveness for setting program priorities.

(5) Ensure that position descriptions and employment standards accurately and specifically reflect the use of PPE, training requirements, participation in medical monitoring programs, and an ability to perform safely those duties that could affect the employee's safety and health.

(6) Make hazardous duty pay and environmental differential pay determinations, in coordination with AEE, ANS, and AAM personnel, based on hazard assessment, AHR policies, OSHA standards, and OPM regulations (if applicable).

(7) Ensure that funds are requested to administer the Workers' Compensation Program.

(8) Ensure that management and supervisory position descriptions reflect safety responsibilities and that performance reviews measure performance in meeting occupational safety and health requirements in accordance with OSHA standards.

h. The Associate Administrator for Research and Acquisitions (ARA) shall:

(1) Ensure compliance with all standards, as identified in paragraph 9, in the design and acquisition of emerging and deployed systems/equipment and real property management.

(2) Develop procedures to incorporate the most current version of the standards referenced in paragraph 9 into the requirements documents, requests for offer, FAA acquisition management system documents, contracts, designs, and acceptance testing protocols. Integrated product teams (IPT) and product teams (PT) shall include ANS as an extended team member in their program plans.

(3) Ensure designs apply human factors, practices, and principles and reflect concerns such as, but not limited to, minimizing employee exposures, hazardous component disposal, and safe operations and maintenance by using a life cycle and systems safety approach.

(4) Establish agencywide procedures to include compliance with all standards as identified in paragraph 9 of this order.

(5) Identify and ensure correction of OSH issues and concerns for FAA's national headquarters [Federal Office Building (FOB 10A)] and coordinate with ANS as necessary.

(a) Appoint and train collateral duty safety personnel for FOB 10A to support the agency OSH program.

(b) Implement OSH policies within FOB 10A.

i. The Office of Aviation Medicine (AAM) shall:

(1) Provide medical evaluations, monitoring, and support as required by policy.

(2) Provide policy development technical support to the Office of Environment and Energy.

(3) Make recommendations on OWCP injury claims and light duty assignments.

(4) Develop procedures to maintain occupational safety and health medical surveillance records in accordance with OSHA regulations and FAA policy.

(5) Ensure that adequate funds are requested to administer the medical surveillance programs that are required by OSHA.

(6) Ensure that appropriate medical surveillance information is coordinated with OSH program managers.

j. The NAS Transition and Integration Program (ANS) within the Airway Facilities Service (AAF) shall:

(1) Manage, coordinate, and direct the implementation of the FAA OSH program across lines of business/staff office boundaries.

(2) Request, allocate, and budget for all prioritized Facilities and Equipment (F&E) OSH requirements necessary for program implementation and management. Include all areas appropriate for F&E funding across lines of business and staff offices in accordance with the 2500 budget series orders.

(3) Develop guidance and planning documents to implement the FAA OSH program.

(4) Identify and prioritize requirements for all FAA OSH training. Assist the Resources Management Program (AFZ) in developing training.

(5) Provide technical support to ensure that OSH considerations are included in the life cycle management process.

(6) Provide technical assistance as appropriate to appropriate AF organizations to ensure that OSH guidance is included in AF technical and maintenance orders and related publications.

(7) Provide technical support in the development of Acquisition Management System (AMS) implementation procedures to incorporate all standards into requirements documents, contracts (including pre-contract awards), designs, and acceptance testing protocols.

(8) Provide technical support in the development of AMS requirements documents that reflect concerns such as, but not limited to, minimizing employee exposures, hazardous component disposal, safe operations/maintenance, system safety, and human factors.

(9) Provide technical assistance as needed to all national headquarters, regional, and center organizations on OSH implementation issues.

(10) Provide periodic updates to national headquarters management on OSH program progress, potential problems, and trends.

(11) Provide technical assistance as needed to headquarters building management on matters dealing with the safety and health of headquarters personnel.

(12) Provide technical or programmatic advice and/or assistance to ARA for OSH issues related to FOB 10A as necessary.

k. The Spectrum Policy and Management Program (ASR) within AAF shall:

(1) Serve as the agency focal point for information about ionizing and nonionizing radiation emission characteristics of all FAA-owned or -leased equipment.

(2) Coordinate with ANS in evaluating potential health hazards associated with employee exposure to radiation emissions from FAA-owned or -leased equipment.

(3) Assist AEE in developing and revising policy on employee exposure to radiation hazards related to FAA-owned or -leased equipment.

(4) Incorporate radiation safety into frequency spectrum engineering practices and when developing telecommunications and network planning.

(5) Ensure funds are requested to conduct surveys, training, and special studies.

(6) Ensure Frequency Management Officers schedule periodic radiation surveys and coordinate the scheduled and special request surveys with the RPMES's and/or ROSHM's/COSHM's.

l. The Resources Management Program (AFZ) within AAF shall:

(1) Serve as the agency's primary focal point for development, execution, and tracking of centralized OSH training across the lines of business in accordance with priorities set by ANS.

(2) Ensure funds are requested for OSH training requirements.

13. RESPONSIBILITIES OF THE REGIONS AND CENTERS.

a. Regional Administrators, AXX-1; Director, Mike Monroney Aeronautical Center (AMC-1), and Director, William J. Hughes Technical Center (ACT-1) shall:

(1) Provide top management commitment and support for the OSH program, to include the enforcement of safety regulations.

(2) Ensure that the Centers' (AMC and ACT responsibility only) programs address OSH requirements in the planning, funding, and operation process.

(3) Incorporate applicable OSH requirements into specifications as well as contracts for inspection, construction, maintenance, and replacement of airway systems, facilities, and equipment; and acquisition of goods and services.

(4) Designate an executive level safety and health official as the DR/CSHO based on respective region/center needs and preferences.

(5) Ensure adequate funds and resources are requested to comply with applicable OSH policies and regulations like training, travel, and PPE. These requests should be made through the appropriate line of business and according to the 2500 budget series orders.

(6) Provide OWCP information to ROSHM's/COSHM's and regional flight surgeons for accident prevention purposes.

(7) Incorporate OSH requirements into existing and future technical training courses provided by the Aeronautical Center. (AMC responsibility only.)

b. Regional Airway Facilities Division Manager, AXX-400, Facility Management Program Director, AMP-1, and Facilities Services and Engineering Program Director, ACT-600 shall:

- (1) Provide top management commitment and support for the OSH program.
- (2) Manage and coordinate the implementation of the region/center OSH program across division/staff office boundaries to include planning and funding functions, as applicable.
- (3) Assist division/staff offices in implementing the OSH program in their organizations.
- (4) Ensure region/center resource requirements for OSH programs identified by all divisions are submitted to ANS.
- (5) Provide an adequate number of technically qualified staff to support the region/center OSH program.
- (6) Ensure procedures are in place to respond to employee reports of imminent danger or other immediate hazard concerns to protect employee safety. (Chapter 9, Reports by Employees on Hazardous Conditions)
- (7) Ensure that written guidance and procedures are in place to expedite the notification of safety-related accidents, fatalities, and incidents to the emergency operations center or facility.

c. Regional Flight Surgeons (AXX-300) shall:

- (1) Implement medical surveillance requirements in their region or center in accordance with this order and any written guidance provided by stakeholders; e.g., ANS.
- (2) Ensure that funding for occupational medical services, including periodic medical monitoring, is addressed in the budgetary review process or elevated to the National Occupational Medicine Surveillance Program Oversight Team (NOMSPOT) in accordance with paragraph 1206.
- (3) Ensure that occupational medical monitoring services are provided to all FAA employees who have been determined by AXX-400 as meeting regulatory requirements for inclusion in the region/center medical surveillance program. When there is a disagreement on the criteria or indications for examinations, the issue shall be resolved in accordance with the region/center OSH program and AAM guidance.
- (4) Review available industrial hygiene exposure monitoring and/or related job hazard analyses prior to providing medical services.
- (5) Coordinate changes to the region/center medical surveillance program with AAM and AXX-400.
- (6) Provide AXX-400 with the results of employee medical monitoring for use in determining procedures to take to eliminate employee exposure to toxic and hazardous materials.

d. All Regional and Center Division Managers shall:

- (1) Provide top management commitment and support for the agency OSH program.
- (2) Implement OSH policies within their respective organization.
- (3) Ensure that adequate funds and resources are requested in order to comply with applicable OSH policies and regulations like training, travel, and PPE. These requests should be made through the appropriate line of business and according to the 2500 budget series orders.
- (4) Ensure all divisional programs and projects address current OSH requirements.
- (5) Designate a representative as a contact point to work with the ROSHM/COSHM on OSH issues.
- (6) Require supervisors to identify employee OSH training needs and provide input during the annual budget formulation.
- (7) Provide appropriate representation and participation in the regional OSHECCOM.
- (8) Appoint and train collateral duty safety personnel to assist in OSH program responsibilities.

14. RESPONSIBILITIES OF ALL FAA SUPERVISORS AND EMPLOYEES.

a. All Supervisors shall:

- (1) Ensure that workplaces are inspected to identify and correct hazards and that completed job safety analyses (JSA) are available for appropriate work practices. Ensure that the results of the inspections and JSA's are documented and maintained in accordance with OSHA standards.
- (2) Ensure that all employees are trained in safety awareness and in safety precautions appropriate for their assigned tasks. Ensure the training records are documented and maintained in accordance with OSHA standards.
- (3) Enforce safety rules and regulations and require the use of PPE when its use is dictated by job requirements.
- (4) Ensure that accidents are investigated and that reports are completed to determine why they occurred. (Chapter 7, Accident Reporting and Investigation)
- (5) Utilize the safety committee, collateral duty, and other occupational safety and health personnel as a source of advice and assistance.
- (6) Ensure that all work-related injuries and illnesses are reported in accordance with prescribed procedures.
- (7) Ensure annual inspections are conducted and documented.
- (8) Provide commitment to the safety and health program.

b. All FAA Employees shall:

(1) Observe safe work practices, including the use of PPE, and comply with FAA and OSHA safety and health policies and standards.

(2) Promptly report unsafe and/or unhealthful working conditions, situations, work-related injuries, illnesses, and accidents to supervisors. (Chapter 9, Reports by Employees on Hazardous Conditions)

(3) Attend applicable OSH-related training sessions and committee meetings and comply with medical surveillance requirements.

(4) Provide commitment to the safety and health program.

CHAPTER 2. WORKPLACE INSPECTIONS, ABATEMENT PROGRAMS, AND VARIANCES

200. GENERAL.

a. Designated OSH personnel shall inspect all FAA workplaces at least annually to ensure safe and healthful working conditions. OSH workplace inspections shall occur at appropriate times and utilize methods that preclude or minimize disruption of the FAA's mission and operations.

b. Designated OSH personnel are:

(1) OSH Professionals: safety specialists, safety managers, safety engineers, or industrial hygienists; or equally qualified agency, military, or non-Government personnel who meet the basic qualifications of the above classifications as defined by AHR standards and recommended by the region/center occupational safety and health manager.

(2) Collateral Duty Safety and Health (CDSH) Personnel: personnel having appropriate OSH training and experience to perform general workplace safety inspections.

201. INSPECTION OF WORKPLACES. Each FAA facility, including offices, shall be inspected by technically qualified safety personnel, who possess appropriate equipment to recognize unsafe and unhealthful working conditions in that workplace. For an OSHA inspection, a "facility" is a single physical location where business is conducted or where services or operations are performed. Facility managers are responsible for ensuring each facility is inspected. Inspections may occur concurrently with regularly scheduled maintenance. Inspection findings shall be documented.

a. Workplaces and agency facilities shall be categorized as a general workplace or increased risk workplace based upon an evaluation of the operations by OSH professionals. A list shall be maintained of increased risk workplaces. For each of the increased risk workplaces, a list of associated facilities shall be identified; e.g., *facility* (ARTCC), *workplace* (battery room), *location or room number* (basement). The list shall be updated at least annually with the revision date documented. However, workplaces shall be added to the increased risk list as soon as it is indicated that conditions change and the risk increased; i.e., accident reports, medical monitoring results, construction projects, etc.

b. Increased risk workplaces shall be inspected at least twice a year by an OSH professional. Regions/centers shall follow implementation guidelines established by FAA headquarters for classification of increased risk workplaces.

c. Non-FAA workplaces in which FAA personnel are present for short duration; e.g., air carrier establishments, do not require annual OSH inspections. However, provisions will be made to ensure the safety and health of FAA employees while in the contractor facility. Annual inspections are required for workplaces not owned by the FAA, in which FAA personnel are assigned on a full-time basis, e.g., ATCT. OSH personnel will ensure inspections are conducted. The responsibilities and conditions for the inspections will be delineated in real property agreements.

d. Additional inspections may be conducted beyond those required above, in order to ensure program viability and the elimination of hazards. These inspections may be announced or unannounced.

e. Inspections shall be conducted in accordance with 29 CFR 1960 and in a manner to preclude unreasonable disruption of the operations of the workplace and shall be consistent with the established and written region/center OSH program.

f. Documentation will be prepared by the inspector for each workplace inspection and made available upon request by region/center, headquarters, or authorized employee representatives.

g. Documentation shall contain, at a minimum, date of inspection, deficiencies, applicable regulatory references, abatement plans, name of inspector, and any other information as required by the region/center OSH program. Inspectors are encouraged to document proactive initiatives. Inspections uncovering no findings will be documented with date of inspection and name of inspector. Electronic systems may be used as documentation to facilitate the recording of the inspection. Documentation shall be maintained in accordance with 29 CFR 1960.

h. Notices of Unsafe or Unhealthful Working Conditions will be prepared, issued, and posted in accordance with 29 CFR 1960 and consistent with the established and written region/center OSH program.

202. ABATEMENT OF UNSAFE AND UNHEALTHFUL CONDITIONS AND PRACTICES.

a. An abatement plan is required for all unsafe and unhealthful conditions found during an inspection, reported by employees, or identified through other means; i.e., accidents, construction activities, system safety analysis, etc., which cannot be corrected within 30 calendar days. Responsibilities for the abatement plan will be established by the region/center OSH program.

b. The abatement plan will contain at the least the following standard data:

- (1) Date of hazard.
- (2) Location of hazard.
- (3) Description of hazard.
- (4) Estimated hazard severity and accident probability.
- (5) Interim control measures.
- (6) Description of the abatement action, including estimated cost and completion date.
- (7) Closeout statement, indicating completed abatement action, actual cost, and date of completed action.

c. Abatement plans will be reviewed and followed up per 29 CFR 1960.30 by designated OSH personnel and kept in a central location as stated in the region/center OSH program.

203. VARIANCES. Variances from accepted OSHA standards may be requested in certain cases. Variances must clearly demonstrate an equivalent or greater level of employee protection.

a. Variance requests shall be reviewed in accordance with the established region/center OSH program and forwarded to ANS for initial processing. The written request will include:

- (1) Description of the adverse condition.
- (2) Identification of the applicable safety and health standard.
- (3) Rationale for noncompliance.
- (4) Description of the proposed alternative action.

(5) Explanation of how the alternative action will provide equivalent or greater protection.

(6) Description of interim protective measures until a decision is made by Washington headquarters and the Secretary of Labor.

b. ANS will review the variance request for adequacy and recommend whether or not it should be forwarded to the Secretary of Labor. ANS will forward the request to AEE for review and approval by the DASHO and official transmittal to the Secretary of Labor.

c. Requests not meeting equivalent protection criteria shall be returned by the office denying the request to the originator with an explanation for nonapproval.

CHAPTER 3. SAFETY AND HEALTH ORGANIZATION

300. GENERAL ORGANIZATION. An effective safety and health organization shall provide the roles, responsibilities, and authorities necessary to furnish each FAA worker with conditions of employment and a workplace free from recognized hazards. The organizational roles, responsibilities, and authorities shall be specified and implemented and periodically reviewed and revised as necessary.

a. Communications. Safety and health responsibilities must be defined in a formal statement and communicated so that managers, personnel, and safety and health staff understand their responsibilities.

b. Formal Organization Systems. Job descriptions of safety and health personnel shall clearly delineate responsibilities and reflect existing duties. Safety and health performance measures shall be job specific, and staff functional performance shall be evaluated during performance reviews.

c. Staffing. Full-time and collateral safety and health personnel shall be assigned to execute the safety and health program adequately. The operation unit's total safety and health mission, goals, and objectives must be considered in determining the required number of personnel.

301. REGION/CENTER SAFETY AND HEALTH PROGRAM. Each region/center organization's safety and health program will have standard safety and health program functions and tasks as part of the normal daily routine. The elements of a comprehensive safety and health program shall include:

a. Principal staff advisors, consultants, and coordinators for planning, organizing, directing, and evaluating region/center safety and health efforts.

b. Guidance for developing and implementing occupational safety and health plans and procedures according to OSHA regulations and FAA policy.

c. Policies and procedures to be used by regional and center managers and supervisors for unique activities.

d. Resources necessary to perform the OSH program.

e. Procedures to obtain professional assistance to eliminate unsafe or unhealthful conditions.

f. Procedures to assist supervisors in carrying out their safety and occupational health responsibilities.

g. Procedures for obtaining technical assistance in accident investigation and reporting according to FAA policy.

h. Accident data collection, analysis, and document preparation procedures.

i. A method to track completion of corrective measures or recommendations as appropriate to ensure a safe and healthful workplace.

j. Procedures to ensure safe practices and physical standards are incorporated into operating manuals, procedures, directives, and plans and that the documents are kept current.

k. Procedures for reviewing emergency plans.

l. Occupational safety and health training at all levels.

- m.** Close coordination with other FAA divisions and branches on safety-related issues.
- n.** Requirements for routine inspections and evaluations of safety programs and activities in accordance with chapter 1.
- o.** Procedures for performing planning and in-process engineering reviews for operations impacting worker OSH programs.
- p.** Liaison with counterparts in other Federal, state, or local agencies, ensuring cooperation on mutual interest issues.
- q.** Occupational safety and health reference material.
- r.** Requirements for membership on planning boards, ensuring existing and potential occupational safety and health issues are addressed.

302. POLICIES AND PROCEDURES.

- a.** The FAA employee safety and health program shall include clear written policies and procedures that provide appropriate direction and guidance. FAA policies and procedures shall be accessible to all personnel. Copies of safety and health standard operating procedures shall be available at each workplace, or, at a minimum, a central location, on the Internet, or on E-mail.
- b.** Routine procedural reviews shall be conducted as needed for changes in internal procedures or as a result of changes in safety and health regulations or FAA directives.
- c.** The FAA encourages the full support and participation of each employee in the Occupational Safety and Health Program. No employee shall be subject to discrimination, reprisal, or restraint as a result of his or her participation in the FAA Occupational Safety and Health Program.

303. PLANNING AND DECISIONMAKING PROCESS.

- a.** Each operating level shall systematically prepare budgets and financial plans to ensure appropriate financial and human resources are available to implement the OSH program.
- b.** Organizations shall conduct periodic safety and health reviews for all capital projects, research and development projects, and all major maintenance modifications.

CHAPTER 5. SAFETY AND HEALTH MANAGEMENT INFORMATION SYSTEM

500. GENERAL. The Safety Management Information System (SMIS) will be used to support FAA compliance with the reporting requirements set forth in 29 CFR 1960. It can also help management begin to use some of the best practices in mishap prevention. The FAA had a variety of independent mishap reporting schemes throughout the regions for years. The FAA has now deployed a system that brings all the FAA automation together and provides general safety information to employees and allows them to report workplace hazards. The system is located at <http://smis.faa.gov> and provides a tool through which supervisors are required to report mishaps. The system will allow Regional and Center Occupational Safety and Health Managers (ROSHM/COSHM) to use the data to track hazard abatement and mishap trends, which they send to affected managers. Supervisors and managers are then required to plan and budget for the abatement in accordance with 29 CFR 1960.7 and in Chapter 1, paragraphs 10(a)(6), 12(e)(4), 13(a)(5), and 13(d)(3) of this order. Supervisors have been assigned user IDs and passwords and can call AMI-200 if they experience difficulty accessing the website. AEE-200 is the System Administrator.

501. MISHAP REPORTING. Chapter 7, Mishap Reporting and Investigation, requires employees to report all work-related injuries, illnesses, motor vehicle accidents, and property damage to supervisors. Supervisors and managers are required to investigate mishaps and report them using the website. If access to the website is not available, supervisors will complete the paper version of FAA Form 3900-6 and submit to the ROSHM/COSHM in accordance with procedures established by the lines of business (LOB), Region or Center.

- a. The initial notification shall be provided to the immediate supervisor by the affected employee.
- b. The immediate supervisor or manager will enter mishap information into the SMIS website.

502. HAZARD REPORTING. Procedures in Chapter 9, Reports by Employees on Hazardous Conditions, require employees to report orally or in writing to supervisors, any unsafe, unhealthful, or unsatisfactory work condition that may result in injury, illness, or property loss. The employee may use FAA Form 1800-1, Unsatisfactory Condition Report, and submit it in accordance with established procedures in FAA Order 1800.6. The supervisor will use SMIS to report OSH hazards electronically, but if access to the website is not available, then Form 1800-1 may be used.

- a. The employee shall provide the initial verbal or written notification of an unsafe, unhealthful, or unsatisfactory condition to the immediate supervisor.
- b. If the written notification is a UCR, the supervisor does not need to enter the hazard into SMIS, since the UCR will eventually be input electronically into SMIS.
- c. If the notification was provided orally or in writing in accordance with Chapter 9 of this Order, then the immediate supervisor will enter the hazard information into SMIS.
- d. SMIS is designed to notify the ROSHM via electronic mail.

503. SAFETY INFORMATION (OPTIONAL). 29 CFR 1960.12 (c) requires the dissemination of occupational safety and health program information. Supervisors may use safety information on the website for safety briefings to promote general safety awareness.

- a. **Safety Campaigns.** Supervisors can download seasonal safety newsletter information and incentive program material for dissemination among the immediate workforce.
- b. **Success Stories.** Any FAA employee can submit a Seatbelt Survivor story, Safety Success story or other Lesson Learned by submitting the story to on cc:Mail to 9-SMIS-AMA@faa.gov.

c. Optional Safety Training Information. Lines of Business (LOB) are responsible for identifying, developing, and providing OSH training for their employees. Generic, sample training programs are provided on this website and may be used by LOBs in establishing training requirements. The courses are also available in video, or CD format from AFZ-100. Supervisors shall consult with their LOB OSH point of contact to determine what OSH training is required.

d. Optional Safety Program Evaluation Criteria. AEE is developing specific Program Evaluation criteria for their use in National LOB Program Evaluations. These criteria will be available for each LOB to use to self assess their OSH Program and for supervisors to better understand how their safety performance contributes to LOB OSH success.

e. Optional Facility Safety Inspection. Annual workplace inspections are required by paragraph 201 of Chapter 2 of Order 3900.19B, Workplace Inspections, Abatement Programs, and Variances. Lines of business shall develop procedures to ensure these inspections are conducted. A generic OSH facility inspection aid is included in the SMIS for LOBs information and use as appropriate

CHAPTER 6. OCCUPATIONAL SAFETY AND HEALTH TRAINING AND AWARENESS PROGRAM

600. GENERAL. This chapter delineates standards and program elements for the FAA Occupational Safety and Health (OSH) Training and Awareness Program. Regulatory training requirements are contained in 29 CFR 1910, "Occupational Safety and Health Standards for General Industry," 29 CFR 1926, "Safety and Health Regulations for Construction," and 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters." In addition, recognized national consensus standards are published by organizations such as the American National Standards Institute (ANSI), and the National Fire Protection Association (NFPA) and other related standards setting organizations.

601. BACKGROUND.

a. The FAA is committed to developing and maintaining well-trained, qualified, and competent personnel to operate and maintain FAA facilities and perform work tasks in a safe and reliable manner. This training chapter is a catalyst for managers to use to meet these expectations. It is important for FAA managers to be actively involved in the development and implementation of their facility's initial and continuing training programs, the identification of training needs, and the review and approval of training materials.

b. Training programs shall provide the basic OSH knowledge and skills to perform intended job functions. Training may include a combination of classroom, computer-based instruction, self-study, and on-the-job instruction.

602. SCOPE. This chapter describes the elements of an OSH training program for FAA personnel, not including occupational safety and health professionals, as described in 29 CFR 1960.2(s).

603. PROGRAM ELEMENTS.

a. Training of Top Management Officials. The FAA shall provide top management officials with orientation and recurrent learning experiences, which will enable them to manage their occupational safety and health program in accordance with 29 CFR 1960.57. Such orientation should include coverage of section 19 of the OSH Act, Executive Order 12196 and the FAA agency safety and health program. Assistant Administrators, Associate Administrators, Service Directors, Office Directors, Regional Administrators, and Regional Division Managers are top managers. The content of this training will provide top managers with current knowledge needed to be able to:

- (1) Communicate the FAA's OSH goals and objectives to all employees.
- (2) Assign safety and health roles and responsibilities.
- (3) Recognize training resources necessary to carry out assigned tasks.
- (4) Ensure managerial and supervisory accountability for OSH performance.
- (5) Support the OSH program.
- (6) Ensure that OSH policies, goals, and objectives are evaluated.
- (7) Ensure accident reporting and investigation procedures are followed.
- (8) Support facility inspection standards.

(9) Incorporate OSH program elements into the planning and budget process.

(10) Ensure hazards are identified and abated.

b. Training of Supervisors. The FAA shall provide initial and recurrent occupational safety and health training for supervisory employees that includes: Supervisory responsibilities for providing and maintaining safe and healthful working conditions for employees, the agency occupational safety and health program, section 19 of the Act, Executive Order 12196, occupational safety and health standards applicable to the assigned workplaces, agency procedures for reporting hazards, agency procedures for reporting and investigating allegations of reprisal, and agency procedures for abatement of hazards. The supervisory training should include the introductory and specialized courses and materials that will enable supervisors to recognize and eliminate, or reduce, occupational safety and health hazards in their working units. Such training shall also include the development of requisite skills in managing the FAA's safety and health program within the work unit, including the training and motivation of their employees toward assuring safe and healthful work practices.

c. Training for OSHECCOM Committee Members. OSHECCOM committee members shall be trained in accordance with 29 CFR 1960.58 and as outlined in the OSHECCOM Charter.

d. Contractor Requirements. Contract statements of work shall require contractors to comply with all applicable federal, state and local OSH training regulations and to conduct their own OSH compliance training for their employees. The FAA shall provide site-specific information and/or training to protect contract employees from recognized workplace hazards on FAA premises.

e. Training for Employees and Employee Representatives. All FAA employees shall receive initial and recurrent safety and health training, including specialized job safety training appropriate to the work performed. The FAA shall adhere to 29 CFR 1960.59(a) and (b). Employee OSH training must occur when: an employee is hired or reassigned, new equipment or processes are introduced, procedures are revised or updated, or when employee performance indicates a need for additional training. At a minimum, the content of this training shall provide employees with the awareness needed to be able to:

- (1) Recognize safety risks in the workplace.
- (2) Become aware of employee OSH rights and responsibilities.
- (3) Use personal protective equipment properly.
- (4) Report all mishaps and hazards to supervisors and managers.
- (5) Follow mishap prevention and hazard abatement programs.
- (6) Achieve certification or qualification, if required by the job.

f. Training Records. All safety training shall be documented in accordance with OSHA regulations and applicable FAA orders. Documentation shall be readily available for OSH program audits.

CHAPTER 7. MISHAP REPORTING AND INVESTIGATION

700. GENERAL. This chapter outlines FAA requirements based on OSHA regulation 29 CFR 1904. Region or Center Occupational Safety and Health (OSH) program offices must provide all reports referenced in this chapter to AHR, AFZ and AEE on request. The Safety Management Information System (SMIS) at <http://smis.faa.gov/> shall be used for reporting mishaps.

701. MISHAP INVESTIGATION.

a. A mishap includes an OSHA recordable occupational injury or illness (see paragraph 702, Reporting of Occupational Injuries or Illnesses) as well as an incident that results in no injury and is limited to property damage.

b. The immediate supervisor must consult with the Regional Occupational Safety and Health Manager (ROSHM) to ensure that an investigation is conducted for Class A, B and C mishaps. The immediate supervisor should also conduct mishap investigations for Class D motor vehicle accidents, fires, equipment and property damage. (See Figure 7-2, Line 17 of this chapter for Mishap Classes).

c. The purpose of mishap investigation is to reduce the potential for recurrence. All causal factors must be identified and fully explored. The extent of mishap investigation should reflect on the seriousness of the mishap. In any event, all OSHA recordable injuries and illnesses must be investigated according to OSHA regulations and FAA policy.

d. The immediate supervisor, or designee must investigate and provide a written report of the results using Figure 7-1, FAA Form 3900-6, FAA Mishap Report or its successor. The SMIS website at <http://smis.faa.gov/> must be used for mishap investigation by all supervisors who have web access. The SMIS will E-Mail the ROSHM in the location where the mishap occurs, and the ROSHM in the region where the person is assigned to aid in completing a thorough investigation. The ROSHM and line of business OSH point of contact will provide technical guidance in mishap reporting and investigation.

e. Form 3900-6 (or succeeding form) must be forwarded to the ROSHM or line of business OSH points of contact within seven working days. Electronic submission using <http://smis.faa.gov/> is highly preferred. Investigations of deaths must begin within 24 hours. Reports identifying potentially serious conditions should be investigated within 3 working days and within 7 working days for other than serious conditions.

702. REPORTING OF MISHAPS.

a. Process.

(1) Employees must promptly report mishap to immediate supervisor.

(2) Supervisors must complete reports as pointed out in paragraph 702b.

(3) Supervisors must determine the “mishap class” *for example*, A, B, C, D, N, and “incident type”; *for example*, injury, illness, property damage, motor vehicle damage, first aid, near miss. See Figure 2 FAA Mishap Form 3900-6 Definitions.

(4) SMIS enables the supervisor to use the secure FAA intranet to automatically maintain the OSHA Log 300 Log and OSHA 300A summary, and print it out as needed. The supervisor shall report injuries and illnesses when the mishap involves any of the following:

- (a) Death occurred in the performance of duty
- (b) An injury resulting in 1 or more days of lost time
- (c) Loss of consciousness
- (d) Restricted work activity
- (e) Transfer to another job or light duty

- (f) Medical treatment beyond first aid, or
- (g) An occupational illness

(5) OSH professionals and Office of Workers' Compensation Program (OWCP) Specialists shall insure that FAA form 3900-6 and /or CA-1 or CA-2 reports respectively are sufficiently complete to simplify hazard identification and trend analysis. SMIS provides automatic notification to OSH personnel when mishaps have been entered.

b. Injury & Illness Reports.

(1) After an employee notification of injury or illness supervisors will continue to follow OWCP procedures in 20 CFR 10.100 and complete the supervisory portion of either the CA-1 (for injuries) or CA-2 (for illnesses). The employee must give the completed form to the Regional/Center OWCP Specialist. Management is responsible for completing FAA Form 3900-6 on the web at: <http://smis.faa.gov> for all property damage, fires and motor vehicle mishaps and injury/illness mishaps. Supervisors who do not have access to the web may give a paper version of FAA Form 3900-6 (copied from this chapter) to the Regional or LOB OSH Professional, who will enter the data.

(2) If the employee wants to file Form CA-1 or CA-2, he/she must initiate it promptly and forward it to the supervisor for completion of the supervisory section and signature. Printable copies of the blank CA-1, CA-2, and CA-6 forms are available under the "Forms" tab in SMIS. The employee must give the completed form to the FAA Workers' Compensation Specialist. The form may be completed for all work-related injuries or illnesses regardless of whether the injury or illness results in actual or expected lost time, or medical expense. A copy should be given to the Regional or LOB OSH Professional.

(3) The investigation report should include details from local police, fire, and autopsy reports.

c. Timelines.

(1) Supervisors must ensure the Establishment/Facility Manager has the information necessary to complete the Log of Occupational Injuries and Illnesses within 6 days of receipt. This requirement is met automatically by completing Form 3900-6 in SMIS. If the employee wants to file form CA-1 or CA-2, he/she must forward it to the Regional OWCP Specialist who will then forward the forms to the Department of Labor within 10 working days of the supervisor's receipt of the form.

(2) Management is responsible for providing first notice to the OSHA area office of any death or the in-patient hospitalization of three or more employees involved in one incident within 8 hours after the incident. When a work place incident occurs during OSHA's off hours, the SSC or facility manager will contact OSHA's recording service at 1-800-321-OSHA. In addition, management must notify the ROSHM and Line of Business OSH professional as soon as possible. The ROSHM and OSH professional shall report the incident to AEE-200 and AFZ-800 within 24 hours. AEE is the liaison to OSHA and will formally report mishaps to OSHA. The report must relate the circumstances of the mishap, names of the individuals involved, any actions taken by the FAA, the number of deaths, or injuries and illnesses, and the extent of injury. AEE will provide the Office of Federal Agency Programs a summary report, as 29 CFR.1904 requires.

(3) DOT Order 3910.1C requires drug or alcohol testing immediately after the mishap occurs, if management suspects drug or alcohol use, especially in the case of motor vehicle accidents. The Internal Substance Abuse Program's "[Site Coordinators Handbook](http://www.faa.gov/avr/aam/isap/)" is available on the web at: <http://www.faa.gov/avr/aam/isap/>.

(4) Supervisors shall forward a copy of the lost time report to the OWCP regional coordinator for verification at the end of each calendar year.

703. RECORDKEEPING. Supervisors must enter injury/illness data on the OSHA 300 log within 6 days of the incident. The OSHA 300 Log must contain injury/illness data from the previous calendar year and be posted from February 1st through April 30th in a prominent place in the Establishment. SMIS is

designed to allow management to automatically update and maintain OSHA 300 Logs for their Establishments. The “Establishment” is determined by selecting the Location ID and Facility type within SMIS. These records must be maintained for a period of 5 years. SMIS also contains CA-1, CA-2 and CA-6 data from the WCIS database and makes it available to ROSHMS and designated LOB contacts to use in performance of their duties.

704. FATAL AND CATASTROPHIC MISHAPS.

a. Supervisors will report all deaths that occurred while an employee was performing work duties. The 3900-6 will be submitted in SMIS.

b. The supervisor sends the CA-6 form to the appropriate AHR office for processing by OWCP.

c. The AXX-400, AMP-1, or ACT-1 will appoint an investigation team for an on-duty death or for the hospitalization of three or more employees that occurs because a single mishap.

(1) The team will prepare a written report and forward it through the designated region or center LOB contact to AFZ-800 and AEE-200 within 15 days after completing the investigation.

(2) OSHA regulation 29 CFR 1960.70b and 29 CFR 1960.70c and paragraph 704c below describe the minimum procedures for the investigation team.

d. Investigation reports should include proper documentation, photographs, employee interviews, witness reports, measurements, and other relevant information. A checklist of items to be covered in the narrative report is shown as Figure 7-2, Checklist of Information to be Included in the Mishap Investigation Report.

e. Report copies will be provided to the Establishment (facility) Manager, the appropriate OSH committee, AXX-400, regional administrator, center director, and national headquarters. Distribution will be made in accordance with the region or center OSH program. If requested, the report must be available to the Secretary of Labor or a representative.

705. MOTOR VEHICLE MISHAPS. A motor vehicle accident is an occurrence involving a Federal Government-owned, leased, or rented vehicle, or privately owned vehicle while operated on official Federal Government business. This kind of mishap may result in death, injury or property damage of two thousand dollars (\$2000) or more. A vehicle operator or their supervisor must complete the following forms;

a. SF-91, Accident Investigation Data,

b. SF-94, Statement of Witness,

c. CA-6 form for all deaths (and forward through the appropriate AHR office to OWCP).

706. OTHER MISHAPS. The contracting officer’s technical representative (COTR) must assure contractors give a written report for all incidents involving property damage or OSHA recordable employee injuries to the Establishment or System Maintenance Office Manager, Office of Procurement and Property Management. The COTR shall provide a copy of the report to the ROSHM within 48 hours of the mishap. When visitor mishaps occur, the Establishment Manager and the Security Official will complete a report and forward it to the Program Services Section, AXX-400, within 2 working days of the incident. The ROSHM must have authority to conduct full and independent investigations of visitor mishaps.

706-799. RESERVED.

Figure 7-1. FAA Form 3900-6, FAA Mishap Report

FAA Mishap Report				FAA Form 3900-6 (October 2003)			
I. Incident Description							
Record Number	1. Incident Type ☐ Injury ☐ Illness ☐ Property Damage ☐ Motor Vehicle ☐ First Aid ☐ Near Miss ☐ Other						
2. Incident Description							
3. Date of Incident (e.g. mm/dd/yyyy)	4. Day of Week	5. Time of Incident (e.g. hh:mm)	6. Shift	7. OSHA Recordable ☐ Yes ☐ No			
8. CA-1 Submitted ☐ Yes ☐ No ☐ Unknown	9. CA-2 Submitted ☐ Yes ☐ No ☐ Unknown	10. Region of Incident	11. WCIS Case No.	12. Facility Type Other			
13. Location ID (of incident)	14. General Location of Incident		15. Specific Location of Incident				
16. On Premises ☐ Yes ☐ No	17. Mishap Category	18. Date Management Notified of Incident (if different from date of incident)					
II. Injury/Illness Information							
19. Description of Injury/Illness							
20. Nature of Injury/Illness Codes				21. Anatomical Location of Injury/Illness			
22. Type of Injury/Illness Codes Other							
23. Source of Injury/Illness Codes Other							
24. Total Days Lost Begin Date Ending Date # by							
25. Total Restricted/Job Transfer Days Begin Date Ending Date # by							
26. Medical Treatment by Health Care Professional ☐ Yes ☐ No		27. Fatality ☐ Yes ☐ No		28. Date of Death (e.g. mm/dd/yyyy)		29. CA-6 Submitted ☐ Yes ☐ No	
30. Backfill Overtime (Estimated Dollar Cost of replacing worker)				31. Number of estimated hours or backfill overtime			
III. Property/Vehicle Data							
32. Description of Damage							
33. Types of Damage Codes Other						34. FAA Property Damage ☐ Yes ☐ No	
35. Non-FAA Property Damage ☐ Yes ☐ No		36. Property Damage Cost		37. Vehicle Damage ☐ Yes ☐ No		38. Vehicle Damage Cost	
39. Vehicle Make		40. Vehicle Model		41. Vehicle License Number		42. State	
43. Vehicle Operator Name First MI Last				44. Vehicle Operator Job Series Number			

Figure 7-1. FAA Form 3900-6, FAA Mishap Report, contd.

IV. Personnel Data			
45. Employee Name First MI Last		46. Sex ☐ Male ☐ Female	47. Date of Birth (e.g. mm/dd/yyyy)
48. SSN (e.g. xxx-xx-xxxx)	49. Cost Center	50. Employee Routing Number (AEE-XXX)	51. Region
52. Line of Business/Staff Office Office		53. Job Series Number	54. Employee Category
55. Facility Type for OSHA 300 Other		56. Location ID for OSHA 300	
57. General Job Task		58. Specific Job Task	
59. Years of FAA Employment (Nearest Whole Number)	60. Years Employed in Occupation (Nearest Whole Number)	61. Name of Employee's First-Line Supervisor First MI Last	
62. Supervisor's Telephone Number (e.g. xxx-xxx-xxxx)		63. Supervisor or designee present at time of incident ☐ Yes ☐ No	
V. Investigation Data			
64. Investigation Performed ☐ Yes ☐ No		65. Investigation Report Number	66. Date Report Prepared (e.g. mm/dd/yyyy)
67. Name of Witness First MI Last		68. Witness Phone Number (e.g. xxx-xxx-xxxx)	
69. City/State/Zip		70. Name of Second Witness First MI Last	
71. Second Witness Phone Number (e.g. xxx-xxx-xxxx)		72. Second Witness City/State/Zip	
73. Investigation Result (Describe formal investigation results; include names of investigators)			
74. Recommendations (Summary of investigator's recommendations)			
75. Actions Taken to Prevent Recurrence (List actions taken and date completed)			
VI. Submitter Information			
76. Mishap Report Prepared By (If not by Supervisor) First MI Last			77. Job Series Number
78. Job Title	79. Routing Number (e.g. AEE-XXX)	80. Telephone Number (e.g. xxx-xxx-xxxx)	81. Date of Report (e.g. mm/dd/yyyy)

Figure 7-2. FAA FORM 3900-6 DEFINITIONS TABLE

Block	Heading	Definitions
1	Injury	Injuries result from mishaps that produce a wound or other adverse condition of the body caused by external force, including physical stress or strain. The damage to a person's body can result from exposure to a single hazardous event or incident, or series of events or incidents within a single day or work shift. An injury is OSHA-recordable if certain criteria are met. See definition in Block 7.
1	Illness	Illnesses result from: mishaps that cause physiological harm or loss of capacity produced by a systemic infection; OR exposure to toxins, poisons, fumes, etc.; OR a continued or repeated physical stress or strain; OR other continued and repeated exposures to conditions of the work environment, typically over a long period of time. Examples include: Musculoskeletal disorders (such as carpal tunnel syndrome), sensitivity to chemicals, and back strain if attributable to long term lifting. An illness is OSHA-recordable if certain criteria are met. See definition in Block 7.
1	Property Damage	A property damage incident is one where one or more FAA-owned/leased, or GSA-controlled, facilities, systems, equipment, or other personal or real property has been damaged. Property damage is classified in Block 17 as Mishap Classes A, B, C, D, and N and may require that an investigation be performed. See the definitions for Blocks 17 and 58. If this block is checked, provide the requested information in Section III.
1	Motor Vehicle	A motor vehicle incident where damage occurs to an FAA-owned/leased, or GSA-controlled, government motor vehicle, or to a privately owned vehicle (POV) used on official FAA business. Vehicles driven by FAA personnel under temporary duty (TDY) conditions are considered on-duty. For the purpose of mishap prevention, all FAA motor vehicle mishaps and near misses must be recorded on this form, regardless of damage dollar value.
1	First Aid	A first aid incident means any one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, insect bites, and so forth, which do not ordinarily require medical care. Such treatment and observation are considered first aid even though provided by a physician or registered professional personnel. 29 CFR 1904.7(b)(5)(ii) provides the following list of all treatments considered first aid for recordkeeping purposes: • Using a non-prescription medication at non-prescription strength • Administering tetanus immunizations (but other immunizations such as Hepatitis B or rabies are considered medical treatment) • Cleaning, flushing, or soaking wounds on the surface of the skin • Using wound coverings such as bandages, gauze pads, butterfly bandages, steri-strips (but other wound closing devices such as sutures, staples, etc. are considered medical treatment) • Using hot or cold therapy • Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts (but devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment) • Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards) • Drilling of a fingernail or toenail to relieve pressure or draining fluid from a blister • Using eye patches • Removing foreign bodies from the eye using only irrigation or a cotton swab

Block	Heading	Definitions
		• Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means • Using finger guards • Using massages (but physical therapy or chiropractic treatment are considered medical treatment), or • Drinking fluids for relief of heat stress
1	Near Miss	A near miss incident occurs when a person was able to avoid injury and/or illness, and when no property damage occurs. A near miss is not OSHA-recordable, but documentation of near misses is important for developing mishap prevention strategies.
1	Other	Other incidents include: chemical spills, fires, violent acts, damage due to acts of nature, etc.
2	Incident Description	Thoroughly describe the incident answering the basic questions of who did what, when, where, how, and why.
7	OSHA Recordable	Mishaps are OSHA-recordable if they involve any of the following and are work-related: • Death • Days away from work • Restricted work or transfer to another job • Medical treatment beyond first aid • Loss of consciousness • A significant injury or illness diagnosed by a physician or other licensed health care professional Ref: 29 CFR 1904 Subpart C – Recordkeeping Forms and Recording Criteria.
11	WCIS Case Number	A Workers' Compensation Information System (WCIS) case number is assigned by the workers' compensation system when a CA-1, CA-2, or CA-6 is filed. The workers' compensation specialists in the regional Human Resource Management Divisions use WCIS for processing and tracking purposes. The number can be obtained from Human Resources, or through a search of the WCIS data feed in SMIS.
13	Location ID	A Location Identifier stands for the name and the location of an airport, navigation aid, weather station, and manned air traffic control facility in air traffic control, telecommunications, computer programming, weather reports, and related services (FAA Order 7350.7G, Location Identifiers). This form will use the 3-letter Location Identifiers listed in Section 6, Assignments Listing. For example, ZAN is listed as the 3-code identifier for the Anchorage, AK ARTCC. The identifiers can be viewed by clicking "Location ID Table" in the Support link near the top right side of each SMIS page.
14	General Location of Incident	A General Location is a broad description of where the incident occurred. For example, 53325 Airport Road, El Segundo, California.
15	Specific Location of Incident	A Specific Location is a detailed description of where the incident occurred. For example, Room 223 on the second floor, near the auxiliary backup generator.
16	On Premises	Refers to mishaps that occur at FAA-owned or leased property, or GSA-controlled property, and includes the primary work facility and other areas, such as storage facilities, cafeterias, and restrooms.
17	Mishap Category	Mishaps shall be categorized for purposes of trend analysis into one of the following classes, based on degree of severity (Category A is most severe). Select only one category. If more than one category applies, then select the category with greater severity. A mishap categorized as any of Class A through D must be investigated (Section V – see definition for Block 58). • Class A Mishap - o Recordable damage of \$1M or more

Block	Heading	Definitions
		- o A fatality or permanent total disability • Class B Mishap - o Recordable damage of \$200K or more but less than \$1M - o A permanent partial disability - o Inpatient hospitalization of 3 or more personnel • Class C Mishap - o Recordable damage between \$10K and \$200K - o An injury resulting in a lost workday case involving 8 hours or more away from work beyond the day or shift on which it occurred; or occupational illness that causes loss of time from work at any time. • Class D Mishap - o Total cost of \$2K or more for property damage but less than \$10K. Property damage includes all government equipment and vehicles. - o A nonfatal injury that does not meet the definition of a Class C Mishap, and results in less than 8 hours of lost time. These include: loss of consciousness, permanent change of job due to injury/illness, or medical treatment beyond first aid. Examples: Individual loses consciousness from heat stress while working in high temperature environment; or individual is injured, goes to personal physician on same day of injury and returns to duty the next day. • Class N Mishap - o Total cost of \$1 or more for property damage but less than \$2K. - o Any other injury that does not meet the above class criteria. These should be reported for trend analysis. Example: First Aid treatments; near misses.
19	Description of Injury/ Illness	Describe the injury or illness, describing clearly and concisely the nature and cause of injury that might not be captured fully by the codes in blocks 19-22. Please include contributing factors that led to the injury or illness, such as fatigue, insufficient training, lack of personal protective equipment, faulty equipment, prescription drugs, etc. This information will be helpful if an investigation is performed (Section V).
20	Nature of injury/Illness Codes	Nature of injury or illness names the principal physical characteristic of a disabling condition, such as sprain/strain, cut/laceration, or carpal tunnel syndrome. Useful resources for information on the listed conditions include the Bureau of Labor Statistics' (BLS) Occupational Injury and Illness Classification Manual at http://www.bls.gov/iif/oshwc/oiicm1.pdf , and BLS' new Injuries, Illnesses, and Fatalities (IIF) program at http://www.bls.gov/iif/ .
21	Part of Body Affected	Also known as "Part of Body Affected," this is directly linked to the nature of injury or illness cited, for example, back sprain, finger cut, or wrist and carpal tunnel syndrome.
22 23	Type of Injury/Illness Codes	Both Type and Source Codes are used to describe what caused the injury or illness. The Type Code stands for an action and the Source Code stands for an object or substance. If there are two different sources, please use the code for the initiating source of the incident. For example, if an employee tripped on the carpet and struck his head on a desk, use Type: 210 (Fell on same level) and Source: 0110 (walking/working surface). This example would not be coded Type: 120 (struck against) and Source: 0140 (furniture). If in doubt about the codes to use, please contact your Regional Safety and Health Manager or organizational OSH point of contact. If you do not find a suitable

Block	Heading	Definitions
		code, select “Other – Specify” at the bottom of the list. You must then fill in the adjacent box before you can move forward through the form. Adapted from: Recordkeeping and Reporting Guidelines for Federal Agencies (OSHA 2014 – 1986)
24	Total Days Lost	Enter the calendar dates for the estimated/verified days lost or the estimated/verified total number of days lost. Do not include date of the mishap. (Alternatively, you can enter the total number of days in the totals box.) To enter the dates, begin with the first full day lost subsequent to the date of the mishap. The ending date should be the first full day the employee returns to work. This will provide an accurate automated calculation of the total days lost. For example, an employee was injured at noon on 1/2/03 and went home for the remainder of the day, returning to work on 1/15/03. You would select 1/3/03 as the first lost work day and 1/15/03 as the first day back at work. SMIS will correctly calculate 12 as the total days lost, including the weekends, in accordance with OSHA Part 1904, Recordkeeping. Please select whether the days provided are “estimated” or “verified.” Then select the person providing the data. This would be the regional occupational safety and health manager (ROSHM), the safety and environmental compliance manager (SECM), or the supervisor. This information can be updated through the Modify Mishap feature.
25	Total Restricted/ Job Transfer Days	Enter the calendar dates for the estimated/verified period that an employee will perform or has performed restricted work; or will be transferred or was transferred temporarily to another job. (Alternatively, you can enter the total number of days in the totals box.) To enter the dates, begin with the first full day of restricted or transferred activity. The ending date should be the first full day the employee returns to work. This will provide an accurate automated calculation of the total days lost. For example, an employee was injured at noon on 1/2/03 and went home for the remainder of the day, returning to work on 1/15/03. Restricted activity began on 1/15/03 and you estimate the employee will return to regular duty on 1/23/03. You would select 1/15/03 as the first full day of restricted activity and 1/23/03 as the first day back on regular duty. SMIS will correctly calculate 7 as the total restricted days, including the weekend, in accordance with OSHA Part 1904, Recordkeeping. Please select whether the days provided are “estimated” or “verified.” Then select the person providing the data. This would be the regional occupational safety and health manager (ROSHM), the safety and environmental compliance manager (SECM), or the supervisor. This information can be updated through the Modify Mishap feature.
26	Medical Treatment by Licensed Health Care Professional	This block should be checked “yes” if treatment of the injury or illness was administered by a licensed health care professional, such as a physician, Registered Nurse (RN), or a Physician’s Assistant (PA). OSHA’s Part 1904 states that medical treatment does <u>not</u> include: • Visits to a physician or other licensed health care professional solely for observation or counseling; • The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); • or First Aid, even if provided by a licensed health care provider. (See the definition for First Aid in block 1).
27	Fatality	The fatality box should be checked “yes” if the incident is work-related and: • a legal death certificate has been issued by a licensed and authorized medical authority who has determined that the employee is deceased, or

Block	Heading	Definitions
		a CA-6 has been submitted
32	Description of Damage	Describe the damage, describing clearly and concisely contributing factors that led to the damage, such as fatigue, insufficient training, faulty equipment, etc. Where possible, include in the narrative descriptors for when, what, why, how, and who. This information will be helpful if an investigation is performed (Section V).
33	Types of Damage Codes	Select the best code that describes the major source/cause of the damage. For example, an auto accident using a government vehicle in icy conditions may be best classified as "Environmental Conditions". The selection should not identify what was damaged, but what caused the damage.
49	Cost Center	Enter the employee's cost center code. Cost center codes are used in all financial, personnel, payroll, and other management data systems for the purpose of identification of organizations. FAA Order 1375.7G is the source of these codes. The codes may be viewed by clicking "Cost Center Table" in the Support link on the right side of the SMIS Information page.
56	Location Identifier for OSHA 300	A Location Identifier stands for the name and the location of an airport, navigation aid, weather station, and manned air traffic control facility in air traffic control, telecommunications, computer programming, weather reports, and related services (FAA Order 7350.7G, Location Identifiers). This form will use the 3-letter Location Identifiers listed in Section 6, Assignments Listing. For example, ZAN is listed as the 3-code identifier for the Anchorage, AK ARTCC. See #13 above.
57	General Job Task	The general job task is a broad description of what the individual has been assigned to do, such as radar system calibration.
58	Specific Job Task	The specific job task is a narrow description of what the individual was doing at the time of the mishap, such as discharging a capacitor on a circuit board.
64	Investigation Performed	Completion of an investigation by technically qualified safety personnel (TQSP) is required for the mishaps categorized in Block 17 as Class A or Class B. A supervisor may initiate an investigation for Classes C, D, and N. Depending on the severity, additional investigation will be performed by the TQSP, such as a Regional Occupational Safety and Health Manager or his/her qualified designee, and/or the LOB OSH POC (if qualified), in accordance with Chapter 7 of Order 3900.19B. An investigation will provide valuable information that will help to identify future mishap prevention strategies. Further information about the investigation process is in Chapter 7 of Order 3900.19B. "Technically qualified safety personnel" is defined in paragraph 11h in Order 3900.19B. The categories of mishaps are defined in Block 17.
73	Investigation result	All investigation results shall include a chronological summary of the findings of fact, and a listing of all the causes and conclusions. Consideration should also include any relevant equipment involved, weather conditions, and what protective equipment was used. Also include whether alcohol or drugs were involved, and the number of personnel exposed. Finally, note if appropriate training and PPE was provided, list any pictorial exhibits, and provide any additional descriptive information that was not previously captured in other blocks of the 3900-6 form.

**Figure 7-3 . CHECKLIST OF INFORMATION TO BE RESEARCHED AS PART OF THE
MISHAP INVESTIGATION**

When preparing an investigation of the mishap/incident, the following should be collected and evaluated

- _____ Region, Organizational Routing Symbol
- _____ Unit Name
- _____ Location of Mishap/Incident
- _____ Date and Time of Mishap/Incident
- _____ Name of Individual(s) Involved in Mishap/Incident
- _____ SSN, Age, Sex
- _____ Grade and Job Title
- _____ Task assigned during incident (if applicable)
- _____ Total experience in the field
- _____ Experience in this area
- _____ Nature of Injury/Illness
- _____ Part of body affected
- _____ Severity
- _____ Narrative of events, including cause. Also include or consider:
 - _____ Facility Type
 - _____ Equipment Involved
 - _____ Contaminants (if applicable)
 - _____ Weather (if applicable)
 - _____ Phase of Operation
 - _____ Seat belt used? (If applicable)
 - _____ Was personal protective equipment used? (if applicable)
 - _____ Was fatigue a factor?
 - _____ Were drugs or alcohol involved?
- _____ Any other human behavior factors involved?
- _____ Number of personnel exposed (if applicable)
 - _____ Did injured party attend safety training? If so, when?
 - _____ Name of individual operating equipment/vehicle other than injured party
 - _____ Operator's total experience
 - _____ Operator's total experience with type of equipment/vehicle
 - _____ Actual Days Off
 - _____ Actual Days Restricted
 - _____ Were Forms CA-1, CA-2, and CA-6 completed and processed?
 - _____ Personnel costs
 - _____ Government property involved (ID/serial number) and estimated damages
 - _____ Additional property involved (ID/serial number) and estimated damages
 - _____ Liability Claimed
 - _____ Operational days lost
 - _____ Corrective Action Taken or Planned
 - _____ Name and Title of individual preparing the report
 - _____ Report Date
 - _____ Photographs
 - _____ Measurements
 - _____ Interviews of witnesses, and/or employees
 - _____ Accident/Illness occurs on overtime

CHAPTER 9. REPORTS BY EMPLOYEES ON HAZARDOUS CONDITIONS

900. GENERAL. This chapter is a condensed version of 29 CFR 1960.28. Refer to this CFR section if clarification is needed. Employee reports are designed to identify the existence of, or potential for, unsafe or unhealthful working conditions expeditiously. Once identified, the corrective action can be taken and completed. These reports are not to be used as grievances, nor should any employee fear any retribution from filing a legitimate report. Employees who believe an unsafe or unhealthful condition exists in their workplace are encouraged to report these conditions to their supervisor or to the appropriate safety and health official, and to request a workplace inspection. Employees who make a report may request their name be withheld.

901. EMPLOYEE REPORT OF HAZARDOUS CONDITION. Employees may report unsafe or unhealthful conditions either orally or in writing.

a. Process.

- (1) The initial report shall be submitted to the immediate supervisor.
- (2) The supervisor will notify the OSH professional as designated in the region/center OSH program.
- (3) The OSH professional will ensure the report is written and entered into an appropriate log. The log will be provided to AXX-400, AMP-1, or ACT-600 for inclusion in the region/center OSH program documentation.

b. Reports.

- (1) Initial report by employee shall contain the following information:
 - (a) Description of the hazard (include equipment name and system name, if applicable).
 - (b) Location of the reported unsafe or unhealthful condition.
 - (c) The employee name or name of the representative of the employee (the report may be submitted anonymously).
 - (d) Date and time when condition was found.
 - (e) Other information as deemed appropriate (e.g., suggested corrective action).
- (2) Supervisor's Report.
 - (a) At a minimum, the initial report from the employee.
 - (b) Approximate number of employees affected.
 - (c) Date reported to the supervisor.
 - (d) Suggested corrective action.
 - (e) Actions taken/status.

(3) OSH Professional's Report.

(a) Indicate on the supervisor's report whether the condition is imminent danger, serious, or other.

(b) Assign a log number to the report.

(4) Log Report.

(a) A file or reference number.

(b) Date and time of receiving a complaint.

(c) Location of the alleged hazardous condition; e.g., facility name, city, and state.

(d) A brief description of the alleged condition.

(e) Hazard classification; e.g., imminent danger, serious, other than serious.

(f) Date and nature of action taken.

c. **Timelines.**

(1) Imminent danger and serious conditions will be reported immediately.

(2) All others will be reported as soon as possible.

(3) Inspections and employee notification will be performed in accordance with the requirements set in 29 CFR 1960.28. These include the following:

(a) The ROSHM will inspect the workplace within 24 hours for reports of imminent danger conditions; within 3 working days for potentially serious conditions; and within 20 working days for other than serious safety and health conditions. An inspection may not be necessary if, through normal management action, the identified hazardous condition can be abated immediately.

(b) An employee reporting unsafe or unhealthful conditions shall be notified in writing within 15 calendar days if it is determined that no hazards exist and no inspection is planned based on the report. A copy of the notification will be provided to the field OSHECCOM committee. If an inspection or investigation is performed, the results shall be made available to the employee making the report within 15 calendar days after completion of the inspection for safety violations, or within 30 days for health violations.

(c) A copy of the employee reports of hazardous conditions logs for each facility shall be collected by each regional division manager and forwarded to the ROSHM, who shall forward the logs to ANS and AEE by January 15 of each year.

902. ALLEGATIONS OF REPRISAL All employees are protected from coercion, discrimination, or reprisals for filing a report of an unsafe or unhealthful working condition; for participation in the FAA OSH program; or for declining to perform his or her assigned task because of a reasonable belief the task poses an imminent risk of bodily harm or death (see 29 CFR 1960.46(a)). Employees may report allegations of reprisal orally or in writing to the ROSHM (Washington headquarters employees should file reports with ARA). The ROSHM will investigate these allegations and initiate appropriate action in accordance with procedures in the region/center OSH program. A copy of the investigation will be furnished to AEE within 30 days after completion of the investigation for forwarding to the Secretary of Labor.

903-999. RESERVED.

CHAPTER 10. FALL PROTECTION PROGRAM

1000. GENERAL. The purpose of a fall protection program is to protect employees working at elevated heights from injuries or death due to a fall. The Department of Labor lists falls as one of the leading causes of traumatic occupational death, and OSHA estimates that there are at least 68,000 fall-related injuries annually in the construction industry alone. Fall protection standards are outlined in OSHA General Industry Standards under 29 CFR 1910.23 - 1910.29 and in OSHA Construction Standards under 29 CFR 1926, Subpart M, Fall Protection, 29 CFR 1926.104, Safety Belts, Lifelines, and Lanyards, 29 CFR 1926.105, Safety Nets, and 29 CFR 1926.106, Working Over or Near Water. National consensus standards also provide guidelines for technical issues related to fall protection and elevated work surface exposures and associated controls. Figure 10-1, Cross References to OSHA and national consensus standards, contains a cross reference of applicable American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM) standards to OSHA.

1001. SCOPE. This chapter applies to all FAA personnel. This includes, but is not limited to, personnel performing work on elevated work sites, personnel involved in design and acquisition, etc.

1002. DEFINITIONS.

a. Competent person. A person who, because of training and experience, is capable of providing program oversight. This includes identifying hazardous conditions in personal fall arrest systems or any component thereof as well as in their application and use with related equipment. This person is considered an expert climber, and has a potential exposure to falls due to the complexity of work being performed at these heights.

b. Ladder safety system. An assembly of components whose function is to arrest the fall of a user, including the carrier and its associated attachment elements (brackets, fasteners, etc.), safety sleeve, body support and connectors, wherein the carrier is permanently attached to the climbing face of the ladder or immediately adjacent to the structure.

c. Personal fall arrest system. A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

d. Qualified person. An individual with a recognized degree or professional certificate and extensive knowledge and experience in the subject field, who is capable of design, analysis, evaluation, and specifications in the subject work, project, or product (e.g., structural engineers, designers). This person must be an expert climber if job duties require climbing.

e. Qualified climber. An individual who, by virtue of physical capabilities, training, work experience, and job assignments, climbs standard structures that meet OSHA standards and are equipped with appropriate fall protection to perform routine tasks, and the climber is constantly protected by attachment to a ladder safety device or by a guardrail. This person performs construction activity using ladders and scaffolds below 10 feet.

f. Expert climber. An individual who, by virtue of physical capabilities, training, work experience, and job assignments, climbs standard structures that are not equipped with climbing safety devices; performs work at elevated sites (i.e., platforms, antenna cross members, top or back of radar antennas, etc.) that do not meet OSHA standards for walking/working surfaces; or is required to perform construction activity above 10 feet (i.e., use of portable ladders or scaffolds). This person is considered a qualified climber.

1003. PROGRAM ELEMENTS. All FAA regions and centers, the NAS Implementation Engineering Center and Service Centers, and other region and center headquarters organizations who have employees exposed to fall hazards shall develop a fall protection program that includes the following elements:

a. Identification of Fall Hazards. Surveys of facilities shall be conducted and documented to identify fall hazards associated with all elevated work areas by persons who have received training and are qualified to identify and recognize such hazards.

b. Hazard Evaluation and Control.

(1) Existing and potential hazards of each elevated work surface shall be identified and procedures established by a competent person to ensure safe working conditions.

(2) Written fall protection procedures shall be developed to address non-routine (based upon employee risk and familiarity with operations) climbing operations or when the use of conventional fall protection systems are not feasible or create a greater hazard in use (e.g., during construction or modification of elevated work areas). The plan shall address applicable procedures like one-person and multi-person climbing operations, requirements for radio and/or telephone communications, special logistics for remote locations, and emergency rescue procedures. Fall protection procedures for construction-related activity must conform with the requirements of 29 CFR 1926.502.

c. Engineering Assessments. All elevated work surfaces shall be designed, constructed, and maintained to ensure that they support their maximum intended load. When surveys identify potential deficiencies with a structure or system, a determination shall be made by a qualified person to ensure that the surface has the strength and structural integrity to support employees working on them. When exposure to a fall hazard cannot be prevented through engineering controls (e.g., platforms, guardrails) or the use of elevated work platforms, fall arrest equipment shall be used. A qualified person shall evaluate modifications or installations of fall arrest systems to elevated work structures to ensure that the fall arrest systems perform as intended.

d. Selection of Equipment.

(1) Selection of fall protection equipment shall be approved by a competent or qualified person. All equipment shall meet applicable OSHA and ANSI standards and must be suitable for the work intended.

(2) Cages and wells. On fixed ladders installed later than 1 year following the effective date of this order, cages and wells are prohibited on fixed ladder installations over 20 feet in length, unless it can be shown by a competent person that they are the only feasible means of protection.

(3) Personal Fall Arrest System (PFAS). Personal fall arrest systems shall meet applicable OSHA and ANSI requirements and shall be selected by competent persons to match the particular work conditions and environment. Full body harnesses shall be worn unless alternative protection is approved by a competent person. Body belts are not acceptable as part of PFAS.

(4) The following factors shall be considered when selecting equipment and systems:

(a) Maintenance requirements.

(b) Performance specifications.

(c) Ease of use and worker productivity.

(d) Environmental conditions.

(e) Installation (e.g., anchorage points, structural integrity).

e. Maintenance and Inspection.

(1) All equipment and systems shall be inspected and maintained in accordance with manufacturer's specifications and OSHA and ANSI standards.

(2) Any PFAS with signs of damage, impact loading, or significant component defect shall be withdrawn from service immediately and evaluated for serviceability by a competent person or replaced.

(3) Maintenance and inspection activities shall be documented.

(4) All equipment and systems should be thoroughly inspected before each use.

f. Training and Qualifications.

(1) Employees shall receive training to recognize the hazards associated with elevated work surfaces and fall hazards in their area of operation and the procedures to follow to minimize these. Training shall be conducted by a competent person in accordance with OSHA regulations, ANSI requirements, and the manufacturer's instructions. The level of training shall be consistent with an employee's job assignment as a qualified climber, expert climber, competent person, or qualified person. Figure 10-2, FAA Elevated Work Surface Job Categories, summarizes requirements for each level of climber.

(2) Refresher training shall be conducted whenever an employee who has already been trained does not have the understanding or demonstrated skill required by this chapter (e.g., due to changes in the workplace or changes in the types of fall protection systems or equipment to be used).

(3) All training shall be properly documented in the agency's official training information system. Documentation shall include a written certification record that contains the name or other identifier of the employee trained, the date(s) of the training, and the signature of the competent person who performed the training.

(4) Employees shall be physically capable of performing assigned job duties and shall receive medical evaluations consistent with AAM guidance.

g. Emergency Rescue Procedures. Emergency and rescue procedures, consistent with the nature of the operations and the conditions of the elevated space, shall be established to rescue an employee should an emergency occur. Procedures shall include methods for summoning rescue and emergency services, for rescuing employees from heights, and for providing necessary medical services in a timely fashion.

h. Facilities, Systems, and Equipment Acquisitions. Fall protection requirements shall be incorporated as early as possible in all design, construction, renovation, maintenance, and other projects and programs. New facilities shall have fall protection meeting OSHA requirements built in to the system (e.g., approved tie-off points are permanently identified prior to commissioning). A qualified person or a competent person and, as appropriate, planners and engineers shall ensure designs and plans properly indicate location and type of fall arrest systems to be installed and that approved tie-off points are permanently identified prior to commissioning.

i. Contracts.

(1) All contracts issued for work involving elevated surfaces must contain a provision that contractors must have a fall protection program in accordance with OSHA and state requirements. Safety programs shall be submitted in accordance with contract requirements.

(2) Contractors must provide their own appropriate fall arrest equipment and training. FAA will not issue fall protection equipment to contractors.

Figure 10-1. CROSS REFERENCES TO OSHA & NATIONAL CONSENSUS STANDARDS

Subject Area	OSHA Standard 29 CFR	National Consensus Standard
Ladders	1910.25 Portable Wood Ladders 1910.26 Portable Metal Ladders 1910.27 Fixed Ladders	ANSI A14.1, Safety Requirements for Portable Wood Ladders ANSI A14.2, Safety Requirements for Portable Metal Ladders ANSI A14.3, Safety Requirements for Fixed Ladders ANSI A14.4, Safety Requirements for Job-Made Ladders ANSI A14.5, Safety Requirements for Portable Reinforced Plastic Ladders
Step Bolts and Manhole Steps	1910.27 Fixed Ladders	ASTM C478, Specifications for Precast Reinforced Concrete Manhole Sections ASTM A394, Specifications for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
Stairs	1910.24 Fixed Industrial Stairs	ANSI A64.1, Requirements for Fixed Industrial Stairs
Ramps and Bridging Devices	1910.30 Other Working Surfaces 1910.37 Means of Egress, General	ANSI MH14.1, Industrial Loading Dock Levelers and Dockboards
Work Surfaces	1910.23 Guarding Floor and Wall Openings and Holes	ANSI A58.1, Minimum Design Loads for Buildings and Other Structures ANSI A12.1, Safety Requirements for Floor and Wall Openings, Railings, and Toeboards
Scaffolds	1910.29 Manually Propelled Mobile Ladder Stands and Scaffolds (towers) 1910.28 Safety Requirements for Scaffolds	ANSI A92.1, Manually Propelled Mobile Ladder Stands ANSI A10.8, Safety Requirements for Scaffolds
Mobile Elevating Work Platforms, Mobile Ladder Stands, and Powered Industrial Truck Platforms	1910.66 Powered Platforms for Building Maintenance 1910.67 Vehicle-Mounted Elevating and Rotating Work Platforms	ANSI A92.3, Manually Propelled Elevating Work Platforms ANSI A92.1, Manually Propelled Mobile Ladder Stands

Subject Area	OSHA Standard 29 CFR	National Consensus Standard
Fall Protection Systems	1926 Subpart M, Parts: 1926.500 Scope, Application, and Definitions 1926.501 Duty To Have Fall Protection 1926.502 Fall Protection Systems Criteria and Practices 1926.503 Training 1926.105 Safety Nets 1926.106 Working Over or Near Water 1910 Standards: 1910.23 Guarding Floor and Wall Openings and Holes 1910.24 Fixed Industrial Stairs 1910.27 Fixed Ladders 1910.28 Safety Requirements for Scaffolding 1910.67 Vehicle-Mounted Elevating and Rotating Work Platforms 1910.268 Telecommunications	ANSI A10.11, Construction and Demolition Operations - Personnel and Debris Nets ANSI A10.14, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use ANSI A12.1, Safety Requirements for Floor and Wall Openings, Railings, and Toeboards ANSI A39.1, Safety Requirements for Window Cleaning ANSI Z359.1, Safety Requirements for Personal Fall Arrest Systems, Subsystems, and Components

Figure 10-2. FAA ELEVATED WORK SURFACE JOB CATEGORIES

How to use this table: Read down the duties column and then select the category furthest down the table in which the employee has one or more duties. That is the minimum level of job category to which the employee must be trained.

CATEGORY	DUTIES	PREREQUISITES
<u>Qualified Climber:</u> Is a person who performs any of the duties specified for this category and has successfully completed the Qualified Climber training	Climbs structures that are 50 feet or less in height. Structures meet OSHA standards. Maintenance tasks performed. Climber always be protected by attachment to a ladder safety device or guardrail.	
<u>Expert Climber:</u> Is a person who performs any of the duties specified for this category. Then, after meeting the prerequisites identified, has successfully completed Expert Climber training. Note: He/she may also be assigned duties specified for the Qualified Climber.	Maintenance tasks performed. Structures more than 50 feet in height. Structure may not meet OSHA standards. Performs construction work, if job duties require regardless of height. Conducts basic elevated work surface inspections, if job duties require.	Physically capable Has successfully completed Qualified Climber training
<u>Competent Person:</u> Is a person who performs any of the duties specified for this category. Then, after meeting the prerequisites identified, has successfully completed Competent Person training. He/she may also be assigned duties specified for the Qualified and/or Expert Climber categories.	Provides program oversight, if job duties require. Selects equipment and systems, if job duties require. Inspects fall protection equipment and systems, if job duties require. Heavy exposure to falls; majority of work performed at heights, if job duties require.	Physically capable Has successfully completed Qualified Climber training Has successfully completed Expert Climber training, if job duties require climbing
<u>Qualified Person:</u> Is a person who performs any of the duties specified for this category. Then, after meeting the prerequisites identified, has successfully completed Qualified Person training. He/she may also be assigned duties specified for the Qualified Climber and/or Expert Climber and/or Competent Person categories.	May have program oversight, if FAA employee. Degreed (i.e., structural or equivalent engineering degree) or holds professional certification in fall protection-related disciplines. Extensive knowledge. Capable of design, analysis, and evaluation. Develops specifications related to work on elevated surfaces and the associated fall protection systems.	Physically capable Has successfully completed Qualified Climber training Has successfully completed Expert Climber training, if job duties require climbing Has successfully completed Competent Person training

CHAPTER 11. CONFINED SPACE ENTRY PROGRAM

1100. GENERAL. The purpose of a confined space program is to prevent injuries to personnel who must enter confined spaces to work. Practices and procedures to protect employees from the hazards of entry into confined spaces are covered under the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA), *Permit-Required Confined Spaces*, 29 CFR 1910.146. The FAA Confined Space Entry Program (CSEP) is designed to enable employees to operate in and maintain a safe confined space work environment. All confined spaces are considered potentially hazardous. Employees will not enter confined spaces until the space has been evaluated by a qualified person to establish the appropriate safety precautions.

1101. SCOPE. This chapter applies to all FAA personnel and contractors. This includes, but is not limited to, personnel performing work in confined spaces, personnel involved in acquisition, design, and construction, etc.

1102. DEFINITIONS.

a. Alternate entry procedures. Procedures utilized for entry when the only hazard or potential hazard presented by the confined space is atmospheric and may be eliminated by the use of continuous forced air ventilation.

b. Confined space. A space that is large enough and so configured that an employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy. Examples of such spaces include storage tanks, pits, boilers, fuel cells, sewers, underground utility vaults, tunnels, cooling towers, and manholes. Once a known or potential hazard is identified with a confined space, it becomes a permit-required confined space (PRCS).

c. Hazardous atmosphere. An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL.
- (3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- (4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit (PEL) is published in 29 CFR 1910, Subpart G, "Occupational Health and Environmental Control," or in 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances," and which could result in employee exposure in excess of its dose or PEL.
- (5) Any other atmospheric condition that is immediately dangerous to life or health.
- (6) NOTE: FAA policy requires personnel to use OSHA PEL's. Where there are no OSHA PEL's, airborne limits shall not exceed American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values-Time Weighted Averages (TLV-TWA), NIOSH Recommended Exposure Limits (REL), or other published sources, such as material safety data sheets (MSDS), whichever is the more stringent, when making decisions related to personnel exposure to air contaminants.

d. Permit-Required Confined Space (PRCS). A confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere.

(2) Contains a material that has the potential for engulfing an entrant; or has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.

(3) Contains any other recognized serious safety or health hazard.

1103. PROGRAM ELEMENTS. The following elements must be developed and implemented.

a. Program Management. A confined space program manager (CPSM) shall be designated to manage the Region/Center Confined Space Program.

b. Written Program. A written confined space entry program (CSEP) must be developed and implemented in accordance with the requirements of 29 CFR 1910.146. The entry program must be made available for inspection by employees and their authorized representatives. The written CSEP must contain the following elements:

(1) **Identification of Confined Spaces.** A survey of facilities shall be conducted and documented to identify and classify all confined spaces (permit and non-permit required) that could be entered by employees. A current inventory of spaces shall be maintained for each facility.

(2) **Comprehensive Hazard Evaluation and Control.** Existing and potential hazards of each space shall be identified and evaluated, and procedures and practices established by which the confined spaces can be entered safely.

(3) **Prevention of Unauthorized Entry.** Responsible supervisors shall prevent unauthorized entry through such measures as training and by posting signs and barriers, as necessary. The employer shall inform exposed employees by posting danger signs or by any other equally effective means of the existence of and location of the danger posed by the permit spaces.

(4) **Permit System.** If FAA employees will enter permit-required confined spaces, a written permit system shall be developed in accordance with 29 CFR 1910.146. Prior to entry into any PRCS containing a potentially hazardous atmosphere, the space shall be tested for oxygen content and the presence of toxic or flammable/explosive constituents. During the PRCS entry operation, the permit shall be clearly posted at the site.

(5) **Entry Into Confined Spaces.** Employees shall ensure that they follow FAA confined space entry procedures whenever entering non-FAA owned spaces.

(6) **Entry Procedures.** If the hazard cannot be eliminated, but is reduced so that only continuous forced air ventilation is required to permit safe entry, and no other potential hazard may be present, the space may be designated as an alternate entry procedure space and eliminate the requirement for attendants and rescue provisions. PRCS procedures must be followed until the entry supervisor certifies that all alternate entry procedures have been met. The entry shall be documented in accordance with requirements as listed in 29 CFR 1910.146 (c)(5).

(7) **Employee Information and Training.** All FAA employees who work in or near confined spaces must be properly trained on the hazards likely to be encountered and appropriate safety measures necessary to protect themselves before being assigned to work in accordance with 29 CFR 1910.146(g). Training shall include procedures specific to the employees' job duties and responsibilities (e.g., CSPM, authorized entrant, attendant, entry supervisor, and rescue personnel). All training shall be properly documented. Refresher training will be required whenever there is a change in operation that presents a hazard about which the employee has not been previously trained; and whenever the supervisor believes there have been deviations from entry procedures or there is inadequate knowledge of procedures; or whenever evaluation determines inadequacies in the employee's knowledge.

(8) Emergency Rescue Procedures. Emergency and rescue procedures must be consistent with the nature of the operations and the conditions within the confined space. A written emergency plan, approved by the CSPM, shall be developed and implemented for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary medical services to rescued employees, and for preventing unauthorized personnel from attempting rescue. Emergency rescue teams shall be trained and shall conduct annual permit space rescue drills in accordance with 29 CFR 1910.146(k). Additionally, rescue equipment like tripod, harness, cable, and lift crank shall be provided, as appropriate.

(9) Equipment. Supervisors shall ensure that equipment necessary for safe entry is provided, including calibrating, testing, monitoring, and personal protective equipment, and that it is properly used and maintained.

(10) Contractor Operations. 29 CFR 1910.146 assigns specific responsibilities to both host employers and contractors. FAA contracts shall require contractors to comply with confined space standards and all other applicable Federal, state, and local safety and health regulations.

(a) When contractors perform work that involves entry into FAA-owned permit spaces, FAA contracting representatives shall provide information to the contractor on the FAA confined space program and the hazards associated with the confined space and ensure contractor compliance with 29 CFR 1910.146. FAA contractors performing work in non-FAA-owned spaces, are required to comply with requirements of OSHA and the property owner (e.g., local Port Authority).

(b) During construction work by contractors, consideration shall be given to the creation of confined spaces that FAA personnel may have to enter. Contracts shall require these spaces to be labeled to warn entrants of potential hazards.

(c) FAA personnel shall not permit contractors to use Government-owned equipment to evaluate confined spaces.

c. Facilities and Systems. Confined space requirements shall be considered and incorporated as early as possible in all design, construction, operation, and other projects and programs. Planners and engineers shall ensure all renovations and new designs and plans properly indicate the location of all confined spaces. All new confined spaces must be labeled prior to acceptance and operation.

d. Annual Program Evaluation. An evaluation of the CSEP shall be conducted annually, or whenever the CSPM has reason to believe that the measures taken under the permit program may not sufficiently protect employees, to validate compliance with this chapter. The program shall be revised to correct deficiencies found to exist before additional entries are authorized.

CHAPTER 12. OCCUPATIONAL MEDICAL SURVEILLANCE PROGRAM

1200. GENERAL. Where the Occupational Safety and Health Administration (OSHA) requires the implementation of medical surveillance of FAA employees, the FAA shall conduct medical surveillance. This chapter establishes the elements of an FAA Occupational Medical Surveillance Program (OMSP), which includes requirements for medical surveillance and industrial hygiene surveillance in FAA workplaces and organizational responsibilities.

1201. BACKGROUND. A relatively small proportion of OSHA regulations include medical surveillance requirements. FAA is committed to identifying the OSHA regulations that apply to its workplaces or work tasks and to provide the requisite employee medical physicals. FAA may also provide additional medical monitoring where OSHA medical surveillance requirements are absent.

1202. GOALS AND OBJECTIVES. The goal of the OMSP is to safeguard employees' health by anticipating and identifying physiological changes in employees related to workplace exposures so that preventive measures can be taken, as well as identifying occupationally induced diseases prior to incapacitating illness.

1203. SCOPE. This chapter applies to all FAA employees whose work duties and/or work environments may expose them to certain occupational hazards that OSHA has identified as requiring medical surveillance. Not included in this program are medical examination requirements for certification of pilots and medical clearance of air traffic controllers. These certification requirements are covered in other organizations' orders and policies.

1204. DEFINITIONS.

a. Allied safety officer. An allied safety officer is an FAA employee who has been assigned full-time or collateral duty safety and health responsibilities, not including the Regional or Center Program Manager for Environment and Safety, Regional or Center Occupational Safety and Health Manager, or FAA headquarters safety and health staff. Examples include Safety and Environmental Compliance Managers (SECM), designated facility safety officers, and safety committee members.

b. American Industrial Hygiene Association (AIHA). The American Industrial Hygiene Association (AIHA) is a membership organization for industrial hygienists. AIHA manages an accreditation program designed for laboratories involved in analyzing samples for the purpose of evaluating workplace exposures.

c. Industrial hygiene surveillance. Industrial hygiene surveillance is performed by a qualified safety and health professional and includes evaluation of employee work practices and work environments with emphasis on identifying occupational health hazards, as required by OSHA regulations and FAA policy.

d. Job hazard analysis. Job hazard analysis is a tool for identifying safety and health hazards associated with specific job tasks. The analysis includes a review of job tasks and of workplace environments as possible contributors to health and safety hazards.

e. Medical surveillance. Medical surveillance is performed under the supervision of a qualified physician and includes periodic medical screening and/or medical monitoring of FAA employees as required by OSHA regulations and FAA policy.

f. National Institutes for Occupational Safety and Health (NIOSH). The National Institutes for Occupational Safety and Health (NIOSH) is a Federal agency under the Department of Health and Human Services. The agency conducts research on health and safety concerns and develops analytical methods for the analysis of air samples collected for determination of employee exposure.

g. Occupational hazard. An occupational hazard is any combination of environmental and/or human factors that can cause sickness, impaired health, or significant discomfort in workers. Examples may include chemicals in solid, liquid, or vapor form; physical agents like noise, ionizing and non-ionizing radiation, temperature and pressure extremes, and vibration; biological hazards like bloodborne pathogens; and ergonomic hazards.

1205. KEY PROGRAM ELEMENTS. FAA shall:

a. Investigate health hazards affecting FAA employees and determine which employees shall be included in or removed from the agency's medical surveillance program as required by OSHA regulations. OSHA standards may require the employer to provide medical surveillance for anticipated excessive exposure to occupational hazards without requiring prior exposure monitoring (e.g., 29 CFR 1910.120). Examples of occupational hazards for which OSHA requires medical surveillance are provided in Figure 12-1, Examples of OSHA Regulations That Include Medical Surveillance Requirements.

b. Ensure that medical evaluations are tailored to specific groups of employees and their exposures and that medical testing is supervised by a qualified physician.

c. Provide the required medical examinations and furnish results to appropriate recipients in a coordinated, timely manner.

d. Maintain a secure, confidential repository of all employee medical records and ensure that employees have access to their records as needed for personal medical care.

e. Review the medical surveillance program and update it based upon changes in regulations, consultation with site management and employees, exposure data, and medical monitoring test results.

1206. NATIONAL OCCUPATIONAL MEDICINE SURVEILLANCE PROGRAM OVERSIGHT TEAM (NOMSPOT).

a. Purpose. NOMSPOT shall provide a mechanism for consultation, technical assistance, quality assurance, and as a central point of contact for FAA region or center medical surveillance issues.

b. Membership. Core membership will include representatives from the Office of Aviation Medicine (AAM), Airway Facilities Service (AAF), and the Office of Environment and Energy (AEE). Names of contact persons will be announced at the national OSHECCOM committee meetings. Non-member participants at meetings may include FAA region or center safety and health professionals and bargaining unit representatives.

c. Frequency. Meetings will be held as needed to resolve medical surveillance-related issues and occur as teleconferences, videoconferences, or as panels at mutually agreed-upon locations.

d. Initiation of Request for Review. The initiator of a request to review a medical surveillance-related issue must send to AEE a memorandum describing the nature of the concern. AEE will notify sender of arrival of memorandum within 5 work days of receipt.

e. Resolution of Issue. Every effort will be made to handle medical surveillance-related issues expeditiously. Issues having little or no budgetary impact may be handled within 30 work days; otherwise, they may require a longer review.

1207. RESPONSIBILITIES. In addition to the responsibilities described in chapter 1, the following program-specific responsibilities apply.

a. AEE shall:

- (1) Update, as necessary, program elements and responsibilities for AAM to the Regional Flight Surgeon level and responsibilities for AAF to the AXX-400 level.
- (2) Coordinate all changes relating to the OMSP with appropriate organizations and bargaining groups.
- (3) Review AAM and NAS Implementation and Integration (ANS) guidance prior to field distribution to ensure that they contain procedures that support the key program elements in this chapter.
- (4) Provide oversight of the OMSP to ensure that all program elements established by AEE policy and by AAM and ANS implementation guidance are effective in documenting, assessing, preventing, minimizing, or mitigating occupational illness arising from workplace hazards.
- (5) Support the NOMSPOT for the purpose of providing a national forum for communication on medical surveillance and/or industrial hygiene surveillance issues when needed.

b. AAM shall:

- (1) Support the agency OMSP through the provision of occupational medical services through the provision of medical consultation, advice, examinations, and monitoring as required by OSHA regulations and agency policy.
- (2) Ensure that funding for medical services, including periodic medical monitoring, is addressed in the budgetary review process.
- (3) Develop written implementation guidance in accordance with Federal mandates that detail procedures to be followed when providing medical monitoring services to FAA employees; and provide a copy of this guidance and any subsequent changes to AEE and ANS prior to distribution to the field.
- (4) Ensure that all medical records are maintained in a secure location; ensure accessibility by employees in accordance with 29 CFR 1910.1020, "Access to employee exposure and medical records."
- (5) Communicate with ANS, AEE, and other agency organizations, as appropriate, trends in medical monitoring examinations.

c. ANS shall:

- (1) Implement the agency OMSP through the provision of industrial hygiene surveillance and job hazard analyses.
- (2) Develop written implementation guidance that includes procedures for performing industrial hygiene surveillance and job hazard analyses, and provide AEE with a copy of the guidance prior to distribution to the field.

(3) Serve as budget advocate by requesting adequate F&E funding to implement industrial hygiene surveillance (including an exposure monitoring program) and job hazard analyses; to purchase and maintain appropriate industrial hygiene monitoring equipment; and to fund industrial hygiene laboratory support.

(4) Ensure that the exposure monitoring program is overseen by an industrial hygienist certified by the American Board of Industrial Hygiene; that appropriate OSHA or NIOSH sampling and analytical methods are used; and that any laboratory analyses are performed by an AIHA-accredited laboratory, or equivalent.

(5) Identify and prioritize the requirements for training in support of the OMSP.

(6) Ensure that all exposure monitoring records are maintained and made available to employees in accordance with appropriate OSHA regulations, including 29 CFR 1910.1020, "Access to employee exposure and medical records."

d. Regional Airway Facilities Division (AXX-400), Environmental, Safety, and Emergency Management Division (AMP-100), and Facilities Services and Engineering Division (ACT-600) shall:

(1) Support the OMSP in their region or center in accordance with this chapter.

(2) Ensure that job hazard analyses and/or industrial hygiene surveillance procedures are used to identify FAA employees whose job tasks expose them to occupational hazards.

(3) Ensure that funding for industrial hygiene surveillance/exposure monitoring and job hazard analyses of workplaces is requested in the budgetary review process.

(4) Ensure coordination with the Regional Flight Surgeon (RFS) or the Aeronautical or Technical Center equivalent when results of job hazard analyses and/or industrial hygiene monitoring indicate the need to include an employee in or remove an employee from the OMSP; and that the medical officer is provided copies of all documentation supporting this determination for inclusion in, or removal from, the OMSP.

(5) Ensure that employees have an avenue for requesting a job hazard analysis of their workplace and/or work tasks.

(6) Ensure that a current listing of all employees who are included in the OMSP is maintained and is provided to the RFS or the Aeronautical and/or Technical Center equivalent.

(7) Ensure that all individuals identified in paragraph 1207d(6) are informed and trained in the hazards of their job and the relevance of industrial hygiene surveillance and medical monitoring; and that this training is documented.

(8) Ensure that occupational safety and health managers and allied safety officers and any other appropriate personnel receive training needed to evaluate workplace hazards properly, and ensure that all training is documented.

(9) Ensure that the required medical examinations are provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(10) Ensure annual reviews of employees' work tasks and/or work environments to identify new operations or modifications to the work space environment; and ensure these reviews are documented. Inform ANS and the RFS of any new occupations or job tasks or environmental hazards that should be covered in the OMSP.

e. The Regional Aviation Medical Division (AXX-300); and the Occupational Health Division (AAM-700) shall:

(1) Implement the OMSP in their region or center in accordance with this chapter and written guidance provided by AAM.

(2) Ensure that occupational medical monitoring services are provided to employees who have been determined by AXX-400, AMP-100, and ACT-600 as meeting regulatory requirements for inclusion in the OMSP. When there are issues regarding criteria or indications for examinations, they shall be forwarded to NOMSPOT for resolution.

(3) Review available industrial hygiene exposure monitoring and/or related job hazard analyses prior to commencement of medical services.

(4) Coordinate changes in region or center implementation of the OMSP with region or center headquarters AAM and AXX-400, AMP-100, and/or ACT-600.

(5) Ensure, consistent with established privacy procedures, that AXX-400, AMP-100, and ACT-600 are provided aggregate results of employee medical monitoring that will enable AXX-400, AMP-100, and/or ACT-600 to evaluate exposure controls in their respective occupational safety and health program.

(6) Communicate with NOMSPOT and AAM trends and sentinel events noted in medical monitoring examinations, as appropriate.

f. The Assistant Administrator for Human Resource Management (AHR), the Office of Human Resource Management at the Aeronautical Center (AMH), and the Regional Human Resource Management Divisions (AXX-10) shall:

(1) Assist as necessary to ensure that this chapter is addressed in human resource management/services programs and policies, as appropriate.

(2) Assist NOMSPOT in resolving concerns of mutual interest. Examples include Workers' Compensation claims; requests for hazardous duty pay; work limitations; and union coordination.

g. The Training Division (AFZ-100) shall serve as the agency's primary focal point for development, execution, and tracking of centralized OSH training across the lines of business in accordance with priorities set by ANS; and shall ensure that funding is requested for OSH training requirements.

h. All FAA managers shall assist wherever possible in the identification of FAA employees whose job tasks or work environments expose them to OSHA-recognized occupational hazards. Contact the FAA region, center, or Washington headquarters safety office or a local safety and health professional/allied safety officer for assistance in the identification of workplace hazards.

FIGURE 12-1. EXAMPLES OF OSHA REGULATIONS THAT INCLUDE MEDICAL SURVEILLANCE REQUIREMENTS

This figure contains brief overviews of pertinent medical surveillance requirements that are enforced by OSHA. Detailed guidance for performing job hazard analyses, industrial hygiene surveillance, and medical surveillance for each of these areas shall be provided by ANS and AAM.

1. Asbestos. The OSHA asbestos standards, 29 CFR 1910.1001 (29 CFR 1926.1101 for construction) require full medical monitoring for asbestos workers, including operations and maintenance workers whose job tasks entail the disturbance of asbestos-containing materials for 30 or more days each year. Asbestos workers must wear respiratory protection and must have had respirator clearance examinations prior to use.

2. Noise. The OSHA standard 29 CFR 1910.95 requires that workers exposed to noise levels over 85 decibels on the A-weighted scale (dBA) as an 8-hour time weighted average (TWA) must be included in a hearing conservation program. This includes preplacement and annual audiometric examinations. FAA workers who may be candidates for the program include a) employees who routinely work in airport operating areas, including AF technicians, Flight Standards, and Security; b) AF technicians who maintain and operate emergency engine generators and building heating, ventilation, and air conditioning equipment; c) Field maintenance personnel who operate machinery and road equipment; d) Flight Standards employees who inspect and fly in aircraft; and e) certain employee groups like metalworkers at the Aeronautical and Technical Centers. The FAA has published a hearing conservation order (Order 3910.4, Hearing Conservation Program) that details the elements of a comprehensive hearing loss prevention program.

3. Lead. The OSHA standards for lead (29 CFR 1910.1025 for general industry and 1926.62 for construction) require that medical surveillance be provided to all employees exposed to levels over the action level of 30 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) calculated as an 8-hour TWA for more than 30 days per year. The paint used on outdoor steel support structures for the radar and antenna systems usually has a high percentage of lead. Disturbance of steel structures through cutting, burning, or drilling has the potential to cause lead dust and fume exposures in excess of the OSHA action level. In those regions and regions where FAA workers perform lead-based paint removal or other activities that disturb lead-based paint and who may be exposed to lead in excess of the OSHA limits, the employee must be included in a medical surveillance program.

4. Bloodborne Pathogens (BBP). The OSHA BBP Standard (29 CFR 1910.1030) includes medical surveillance requirements for employees potentially exposed to bloodborne pathogens. Materials considered potentially infectious are unfixed human tissue and body fluids, e.g., blood, semen, pericardial fluid, peritoneal fluid, fluid visibly contaminated with blood and cerebrospinal fluid. FAA employee categories who fall under the BBP requirements include aircraft accident investigators, health care workers, laboratory technicians, and designated first aid/emergency healthcare responders.

5. Clearance for Respirator Use. OSHA's respiratory protection standard 29 CFR 1910.134 (29 CFR 1926.103 for construction) mandate that workers wearing any type of respirator must receive medical approval prior to issuance of the respirator and annually thereafter. Factors to be considered in medical approval include the circumstances of respirator use, i.e., frequency and duration of use, the type of respirator required, and the workers' baseline medical condition (including review of employee's medical history). The examination should investigate the following factors: Pulmonary effects from respirator use including increased resistance to breathing and decrease in ventilation due to respirator dead space, cardiovascular effects related to increased work, facial deformities, perforated eardrum, psychological factors, and dermatological effects from local skin irritation. FAA workers who may be required to wear a respirator include asbestos operations and maintenance workers, workers disturbing or removing paint containing lead, aircraft painters and aerospace engineering technicians, hazardous waste and emergency response workers, and possibly others identified during industrial hygiene surveillance of work tasks.

6. Hazardous Waste or Emergency Response Workers. The OSHA Hazardous Waste Operations and Emergency Response standard (29 CFR 1910.120) requires that hazardous waste workers receive medical surveillance examinations when exposed to hazardous substances or wear a respirator 30 or more days per year. Emergency response/HAZMAT team members must receive an annual medical examination without regard to frequency of exposure. All hazardous waste workers and emergency responders must wear protective equipment including respirators, chemical protective suits, and gloves. Respirator clearance medical examinations are required in accordance with 29 CFR 1910.134. Note: For the purposes of this chapter, HAZMAT team refers to emergency responders, not persons responsible for conducting regulatory inspections to determine compliance with regulations on the safe transport of hazardous materials.

CHAPTER 13. HAZARDOUS ENERGY CONTROL PROGRAM (LOCKOUT/TAGOUT)

1300. GENERAL. This chapter establishes FAA policy and minimum requirements for locking out and/or tagging out sources of energy to equipment or systems under the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA) *Control Of Hazardous Energy (Lockout/Tagout)* Standard, 29 CFR 1910.147. The FAA Hazardous Energy Control (Lockout/Tagout) Program shall be used to control hazardous energy during installation, servicing, modification, and maintenance work. Following the practices in this chapter will help prevent injuries and property damage due to unexpected energization, startup, release of stored energy, and sudden movement of equipment components.

1301. SCOPE. This chapter applies to all FAA personnel. This includes, but is not limited to, employees involved in design, acquisition, installation, modification, alteration, maintenance, and service work on machines, equipment, and systems. FAA contractors and subcontractors must comply with the requirements of this chapter.

1302. POLICY. It is the policy of the FAA that before any employee performs any servicing, modification, alteration, or maintenance on a machine or equipment where the unexpected energizing, startup, or release of stored energy could occur and cause injury, the machine or equipment shall be isolated and rendered inoperative through the use of a lockout device whenever the machinery or equipment is capable of being locked out. If an energy-isolating device is not capable of being locked out, a tagout procedure consistent with the requirements of this chapter shall be utilized that provides full employee protection equivalent to that of a lockout procedure. Lockout/tagout shall only be performed by authorized employees. All new equipment designed, ordered, and installed and any replacement or major repair, modification, alteration, or renovation to existing machines or equipment must be equipped with the capacity for lockout.

1303. DEFINITIONS.

a. Affected employee. An FAA employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed. Affected employees who are not directly involved in but are present during maintenance or service activities shall be verbally notified of lockout/tagout procedures and their significance.

b. Authorized employee. An FAA employee who locks out or tags out machines or equipment to perform servicing, modification, alteration, or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance as defined in paragraph 1303k. In general, all technicians, mechanics, aircraft maintenance technicians, aerospace engineering technicians, etc., or any persons authorized to service and/or certify equipment may be authorized employees.

c. Capable of being locked out. An energy-isolating device is capable of being locked out if it has a device, hasp, or other means of attachment to which or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy-isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

d. Energized. Connected to an energy source or containing residual or stored energy.

e. Energy-isolating device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and disconnects, gate valves, gas regulators, and any similar device used to block or isolate energy. Push buttons, selector switches, and other control circuit-type devices ARE NOT energy-isolating devices.

f. Energy source. Any source of energy, several of which are: electrical, mechanical, hydraulic, kinetic, pneumatic, ionizing or non-ionizing radiation, chemical, thermal, gravitational, or other energy.

g. Hasp. A metal piece fitted over a staple and fastened as by a bolt or padlock.

h. Lockout. The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

i. Lockout device. Hardware that utilizes a positive means like a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

j. Normal production operations. The utilization of a machine or equipment to perform the intended function(s).

k. Servicing, modification, alteration, and/or maintenance. Workplace activities like constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy. Note: Minor tool changes and adjustments and other minor servicing activities, which take place during normal production operations, are not covered if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternate measures that provide effective protection.

l. Tagout. The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

m. Tagout device. A prominent warning device, capable of withstanding environmental stresses, such as a tag and a means of attachment, which can be securely fastened to an energy-isolating device in accordance with an established procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

1304. KEY PROGRAM ELEMENTS.

a. Documented Program. A documented lockout/tagout program must be developed and implemented in accordance with 29 CFR 1910.147 whenever installation, maintenance, modification, alteration, or servicing of machines, equipment, or systems will be accomplished by FAA employees. The documented program must contain each of the key elements specified in paragraph 1304.

b. Designated Program Manager. A lockout/tagout program manager shall be appointed and documented to coordinate overall implementation and oversight of the region/center Lockout/Tagout Program.

c. Lockout/Tagout Procedures. Procedures shall be developed, documented, and utilized for the control of potentially hazardous energy in accordance with 29 CFR 1910.147, whenever FAA employees are engaged in servicing, modification, alteration, or maintenance of machines or equipment, except for those situations specifically excluded in paragraph (i), “Exceptions to Lockout/Tagout Requirements.” The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for lockout/tagout and the means to ensure compliance, including:

(1) Specific procedural steps for starting-up, shutting down, isolating, blocking, securing, and tagging out all machines or equipment to control hazardous energy and verifying each step.

(2) Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them. If an energy-isolating device is not capable of being locked out, the device will be modified when possible. If the device cannot be modified, then and only then will tagout procedures be allowed.

(3) Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

(4) Specific procedures for locating and contacting employees who have left the job site without properly removing their locks/tags, and for documenting those attempts. The documentation will be sent to the second line supervisor for review. If the authorized employee cannot remove the lock/tag for any reason, the only other person that can do so will be the authorized employee’s supervisor.

d. Training and Communications.

(1) All affected and authorized personnel, and their supervisors, shall receive training on the contents of the FAA Lockout/Tagout Program consistent with the requirements of 29 CFR 1910.147. Retraining shall be provided for all authorized and affected employees whenever there is a change in job assignments, a change in machines, equipment, processes, or systems that present a new hazard, when there is a change in the FAA lockout/tagout procedures, or whenever inadequacies are discovered in the performance of lockout/tagout. FAA supervisors shall certify that employee training has been accomplished, has been documented, and is kept up-to-date.

(2) Procedures for lockout/tagout shall be included in all training courses for equipment and facilities, including FAA Academy courses, where it is necessary to control hazardous energy for maintenance, modification, alteration, or service activities.

(3) All training shall be properly documented in the agency’s official training information system. Documentation shall include a written certification record that contains the name or other identifier of the employee trained, the date(s) of the training, and the signature of the competent person who performed the training.

e. Protective Materials and Hardware. All protective materials and hardware used must meet the requirements of 29 CFR 1910.147. Additionally:

(1) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided only to authorized FAA employees for isolating, securing, or blocking machines or equipment from energy sources.

(2) Lockout devices and tagout devices shall be singularly identified; shall be the only device(s) used for controlling energy; shall not be used for other purposes; and shall be durable, substantial, and identifiable, i.e., the lock or an attached tag shall indicate the identity of the employee applying the device(s).

(3) Locks shall be a personal issue item (i.e., issued to a single individual as personal property).

f. Group Lockout. When servicing and/or maintenance is performed by more than one person, a procedure shall be provided that affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. When an energy-isolating device cannot accept more than one single lock, a multiple lockout/tagout device will be used. Primary responsibility shall be assigned to an authorized employee who shall be designated to coordinate affected work forces and ensure continuity of protection. Specific procedures shall be provided for shift personnel to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout devices between off-going and oncoming personnel, to minimize the possibility of unexpected energization, start-up of the machine or equipment, or release of stored energy.

g. Periodic Inspections and Reviews.

(1) Periodic inspections of a facility's energy control procedures shall be conducted at least annually, in accordance with OSHA requirements in 29 CFR 1910.147, by an authorized employee (other than the authorized employee utilizing the energy control procedures being inspected), and after any incident involving the unexpected release of hazardous energy. Authorized employees conducting inspections shall document compliance and non-compliance with the requirements of the OSHA standard. Where lockout or tagout is used for energy control, the periodic inspections shall include a discussion between the reviewer and affected and authorized employees of their responsibilities under the energy control procedure being reviewed.

(2) Managers shall review facilities or areas under their control at least annually for overall compliance with facility lockout/tagout requirements and certify that the periodic inspections have been performed. Reviews shall be documented and include identified deficiencies, trends, corrective actions required, and tracking for abatement.

h. Requirements for Contractors or Other Outside Personnel.

(1) All contracts issued for work involving hazardous energy control (lockout/tagout) procedures must contain a provision that contractors must have a hazardous energy control (lockout/tagout) program in accordance with OSHA and state requirements. Contractor hazardous energy control (lockout/tagout) programs shall be submitted in accordance with contract requirements.

(2) Contractors must provide their own appropriate hazardous energy control (lockout/tagout) equipment and training, and the contractor is responsible for ensuring that all subordinate contractor personnel understand and comply with the lockout/tagout program and procedures. The FAA shall not issue locks, tags, or other equipment to contractors and shall not train contractor personnel.

(3) Whenever contractors or other outside servicing personnel (e.g., Port Authority or telephone company personnel) are engaged in work covered by 29 CFR 1910.147, the responsible management officials of the outside organization and the FAA shall provide each other with their respective lockout/tagout programs prior to the commencement of work. A copy of the contractor's/company's lockout/tagout program shall be provided to the contracting officer's technical representative (COTR) for coordination with the appropriate FAA personnel.

i. Exceptions to Lockout/Tagout Requirements.

(1) The FAA's Hazardous Energy Control Program provides for certain exceptions to lockout/tagout. Exceptions include, but are not limited to:

(a) Electrical equipment whose maximum voltage is less than 50 volts to ground, provided there will be no exposure to electric burns or explosions.

(b) Routine production operations where workers are not required to remove or bypass a guard or other safety device, or are not required to place any part of their bodies into an area of the machine or equipment where work is actually performed upon the material being processed (point of operation).

(c) Electrical equipment that can be de-energized by unplugging; the person performing the maintenance has exclusive control of the plug.

(d) Hot tap operations as defined by 29 CFR 1910.147.

(2) Under certain conditions energy may be isolated by other devices to prevent the release of hazardous energy. The devices, such as blanks, blocks, line valves, etc., do not require locks or tags, but must prevent the release of the stored energy. Mechanical or electrical items like push buttons, selector switches, or other circuit control devices are not considered to be energy-isolating devices.

(3) Troubleshooting, testing, and/or diagnostics on electrical or electronic equipment may not be able to be performed using lockout/tagout. In such cases, qualified employees are permitted to perform these functions, under the requirements of 29 CFR 1910, Subpart S, and 29 CFR 1910.331-.335. Procedures must be developed to protect FAA employees adequately from the electrical hazard when testing, troubleshooting, and/or performing diagnostics on equipment that is not de-energized.

j. Design and Acquisition.

(1) An assessment to determine application of 29 CFR 1910.147 is required whenever new equipment is designed, acquired, and installed or whenever replacements are made in existing systems. In existing systems, an assessment shall be done on major replacement equipment at the time of installation, for consideration of equipment requirements and impact on the entire system. Upon completion of the assessment, lockout capability must be designed into the equipment, if required, and installed prior to delivery or installation and use by FAA employees.

(2) All contracts issued for work involving hazardous energy control (lockout/tagout) procedures must contain a provision that contractors must have a hazardous energy control (lockout/tagout) program in accordance with OSHA and state requirements. Safety programs shall be submitted in accordance with contract requirements.

(3) Contractors must provide their own appropriate hazardous energy control (lockout/tagout) equipment and training. FAA will not issue locks, tags, or other equipment to contractors.

(4) All equipment installed after January 2, 1990, must accommodate the use of a lock.

(5) The written lockout/tagout program must include a process to evaluate the requirements for energy-isolating devices whenever major replacement, repair, renovation, alteration, or modification of machines, equipment, or systems is performed and whenever new equipment is designed and installed.

CHAPTER 14. RADIATION SAFETY PROGRAM

1400. GENERAL. All FAA employees shall be protected from exposure to hazardous electromagnetic radiation and fields in the workplace. This shall be accomplished through a comprehensive agency Radiation Safety Program (RSP). The FAA shall adopt the most current employee exposure safety criteria published by the American Conference of Government Industrial Hygienists (ACGIH) as well as criteria for Radiofrequency (RF) radiation published jointly by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE). Key program elements and responsibilities are included in this chapter. Additional implementation guidance will be developed by responsible organizations to support this chapter, and shall be followed.

1401. BACKGROUND.

a. The existing OSHA regulation pertaining to nonionizing radiation, 29 CFR 1910.97, is based on outdated exposure safety standards. Therefore, for controlled environments (defined in paragraph 1405e), the FAA adopts current ACGIH consensus occupational exposure safety standards for nonionizing radiation (NIR) and fields (*1998 TLVs and BEIs-Threshold Limit Values for Chemical Substances and Physical Agents*), including: Radiofrequency (RF) and Microwave radiation; Sub-radiofrequency (SRF, 30 kHz and below), which includes the Extremely Low Frequency (ELF, 3-3000 Hz) and static electric and magnetic fields (EMF); and laser radiation.

b. The ACGIH employee exposure safety standards for RF and Microwave radiation referred to in paragraph 1401a are identical to the controlled environment maximum permissible exposure levels (MPE) published in ANSI/IEEE C95.1-1991, *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*. These standards will be applied to FAA employees who routinely work in, and are aware of, environments having potential for radiation hazards (controlled environments). To ensure the safety of all other workers, such as office workers and general maintenance personnel, the FAA adopts the more stringent ANSI/IEEE MPE's for *uncontrolled* environments. Uncontrolled environment exposure safety standards will be used as "action levels" (see paragraph 1405a) for any area with high power radiation emitters within the FAA, where individuals who are unaware of a potential radiation hazard might enter. Every effort shall be made to maintain RF and Microwave radiation from FAA sources to the lowest feasible level. See definitions in paragraph 1405 for additional clarification of controlled and uncontrolled environments.

c. The existing OSHA regulation for ionizing radiation, 29 CFR 1910.1096, is also outdated. For example, it does not specifically address protection of pregnant workers. Current ACGIH 1998 safety standards for ionizing radiation are adopted, including new ionizing radiation terminology, exposure units (dose and dose-rate), and exposure safety guidelines (Table 1, *ibid.*), as relevant to FAA workplace environments. However, OSHA's safety program elements for ionizing radiation (e.g., labeling, personal monitoring triggered by a certain radiation level, reporting, and recordkeeping) shall be preserved, as well as the ACGIH-endorsed ALARA (as low as reasonably achievable) principle to keep radiation exposure levels below the recommended guidelines in the workplace.

d. Commercial products and unintentional sources of workplace radiation (such as office computers and video display terminal (VDT) units, cellular and satellite telephones, microwave ovens, and personnel security screening systems) are not included in the RSP. These are covered by other applicable public safety and health radiation emissions standards and regulations of the Federal Communication Commission (FCC) and the Food and Drug Administration's (FDA) Center for Devices and Radiological Health (CDRH). However, radiation safety for FAA users of such devices shall be assured by requiring manufacturer data and proof of compliance with applicable safety standards (see paragraph 1410(d)(3)).

e. FAA's adoption of ACGIH guidelines for human exposure safety in controlled environments and ANSI/IEEE MPE's for uncontrolled environments is consistent with Public Law 104-113, the *National Technology Transfer and Advancement Act of 1996*. This law directs Federal agencies to adopt or adapt technical and safety standards developed by voluntary consensus standards-setting organizations, such as ANSI/IEEE, as well as consult and participate with such bodies in the development of technical standards. (Note: ACGIH is not a consensus standards-setting organization, but a professional society whose membership includes occupational safety and health professionals from national and international government, academia, and industry. The ACGIH "Physical Agents TLV Committee" is dedicated to the control of workplace health hazards and annually reviews and adopts the most recent and best available consensus human exposure safety standards, such as the ANSI/IEEE, International and National Commissions for Radiation Protection (ICRP and NCRP) radiation safety guidelines.)

f. As shown in 29 CFR 1910.100, Standards Organizations, OSHA accepts, endorses, and recommends the use of ACGIH TLV's as safety guidelines. The FAA, through DOT/OST, notified OSHA of its intent to adopt current ACGIH and ANSI/IEEE radiation exposure safety guidelines, in accordance with the notification requirements of 29 CFR 1960. In August 1998, DOT and FAA received verbal approval of the RSP as contained in this chapter, and the specific adopted radiation safety exposure standards and guidelines. A formal, written endorsement from OSHA is shown in Figure 14-1, OSHA Response Concerning FAA's Adoption of Consensus Radiation Safety Standards. OSHA has indicated that it will use this RSP as the basis for future inspections.

1402. RELATED PUBLICATIONS.

a. The American Conference of Governmental Industrial Hygienists (ACGIH) 1998 *TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents*. A current edition may be purchased from ACGIH, Kemper Woods Center, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634. See also <http://www.acgih.org> for ordering information.

b. ANSI/IEEE C95.1-1991 *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*. A current edition may be purchased from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036. See also <http://www.ansi.org> for ordering information.

1403. GOALS AND OBJECTIVES. The goal of the RSP is to safeguard employees' safety and health in the FAA workplace by: setting the agencywide policy framework based on adoption of the most recent, scientifically credible safety standards and guidelines, and by delineating a comprehensive radiation safety program with clear organizational roles and responsibilities for its timely implementation through communication, training, radiation environment characterization, exposure prevention and documentation, and oversight for safety assurance.

1404. SCOPE. This chapter applies to all FAA employees whose work duties and/or work environments may expose them to radiation and fields generated by FAA facilities. It is limited to the identification of the radiation exposure safety criteria that shall be used and to stating the RSP program elements and organizational responsibilities necessary for its successful implementation. The RSP will protect FAA workers from any unsafe radiation and fields emitted from FAA sources in FAA-owned or -leased Airway Facilities (including GSA-controlled buildings and/or facilities occupied by FAA).

1405. DEFINITIONS. To conserve space, definitions used here are limited to nontechnical or frequently used terms in this chapter. Please consult the resources listed in the ACGIH and ANSI/IEEE publications for definitions and explanations of other radiation terminology.

a. Action levels. Action levels are those employee exposure levels that trigger the implementation of this chapter and related program guidelines. When these levels are exceeded, protective steps will be initiated to ensure the safety of employees, such as: increased employee awareness of radiation hazards (through improved communications or updated training), additional radiation measurements, labeling and signage, and/or initiation of controls to reduce exposure to below the action levels. (For the purpose of this chapter, the ANSI/IEEE C95.1 uncontrolled environment MPE's will serve as action levels. See paragraph 1407b.)

b. Allied safety officer. An allied safety officer is an FAA employee who has been assigned full-time or collateral duty safety and health responsibilities, not including the regional or center program manager for environment and safety, regional or center occupational safety and health manager, or Washington headquarters safety and health staff. Examples include Safety and Environmental Compliance Managers (SECM), designated facility safety officers, and safety committee members.

c. American Conference of Governmental Industrial Hygienists (ACGIH). The American Conference of Governmental Industrial Hygienists is an organization devoted to developing and improving worker health protection standards. As a professional society, it includes members from Federal safety and health agencies, as well as public health experts from industry and academia and the international OSH community. It annually publishes up-to-date voluntary occupational safety standards for exposure to chemical and physical agents in the workplace in "*Threshold Limit Values for Chemical Substances and Physical Agents*," commonly referred to as the "TLV booklet" by OSH personnel.

d. American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE). These two voluntary standards-setting organizations came together after 1988 when the ANSI accredited standards committee C95 was converted to standards coordinating committee (SSC) 28 under the sponsorship of the IEEE standards board. Future C95 standards will be developed and issued by IEEE, who will submit them to ANSI for recognition. The scope of the SSC 28 is to develop standards "for the safe use of electromagnetic energy in the range of 0 Hz to 300 GHz relative to the potential hazards of exposure to man, volatile materials, and explosive devices to such energy." ANSI/IEEE C95.1-1991 *Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz* (or most recent update) provides the rationale for using controlled and uncontrolled environment MPE's for controlling FAA employee exposures to nonionizing (RF and microwave) radiation.

e. Controlled environment. ANSI/IEEE defines controlled environments as locations where access is restricted and that are occupied only by individuals who are aware of the potential for exposure as a concomitant of employment. In the FAA, such individuals may include the following personnel trained in, or cognizant of, the presence of radiation hazards and exposure prevention and controls: radar and/or environmental technicians, certain members of the FAA Academy and the FAA Technical Center, safety professionals and allied safety officers, and other cognizant individuals. The MPE's for controlled environments were adopted by ACGIH as TLV's for workers and carry a smaller protection factor than MPE's for uncontrolled environments.

f. Electromagnetic Radiation. Electromagnetic (EM) radiation is the radiant electromagnetic energy characterized by its power density (energy radiated per unit area per second), and frequency (or wavelength). The EM spectrum ranges from nonionizing radiation (NIR)- that includes sub-radiofrequency (SRF), radiofrequency (RF) and microwave (MW) radiation through infrared, visible and ultraviolet frequencies, and extends into the ionizing radiation range (including x-rays and gamma rays). This EM spectrum and related TLV's addressed by ACGIH for workplace exposure safety are depicted in the TLV booklet (1998, p. 143).

g. Ionizing radiation. Ionizing radiation is either particulate or electromagnetic radiation that is sufficiently energetic (more than 12.4 electron-volts (eV)) to ionize the matter absorbing it. It includes subatomic particles (such as electrons, protons, neutrons, or energetic alpha particles and heavier ions), and electromagnetic radiation (x-rays and gamma rays).

h. Maximum Permissible Exposure (MPE). The term maximum permissible exposure is the ANSI/IEEE designation for a human safety exposure limit to RF radiation. MPE's are provided in ANSI/IEEE C95.1-1991 for both controlled and uncontrolled environments (see definitions in this chapter and original reference). Note: When ACGIH adopted the controlled environment MPE's, the MPE's were redesignated as TLV's. Because ACGIH did not adopt the uncontrolled environment MPE's, these standards should continue to be called MPE's in the RSP.

i. Nonionizing radiation (NIR). Nonionizing radiation applies to electromagnetic radiation with photon energies less than 12.4 eV, which cannot ionize atoms and molecules. It includes all frequencies at and below the ultraviolet (UV) portion of the spectrum, namely:

(1) Sub-radiofrequency (SRF) radiation, defined by ACGIH-98 as radiation with frequencies below 30 kHz. SRF limits (TLV's) on magnetic and electric fields include the extremely low frequencies (ELF) electromagnetic fields (EMF) $3 \text{ Hz} < f < 3 \text{ kHz}$. ELF/EMF also include magnetic fields at power frequency (60 Hz) and its harmonics (up to 300 Hz), whose potentially adverse health effects are still under active investigation.

(2) Static magnetic and static electric fields, which may pose electromagnetic interference (EMI) hazards to medical device wearers and may also be of concern in the proper operation of tools and instrumentation.

(3) RF (30 kHz - 300 MHz) and microwaves (MW, 300 MHz - 300 GHz) radiation where the specified TLV's limit either the radiation power density or the corresponding electric or magnetic field components. Radiation might be emitted as periodic pulse trains (pulsed) or as continuous waves (CW). The quantity of interest to exposure safety is the time-averaged power density, or corresponding magnetic and/or electric field strengths, as specified in the standards as a function of frequency.

(4) Optical radiation, with wavelengths longer than 100 nm and shorter than 1 mm, including infrared, visible, and ultraviolet ranges. Of special concern for the workplace are the laser safety standards, given the growing use of lasers (both pulsed and CW) by the FAA.

j. Radiation Protection Officer (RPO). The Radiation Protection Officer is the FAA official charged with serving as the principal point of contact and coordinator for employee ionizing and nonionizing radiation exposure issues. This individual is qualified by education, training, and/or experience to evaluate the potential for short- or long-term health effects associated with use of components generating NIR and ionizing radiation in FAA workplaces (see para. 1410b(3) for RPO responsibilities).

k. Threshold Limit Value (TLV). A Threshold Limit Value is an ACGIH term for occupational exposure limits adopted following extensive review of supporting documentation from standard-setting consensus organizations, research laboratories, and epidemiological data in the published literature. TLV's represent the level of exposure ACGIH has determined to which workers may be exposed during a normal 8-hour workday in a 40-hour work week over a working lifetime without adverse effect.

l. Uncontrolled environment. ANSI/IEEE defines uncontrolled environments as locations where individuals may be exposed to radiation who have no knowledge, control, or expectation of potential for radiation exposure. In the FAA, this would include any location with high power emitters where there is a possibility of access by persons unaware of the radiation hazard. ANSI/IEEE C95.1 provides MPE's for uncontrolled environments and states that individuals may be exposed to these levels without harmful effect and with an acceptably high safety factor. See definition for *action level*.

1406. KEY RADIATION SAFETY PROGRAM ELEMENTS. FAA shall:

- a.** Adopt the most current ACGIH (1998 or as applicable) occupational exposure safety guidelines for physical agents, specifically the sections identified as Ionizing Radiation; Lasers; and Nonionizing Radiation and Fields. Also adopt the most current ANSI/IEEE C95.1 recommended RF radiation exposure safety standards for uncontrolled environments as “action levels” (see 1405a and 1407b(1) for definition). *(Note: ACGIH 1998 TLVs and BEIs and ANSI/IEEE C95.1-1991 shall serve as the baseline for 1998, the year of this chapter's initial issue.)*
- b.** Ensure that timely and specific implementation guidance of the RSP is developed and issued by the responsible FAA organizations. (See paragraph 1410.)
- c.** Ensure that appropriate radiation safety training materials are developed in a timely manner, in coordination with current and documented RSP guidance and safety information; and that responsible FAA staff (e.g., safety and health managers and allied safety officers, appropriate spectrum engineering, and technical maintenance and operations staff) receive appropriate initial and continuing training needed to prevent, evaluate, measure, control, and mitigate potential radiation exposure hazards in the FAA workplace.
- d.** Ensure that baseline radiation surveys, commissioning, modifications, and other radiation safety assessments are conducted as needed, or as requested, in a timely manner. The goal is to document, evaluate, control, and mark, by posted warnings or restricted access to, areas where employee exposures could exceed recommended exposure limits from a single source or multiple radiation sources. (Baseline surveys of ELF/EMF and static magnetic and electric fields will be performed only on an as-needed basis.)
- e.** Ensure that no FAA employee shall handle, maintain, test, and operate radiation emitting components, or perform duties in areas where there is a potential radiation hazard, without first being made aware of the radiation hazard potential, and receiving information or appropriate training in radiation hazards prevention and control appropriate to his/her job tasks. The employee shall be made aware of radiation potential hazards identification, safe work procedures, and strategies for preventing, controlling, and mitigating unnecessary or excessive personnel exposures.
- f.** Ensure that informative reading materials on potential radiation hazards shall be maintained by Washington headquarters, regions, centers, and field offices, and shall be made available to concerned employees on request.
- g.** Ensure that all existing radiation and high fields sources are inventoried, and that measured radiation emission levels are archived by facility type, source type, configuration, location, and date. Where employee exposures to these sources have been measured (i.e., dosimetry), the appropriate employee job classification numbers and job task descriptions shall also be archived.
- h.** Ensure that specifications for and acceptance testing of new equipment, subsystems, and systems to be developed or acquired under the NAS Facilities Modernization and/or as part of the NAS System Architecture complies with applicable radiation safety standards and guidelines.
- i.** Maintain a centralized RSP resource file and data base to include: work area radiation hazard measurements and estimates of radiation hazard by type, radiation survey data at typical facilities, and for representative sources, employee exposure and source(s) of exposure; also, results of baseline and periodic employee workplace radiation surveys and hazard assessments, and results of both scheduled or planned and on-request or unplanned investigations.

j. Ensure that all radiation emissions survey data and employees' exposure records and related health or medical evaluations shall be maintained for the duration of employment plus 30 years in accordance with 29 CFR 1910.1020, *Access to employee exposure and medical records*.

k. Investigate and document all alleged workplace exposure incidents and levels that exceed the adopted exposure criteria, and recommend prevention and mitigation strategies; or medical treatment and/or inclusion in a medical surveillance program, if recommended by AAM.

l. Require that all commercially acquired FAA equipment that are unintentional radiation sources (such as microwave ovens, computer, communication, and display devices, physical security screening equipment), have evidence of manufacturer or supplier compliance with applicable FCC or FDA/CDRH radiation safety standards.

1407. NIR EMPLOYEE EXPOSURE CRITERIA. Following is a brief overview of the criteria for the different radiation frequency bands. Consult the appropriate current version of the TLV booklet and/or ANSI/IEEE C95.1 for the actual criteria.

a. SRF limits for electromagnetic radiation with frequencies (f) below 30 kHz, including ELF/EMF power frequencies and harmonics ($f < 300$ Hz). These TLV's include both electric and magnetic fields down to static ($f = 0$) electric and magnetic fields. Special warnings and more stringent TLV's are noted for workers wearing electronic implants, such as pacemakers, susceptible to electromagnetic interference (EMI) from NIR sources.

b. RF radiation with $30 \text{ kHz} < f < 300 \text{ MHz}$ and MW radiation with $300 \text{ MHz} < f < 300 \text{ GHz}$. These TLV's are identical to the controlled environment electric and magnetic fields, or equivalent power density limits, in ANSI/IEEE C95.1-1991, "*Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*," and are applicable only to experienced, trained personnel, such as radar and/or environmental technicians, certain members of the Academy, safety professionals and allied safety officers, and other cognizant individuals. The ACGIH also adopted the C95.1-1991 controlled environment limits on RF-induced and contact (shock and RF burn limits) for whole body and partial body currents and on pulsed, multi-frequency or multiple-source radiation that requires summation, as well as spatial and time averaging to ensure exposure safety.

(1) Action Levels. MPE's for uncontrolled environments shown in ANSI/IEEE C95.1-1991 are applicable to most FAA workplaces, and shall be used as *action levels* for implementing this chapter and program guidance to control employee exposure to RF and MW radiation.

(2) Representative baseline surveys shall be conducted in accordance with program guidance to identify controlled and uncontrolled environments, and to demonstrate that *action levels* are not exceeded.

c. Laser safety. ACGIH-98 adopts appropriate technical standards for safe use of lasers in the workplace, as a function of wavelength, power, beam crossection, exposure type (both pulsed and continuous wave, CW), duration of exposure, and body crossection exposed (ocular or skin).

1408. IONIZING RADIATION EMPLOYEE EXPOSURE CRITERIA. The ACGIH 1998 TLV's for ionizing radiation include specific occupational exposure safety guidelines to limit exposures to ionizing radiation, including particulates (e.g., inhaled radon) and electromagnetic (e.g., x-rays from radars and VDTs). These guidelines are based on the most recent guidance from the National Council for Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP). The ACGIH also endorses the ALARA (as low as reasonably achievable) principle for minimizing workplace exposures. Special radiological protection guidance is given to minimizing exposures for declared pregnant employees, so as to limit the *in utero* dose. The existing OSHA standard for ionizing radiation, 29 CFR 1910.97, is outdated and does not specifically protect pregnant workers; however, the standard's program elements (e.g., labeling, warning signs, personal monitoring in special cases, reporting, and recordkeeping) shall be followed in this chapter.

1409. RADON EXPOSURE CRITERIA. The ACGIH-98 includes recommended occupational TLV's for radon daughters of 4 working level months (WLM) per year. This is approximately equivalent to an annual exposure to an average of 16 picocuries of radon per liter of air (pCi/l). The FAA adopts this guideline for exposure to indoor radon in FAA-controlled occupational environments.

1410. RESPONSIBILITIES. In addition to the responsibilities described in chapter 1, the following program-specific responsibilities apply.

a. AEE shall:

(1) Develop policy for the RSP, including exposure criteria and organizational responsibilities to the AXX-400 level.

(2) Provide oversight of the RSP to ensure all program elements established by AEE and implemented by AAF are effective in identifying, measuring, evaluating, preventing, minimizing, controlling, mitigating, documenting, or assessing potential radiation hazards to employees at FAA facilities, or as a result of FAA activities.

(3) Coordinate any policy changes relating to the RSP with all affected organizations.

(4) Review RSP implementation guidance and data products to ensure that all elements of this chapter are adequately addressed and implemented in a timely manner.

b. AAF shall:

(1) Administer the RSP and ensure that written implementation guidance is developed and applied in accordance with this chapter; proposed guidance shall be coordinated with AEE prior to distribution to the field.

(2) Provide adequate resources as required for the effective management of the RSP.

(3) Provide a Radiation Protection Officer (RPO) function with the responsibility to serve as the agency focal point for all employee radiation health and safety issues. RPO responsibilities shall include:

(a) Serve as the headquarters focal point for employee concerns relating to alleged radiation hazard from FAA existing and developmental communication, navigation and surveillance (CNS) facilities, systems, and components, when these complaints cannot be resolved at the regional level.

(b) Develop or review data to assess employee radiation exposure levels and implement procedures to protect employees from potential FAA radiation hazards.

(c) Evaluate and respond to employee requests for potential radiation hazards health interpretations of radiation emissions measurements and exposures that cannot be handled at the regional level; forward requests for medical interpretation to AAM.

(d) Review and evaluate proposed nonroutine tasks of trained workers to ensure that exposure does not exceed adopted limits.

(e) Collaborate with appropriate AAF and employee representative organizations in acquiring measurement data for potential radiation hazards, as needed.

(f) Assist in development of required radiation assessment audits.

(g) Assist AEE upon request as co-liaison with Federal worker protection and environmental safety and health regulatory agencies (OSHA, NIOSH, FDA/CDRH, FCC, EPA) and with other professional radiation health societies (ACGIH, ANSI/IEEE, NCRP), whose missions are to develop standards and guidelines to protect workers from radiation hazards.

(4) Coordinate with appropriate organizations as required to secure their support for RSP implementation. Specifically:

(a) Coordinate with AAM when seeking additional health or medical interpretation of any radiation measurement data.

(b) Ensure that annual field safety assessments of employee work tasks and/or work environments are conducted to identify employees for inclusion in the RSP; to identify new operations or modifications to the workspace environment that may increase the potential for radiation exposure hazard; and ensure that these assessments are supported by radiation emission and/or exposure measurements, if needed. All assessments shall be documented.

(c) Ensure all radiation exposure records are maintained in accordance with 29 CFR 1910.1020, *Access to Employee Exposure and Medical Records*. All radiation exposure hazard assessments shall be documented and archived.

(d) Provide technical assistance to the regions and the two centers for radiation hazard prevention, control, and/or mitigation strategies upon request or as needed.

(e) Implement initial and periodic radiation hazard evaluation training; and document all such training and maintain training records for a minimum of 3 years for the following employee groups:

i. Safety and health professionals and staff, who must perform baseline and periodic workplace radiation hazard assessments.

ii. Employees who must perform work tasks or work in environments where potential exists for exposure above adopted TLV's.

iii. Spectrum engineering staff in the performance of occupational radiation hazard measurements and evaluations of compliance with FAA adopted standards.

(f) Collect or develop and provide informational resources on radiation safety to concerned employees upon request.

(g) Provide technical assistance as appropriate to appropriate AF organizations to ensure that the employee safety paragraphs in radar maintenance orders (6000-series) and related publications are revised to include this chapter, and that safety information is available, current, and sufficient to the needs of the users.

(h) Provide Regional Frequency Management Offices (FMO) and the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center counterparts with equipment and/or technical support required for emissions measurement and exposure assessment and for identification of uncontrolled and controlled environments.

(i) Maintain and annually update the radiation measurement equipment inventory and ensure that equipment calibrations are maintained in accordance with manufacturer recommendations.

(j) Periodically update Order 6050.32, Spectrum Management Regulations and Procedures Manual, and/or other written procedures consistent with this RSP policy, and update FMO training materials to ensure compliance with current standards.

(k) Maintain a centralized Spectrum Engineering data base or management information system of official records to log and track representative hazard measurements data. The repository should include baseline and periodic radiation hazard measurements for representative radiation sources and facilities, calculated estimates of exposure for representative employee classifications and/or job tasks, and data arising from all planned or unplanned investigations relating to possible potentially hazardous radiation exposures.

c. AAM shall:

(1) Provide medical interpretation of radiation exposure estimates for FAA employees upon request by the RPO and consult with outside specialists deemed appropriate to evaluate measurements collected by AAF.

(2) Develop written guidance for the regional flight surgeons related to employee radiation exposures and provide a copy to AEE and AAF for review prior to distribution.

(3) Maintain medical records of employees with documented exposure to radiation above the adopted FAA radiation exposure standards, and ensure accessibility to employees in accordance with 29 CFR 1910.1020, *Access to Employee Exposure and Medical Records*.

(4) Recommend an appropriate medical surveillance strategy when an employee has received an accidental or routine radiation exposure in excess of the adopted TLV's.

d. ARA shall:

(1) Coordinate with AAF early in the planning and design phase of prototype equipment that may generate radiation in excess of the adopted MPE's, as established for uncontrolled areas in ANSI/IEEE C95.1-1991.

(2) Ensure that all designs, acquisition, and acceptance testing plans are reviewed by the RPO for potential radiation hazards. This review shall be documented.

(3) Ensure that manufacturers and suppliers of FAA-purchased equipment containing radiation sources provide appropriate radiation source identification, emissions data, and potential hazard warning labels that demonstrate compliance with RSP standards and guidelines.

(4) Develop written procedures for review and evaluation of potential radiation hazards during planning, siting, acquisitions, construction, maintenance, modifications, upgrades or modernization, and all other phases of life-cycle management for real property (i.e., environmental assessment reviews). The procedures (and subsequent revisions) shall be reviewed by AEE and AAF prior to distribution.

(5) Provide to the RPO radiation safety information for new FAA equipment, systems, and facilities as needed to ensure compliance with the RSP and AAF guidance.

(6) Ensure, with technical assistance from AAF, that emerging or planned NAS systems and components or modifications to existing systems are evaluated for possible radiation and fields hazards in all phases of acquisition and life-cycle management.

e. **AHR** shall assist as necessary to ensure that the RSP policy is addressed in employee programs and policies, with special attention to employee categories identified as having potential for exposure to radiation. Examples of programs include Workers' Compensation claims for workers alleging excessive exposure to radiation; siting and construction of child care centers (see Figure 14-2, Evaluation of Potential Radio-Frequency (RF) Radiation Hazard at Planned and Existing Child Care Centers); and affirmative action programs for pregnant women or workers with pacemakers or other medical implants.

f. Regional Airway Facilities Division (AXX-400), Environmental, Safety, and Emergency Management Division (AMP-100), and Facilities Services and Engineering Division (ACT-600) shall:

(1) Implement the RSP in their region or center in accordance with this chapter and written guidance provided by AAF.

(2) Ensure that the request for resources for implementation of the RSP is addressed in the budgetary review process.

(3) Ensure that regional (or center) employees have clear procedures for requesting assistance in the identification of and resolution of concerns of potential and alleged radiation hazards.

(4) Ensure that all appropriate FAA personnel potentially exposed to radiation above adopted TLV's are informed and/or trained in safe work practices and radiation exposure prevention, and that such training is documented.

(5) Ensure that the Regional Occupational Safety and Health Manager (ROSHM) and/or allied safety officers and/or the FMO's receive training and adequate resources needed to identify, measure, evaluate, control, and mitigate radiation hazard risks in the workplace, and that the training is documented.

(6) Ensure that records of employee radiation exposure measurements, including calculated estimates of exposure, are maintained for each employee for the duration of employment plus 30 years. If these records are archived at a storage facility, ensure that they are properly catalogued and readily accessible.

(7) Inform employees that records are available to them and on how they can obtain such records, in accordance with 29 CFR 1910.1020, *Access to Employee Exposure and Medical Records*.

g. All FAA managers shall assist wherever possible in the identification of FAA employees whose job tasks or work environments expose them to radiation hazards, or who are at special risk (e.g., pregnant employees or those with medical electronic implants). Contact the FAA region, center, or Washington headquarters safety office or a local safety and health professional/allied safety officer for assistance in the evaluation of workplace radiation hazards.

Figure 14-1. OSHA RESPONSE CONCERNING FAA's ADOPTION OF CONSENSUS RADIATION SAFETY STANDARDS

U.S. Department of Labor	Occupational Safety and Health Administration Washington, D.C. 20210	
	Reply to the Attention of	
SEP 21 1998		
The Honorable Melissa J. Spillenkothen Assistant Secretary for Administration Department of Transportation M-1, Room 10314 400 7th Street S.W. Washington, D.C. 20590		
Dear Ms. Spillenkothen:		
The Occupational Safety and Health Administration (OSHA) has reviewed your document entitled Chapter 28; Radiation Safety Program," and believes that when implemented this document will provide equal or greater protection than 29 CFR 1910.97. Thus OSHA agrees that the Federal Aviation Administration (FAA) may use this standard in place of 29 CFR 1910.97 to regulate occupational exposure to radiation.		
The exposure limits selected by FAA are well recognized and supported by the safety and health community as well as OSHA by reference (e.g. ACGIH TLV's and ANSI). Although more restrictive than the OSHA standards, complying with the selected consensus standards is feasible and will provide a more protective workplace. The selection of the more restrictive public exposure limits from the current ANSI C95.1 standard as an "action level" which determines when an RF Safety Program is necessary is particularly useful. Most importantly, the adoption of the most recently published ACGIH TLV's will ensure that the FAA program is not locked into outdated standards, in that limits are automatically updated with each update to the TLV's. Of course, full implementation of this program is key to providing the worker protection described.		
Accordingly, the FAA is permitted by 29 CFR 1960.16 to prescribe and enforce more stringent permissible exposure levels or threshold limit values and may require more frequent monitoring of exposures without recourse to the approval procedures for alternate standards described in 29 CFR 1960.17. OSHA believes that the radiation program proposed by the FAA is more protective than the 1910 standard and agrees that FAA should adopt this as its radiation standard. Additionally OSHA will use this proposed standard to determine worker exposure to radiation and will not measure compliance against 29 CFR 1910.97.		

**Figure 14-1. OSHA RESPONSE CONCERNING FAA's ADOPTION OF CONSENSUS
RADIATION SAFETY STANDARDS, contd.**

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Please advise this office when full implementation is expected, so that we can
apprise our compliance inspectors.

Sincerely,

A handwritten signature in black ink, appearing to read "Emzell Blanton, Jr.", with a long horizontal flourish extending to the right.

Emzell Blanton, Jr.
Deputy Assistant Secretary

Figure 14-2. INTERIM POLICY #AEE097-02, EVALUATION OF POTENTIAL RADIO FREQUENCY (RF) RADIATION HAZARD AT PLANNED AND EXISTING CHILD CARE CENTERS, DATED APRIL 21, 1997

	Memorandum
U.S. Department of Transportation Federal Aviation Administration	
Subject: ACTION: Interim Policy Memo AEE097-02: Evaluation of Potential Radio Frequency (RF) Radiation Hazard at Planned And Existing Child Care Centers	
Date:	
From: Acting Assistant Administrator for Policy, Planning, and Planning, and International Aviation, API-1	Reply to Attn. of:
To:	
 BACKGROUND	
The FAA has sited day care centers on or near the grounds of certain FAA facilities in order to improve productivity and efficiency of employees by providing safe, high-quality, and affordable child care during extended hours in locations where such care is not available in the community. FAA Order 3910.3A, Radiation Health Hazards and Protection (1983), requires that FAA workplaces be protected from potential radio frequency radiation (RFR) exposure hazards, but does not include guidelines for controlling potential exposure to children occupying FAA-sponsored child care centers (CCC). To meet this need, we are issuing interim policy for requiring RFR hazard evaluations when siting CCC in the vicinity of FAA radar and communication facilities or when planning modifications to existing CCC. The Office of Environment and Energy (AEE) is currently updating Order 3910.3A, which is planned for release in September 1997. It will include this interim policy.	
 PURPOSE	
This memorandum provides interim policy to facilitate the acquisition of RFR hazard evaluation data for inclusion in proposals for siting new CCC, or when making facility modifications which could increase the potential for hazardous RFR exposure to occupants of existing CCC.	
 AUTHORITY	
AEE has policy and oversight responsibility for FAA employee occupational safety and health programs.	
NAS Transition and Implementation (ANS) has broad responsibility for implementation of safety and health programs. Policy regarding the construction of CCC at the approved location/facility resides with ANS and is based on logistical parameters such as existing space, location of radars, etc.	
The Office of Spectrum Policy and Management (ASR) has responsibility for performing RFR measurements at FAA sites, or where FAA personnel are employed, and providing technical analysis and interpretation of the RFR measurements.	

Figure 14-2. INTERIM POLICY #AEE097-02, EVALUATION OF POTENTIAL RADIO FREQUENCY (RF) RADIATION HAZARD AT PLANNED AND EXISTING CHILD CARE CENTERS, DATED APRIL 21, 1997, contd.

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The Office of Human Resource Management (AHR) is the program office responsible for programmatic policies for the establishment and management of FAA CCC. This role includes review of competing proposals for siting of new CCC and determining which proposals to fund, based on regional needs and available resources. AHR, at the national level, is not involved with the proposal development process; instead, proposal development, including necessary environmental assessments (including potential radiation hazard), is initiated at the field level.

FAA Directive 1100.2C, Organization - FAA Headquarters, is being revised to incorporate the organizational functions and responsibilities consistent with the FAA Notice N 1100.234, dated December 12, 1994. This interim policy memorandum specifies what must be done and who is responsible for evaluating potential radiation hazard at proposed and existing CCC sites. Details of how the interim policy will be implemented are the responsibility of ANS and will be addressed separately.

RF EVALUATION CRITERIA

Compliance with American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE) standards and FAA directives is required. Until FAA Order 3910.3A is updated, the criteria to be used for evaluation of potential RFR hazard to children will be the maximum permissible exposures (MPE) provided for "uncontrolled areas" in the current version of the ANSI approved ANSI/IEEE C95.1-1991, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," dated April 27, 1992. RFR hazard evaluations will be obtained using one or both of the following two approaches:

- (1) Use of actual field measurements made at other similar facilities or sites which are representative of the facility or site under consideration, and/or
- (2) Calculations of RFR exposures based on current specifications or RFR emissions data for the radar/communications systems in use at the location.

RESPONSIBILITIES

a. AEE shall:

- (1) Establish policy for ensuring that siting of new CCC and/or modifications of existing CCC receive appropriate evaluation for possible RFR hazard.
- (2) Provide oversight to verify that this evaluation is being accomplished in an appropriate manner.

b. ANS shall:

- (1) Administer the implementation of this policy (relative to design and construction) to ensure that occupants of future and existing FAA-sponsored CCC are not exposed to RFR in excess of ANSI/IEEE criteria.
- (2) Develop and implement guidelines to ensure that future and existing CCC receive evaluation of possible RFR hazard prior to commencement of construction activities.

Figure 14-2. INTERIM POLICY #AEE097-02, EVALUATION OF POTENTIAL RADIO FREQUENCY (RF) RADIATION HAZARD AT PLANNED AND EXISTING CHILD CARE CENTERS, DATED APRIL 21, 1997, contd.

3

- (3) Provide for adequate funding for the effective implementation of the guidelines.
 - (4) Coordinate with ASR in all phases of implementation.
 - (5) Review technical RFR hazard evaluation reports and collaborate with ASR in providing technical recommendations to the field AHR office for the selection of a location for a CCC.
 - (6) Provide for the timely resolution of any deficiencies found by the RFR hazard evaluations.
 - (7) Coordinate with field personnel to ensure their support for the implementation of this interim policy.
- c. ASR shall:
- (1) Provide support as needed to ensure that future and existing CCC receive proper evaluations of RFR hazard prior to commencement of construction activities.
 - (2) Ensure that personnel designated to carry out RFR measurements follow current, peer-approved techniques and standards for calculating estimates for exposure and for obtaining field measurements.
 - (3) Ensure that properly functioning and calibrated equipment is provided to perform the field measurements.
 - (4) Review technical RFR hazard evaluation reports and collaborate with ANS in providing technical recommendations to the field AHR office for the selection of a location for a CCC.
 - (5) Coordinate with the regional Frequency Management Office (and center equivalents) to ensure its support of this program.
- d. The Regional Airway Facilities Divisions (AXX-400), the Office of Facility Management (AMP-1), and the Facilities Management Division (ACT-400) shall:
- (1) Administer the implementation of this policy in the regions and centers to ensure that occupants of future and existing FAA-sponsored CCC are not exposed to RFR in excess of ANSI/IEEE criteria.
 - (2) Ensure that funding is requested to provide for the acquisition of RFR measurements and for any remedial action(s) that might be required.
 - (3) Ensure that the regional Frequency Management Office (or center equivalent) coordinates with ASR in all matters involving CCC.
 - (4) Ensure that actual field measurements are performed following construction or modifications of CCC in order to verify pre-construction calculated estimates of exposure.

Figure 14-2. INTERIM POLICY #AEE097-02, EVALUATION OF POTENTIAL RADIO FREQUENCY (RF) RADIATION HAZARD AT PLANNED AND EXISTING CHILD CARE CENTERS, DATED APRIL 21, 1997, contd.

4

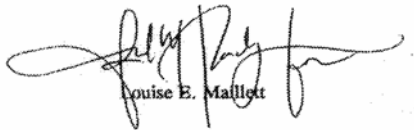
(5) Ensure that the potential for radiation hazard from nearby utility transmission lines, transformers, power conditioning and generation units, or other possible sources of RFR is considered when actual field measurements are performed.

(6) Ensure that technical RFR hazard evaluation reports are reviewed and that technical recommendations are provided to the regional and center AHR office for the selection of a location for a CCC.

(7) Ensure that necessary controls and/or mitigation measures are implemented in a timely manner if a RFR hazard to occupants of CCC is identified.

e. The regional Human Resource Management Division or center equivalent shall request assistance from the regional Airway Facilities Divisions (AXX-400), the Office of Facility Management (AMP-1), or the Facilities Management Division (ACT-400), as appropriate, when RFR hazard evaluation data are needed in connection with new or existing CCC.

If you have questions concerning this policy, please contact Jeanne Kosch, Occupational Safety and Health Program Manager for Policy, AEE-200, at (202) 267-9719.



Louise E. Mallett

CHAPTER 15. ASBESTOS CONTROL PROGRAM

1500. GENERAL. This chapter covers the establishment and maintenance of a Federal Aviation Administration (FAA) asbestos control program, whose purpose is to ensure the protection of FAA employees at FAA facilities from exposure to airborne asbestos fibers in excess of workplace standards. This shall be accomplished through proper management of asbestos-containing materials (ACM) and materials presumed to contain asbestos (PACM) in all FAA-owned or -leased buildings and/or facilities and all General Services Administration (GSA)-controlled buildings and/or facilities occupied by FAA.

a. The FAA shall comply with asbestos regulations promulgated by the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA), any other applicable Federal, state, and local laws and regulations, and with all contractual requirements.

b. Asbestos-related work performed by FAA employees shall be limited to Class III and IV work, as defined in paragraph 1505i. Class I and II work shall be performed by qualified asbestos abatement contractors with qualified, competent third party oversight. Prior to working with ACM and/or PACM, FAA employees shall be trained in accordance with paragraph 1506e.

1501. BACKGROUND. In February 1986, the Office of Aviation Medicine, which at that time was the office of primary interest for all occupational health policy, published Order 3910.5, Asbestos Control. In June 1986, OSHA issued two revised standards for asbestos, one governing occupational exposure in general industry, the other applicable to construction workplaces. Both standards reduced the 8-hour time weighted average (TWA) permissible exposure limit (PEL) to 0.2 f/cc from 2 f/cc, and provided an action level of 0.1 f/cc. In August 1994, OSHA again revised the two standards, and reduced the 8-hr TWA to 0.1 f/cc and eliminated the action level. OSHA worked closely with EPA during the 1994 revision so that the regulations of both agencies are compatible to the extent OSHA's mandate allows. In May 1995, the Airway Facilities Service published Order 1050.20, Airway Facilities Asbestos Control, delineating procedures for the management of ACM in FAA facilities. This chapter replaces Order 3910.5 and complements Order 1050.20 at the agencywide level.

1502. GOALS AND OBJECTIVES. The goal of this FAA asbestos control program is to provide for a strong network of programs and procedures that will ensure that ACM and/or PACM are maintained in good condition, thus ensuring the protection of FAA employees, contractors, and visitors.

1503. SCOPE. This chapter provides coverage for all FAA employees who work in, maintain, operate, or otherwise occupy FAA-owned or -leased buildings and/or facilities and GSA-controlled buildings and/or facilities. It also applies to FAA employees who may be working in buildings and facilities not already identified in this chapter, such as those controlled by the Department of Defense.

1504. STANDARDS.

a. Federal, state, and local governments have promulgated regulations concerning asbestos. FAA is interested in regulations addressing employee exposure to asbestos fibers during construction, maintenance, and custodial operations, and the performance of contract asbestos abatement workers who work with ACM and/or PACM in FAA buildings and facilities. The following Federal regulations are concerned directly with asbestos:

29 CFR 1910.1001	OSHA General Industry Asbestos Standard
29 CFR 1910.134	OSHA Respiratory Protection Standard
29 CFR 1926.1101	OSHA Construction Asbestos Standard
40 CFR 61 Subpart M	National Emission Standard for Asbestos

40 CFR 763 Subpart E	Asbestos-Containing Material in Schools (EPA regulation pursuant to AHERA)
40 CFR 763 Subpart E Appendix C	Asbestos Model Accreditation Plan, as amended for ASHARA (Asbestos School Hazard Abatement Reauthorization Act)

b. Amendments to these regulations are published in the *Federal Register*. It is important for users to ensure that they have all the latest amendments and interpretations. Users also should ensure that they have all current applicable state, local, and host country regulations.

c. FAA employees performing asbestos-related work, and their supervisors, must be familiar with AAF implementation guidance that pertains to the operations they perform. Other suggested reference documents include: Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024, June 1985; and Managing Asbestos in Place, EPA 20T-2003, July 1990.

d. In addition to the requirements of the regulations contained in paragraphs 1504a, 1504b, and 1504c, adherence to the provisions contained in applicable collective bargaining agreements concerning asbestos is required.

1505. DEFINITIONS.

a. Aggressive sampling. An air sampling technique whereby air samples are collected while fans or air circulating devices are operated in a work area, and while floors, walls, and other structural surfaces are sufficiently agitated using a device such as a leaf blower to entrain any particles that may be present. Aggressive sampling is used at the completion of abatement, after an area has been thoroughly cleaned.

b. Air monitoring. The process of measuring the airborne fiber content of a specific volume of air in a stated period. Air monitoring shall be performed in accordance with OSHA asbestos standards.

c. Area air sample. An air sample obtained by using a stationary air pump, with a sampling cassette in-line, to monitor air contaminants within contained or ambient air environments.

d. Asbestos. A class of magnesium-silicate minerals that includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

e. Asbestos abatement. Procedures to control fiber release from ACM and/or PACM in a building or to remove it entirely. These procedures may involve removal, encapsulation, repair, enclosure, encasement, and operation and maintenance programs.

f. Asbestos containing material (ACM). Any material that has been sampled, analyzed by an accredited laboratory, and confirmed to contain more than 1.0 percent asbestos of any type or mixture.

g. Asbestos Control Plan (ACP). A comprehensive written plan including policy and procedures for effective asbestos management, and covering at least the following areas: oversight of Class I and II asbestos abatement contracts; routine inspections and assessment of ACM/PACM; area sampling, exposure monitoring, and clearance determination; Class III and IV operations and maintenance (O&M) work performed by FAA employees, including an O&M Plan and related standard operating procedures (SOP); a facility asbestos abatement contingency plan for unanticipated releases of asbestos fiber in buildings and facilities during contracted Class I and II abatement projects; signage procedures; medical surveillance; training; recordkeeping; and quality control.

h. Asbestos fiber. A particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

i. Asbestos work.

(1) Class I asbestos work: Activities involving the removal, for abatement purposes, of thermal system insulation (TSI) and surfacing ACM and/or PACM.

(2) Class II asbestos work: Activities involving the removal, for abatement purposes, of ACM that is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

(3) Class III asbestos work: Repair and maintenance operations where ACM, including TSI and surfacing ACM and/or PACM, may be disturbed. Class III work includes maintenance work for which a small amount of ACM and/or PACM must be cut away to access mechanical or structural components of buildings. In order to qualify as Class III work (rather than Class I or Class II work), the amount cut away must be less than the amount that can be contained in a standard sized glovebag or waste bag (60" x 60").

(4) Class IV asbestos work: Maintenance and custodial activities during which employees contact but do not disturb intact ACM and/or PACM, and clean-up activities that take place in an area after a Class I, II, or III job has been completed. Class IV work may include tasks like buffing and polishing ACM and/or PACM flooring and vacuuming the dust on consoles. Class IV asbestos work does not include picking up and bagging asbestos waste and debris during Class I, II, and III work.

j. Baseline level sampling. Area air sampling that is performed prior to the onset of asbestos abatement work, and may be referred to as the background level.

k. Breathing zone. A hemisphere forward of the shoulder with a radius of 6 to 9 inches from the worker's nose. Employee exposure sampling must take place within this zone.

l. Building/facility owner. The legal entity that exercises control over management and recordkeeping functions relating to a building and/or facility in which activities covered by this chapter take place. For example, the FAA is the legal entity for all buildings and/or facilities owned by the FAA. GSA is the legal entity for GSA-controlled buildings and facilities occupied by FAA employees. For buildings and/or facilities leased to the FAA, the building/facility owner is the legal entity.

m. Center. Refers to the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center.

n. Certified Industrial Hygienist (CIH). A person who has been certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.

o. Clearance sampling. The practice of using air monitoring in order to approve an area for reoccupancy after an asbestos abatement project.

p. Competent person. A person who meets the intent of the definition in 29 CFR 1926.32(f) and who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate them. Additionally, for Class I and Class II work, whose training meets the criteria in EPA's Model Accreditation Plan (40 CFR 763, Subpart E, Appendix C) for supervisor, or its equivalent. For Class III and Class IV work, a competent person who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). See 29 CFR 1926.1101(o)(1) for further clarification.

q. Comprehensive asbestos inspection. A building- or facility-wide inspection by an EPA-accredited asbestos inspector in current standing and whose training meets the criteria in EPA's Model Accreditation Plan (40 CFR 763, Subpart E, Appendix C) for inspector; and who is experienced in collecting bulk and area air samples in accordance with Asbestos Hazard Emergency Response Act (AHERA) regulations and EPA guidance. This inspection shall be performed in accordance with 40 CFR 763, Subpart E.

r. Containment. Isolation of the work area from adjacent areas or surrounding areas to prevent escape of asbestos fibers.

s. Critical barrier. One or more layers of plastic sealed over all openings from a work area, or any other similarly placed physical barrier sufficient to prevent airborne asbestos fibers in a work area from migrating to an adjacent area.

t. Disturbance. Activities that disrupt the matrix of ACM or PACM, that crumble or pulverize ACM or PACM, or that generate visible debris from ACM or PACM. Disturbance also includes drilling through ACM or PACM, or cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard-sized glovebag or waste bag (not exceeding 60 inches in length and width), in order to access a building component.

u. Employee exposure. That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

v. Facility asbestos abatement contingency plan (FAACP). An FAA document that details oversight and response procedures to be followed by facility management, employees, any FAA "competent person(s)," and the independent third party CIH during a Class I or II asbestos abatement project performed by a contractor (see paragraph 1506i).

w. Friable. Capable of being crumbled, pulverized, or reduced to powder by hand pressure when dry, resulting in a release of airborne fibers.

x. Glovebag. An impermeable plastic bag-like enclosure affixed around an asbestos-containing material (often TSI), with glove-like appendages through which material and tools may be handled so that the material may be removed while minimizing release of airborne fibers to the surrounding atmosphere.

y. High Efficiency Particulate Air (HEPA) filter. A filter capable of trapping and retaining 99.97 percent of all mono-dispersed particles (i.e., particles that are uniformly distributed within a volume of air) which are greater than 0.3 microns in diameter. A HEPA filter will capture asbestos fibers in ambient air.

z. Industrial hygienist. A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

aa. Intact. ACM that is not crumbled, pulverized, or otherwise deteriorated, so that the asbestos fibers are still bound with its matrix .

bb. Medical surveillance. A multi-disciplinary team activity requiring collaboration of FAA management and employees, industrial hygienists, health physicists, engineers, safety professionals, statisticians, nurses, and physicians to maintain and improve the health of the work force. The objective of medical surveillance of workers is to reduce occupational morbidity and mortality.

cc. Operations and Maintenance (O&M) Plan. A subset of the overall Asbestos Control Plan, which provides work practices that will maintain ACM in good condition, ensure proper responses to minor asbestos releases, prevent further releases of asbestos, and monitor the condition of ACM.

dd. Periodic monitoring. Area air monitoring that is performed to determine if there is a change in the concentration of airborne fibers.

ee. Permissible exposure limit (PEL).

(1) an 8-hour time-weighted average (TWA) airborne concentration of asbestos not in excess of 0.1 fiber per cubic centimeter of air, as determined by the method prescribed in Appendix A of the OSHA asbestos standard, or by an equivalent method, or

(2) an airborne concentration of asbestos not in excess of 1.0 fiber per cubic centimeter of air as averaged over a sampling period of 30 minutes, as determined by the method prescribed in Appendix A of the OSHA asbestos standard, or by an equivalent method.

ff. Personal air sample. An air sample obtained by having the worker wear a sampling pump in train with a sampling line and a cassette. The cassette is positioned in the breathing zone of the wearer (not inside a respirator, if worn).

gg. Presumed asbestos containing material (PACM). Thermal system insulation and surfacing material found in buildings constructed before 1981. For the purpose of this chapter, PACM may also include other types of materials (such as flooring, roofing, siding, and transite) determined by the FAC as having the potential to contain asbestos.

hh. Regulated area. An area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and other work areas within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the PEL.

ii. Removal. All operations where ACM and/or PACM is taken out or stripped from structures or substrates, including demolition operations.

jj. Surfacing material. Material that is sprayed on, troweled on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes.

kk. Thermal system insulation (TSI). Insulation applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain or water condensation.

ll. Work area. The area where asbestos-related work or removal operations are performed, which is defined and isolated to prevent the spread of asbestos dust, fibers, or debris, and to prevent entry by unauthorized personnel. The work area is a regulated area as defined in 29 CFR 1926.1101(b).

1506. KEY ASBESTOS CONTROL PROGRAM ELEMENTS.

a. Written Asbestos Control Plan (ACP). Each region and center (see definition of center, paragraph 1505m) shall develop and implement a written asbestos control plan (ACP) which includes, at a minimum, the key asbestos control program elements (sub-paragraphs b through l) identified in this paragraph, and also outlines how the region or center will comply with the regulatory requirements cited in paragraph 1504 and FAA Order 1050.20. The ACP shall cover all buildings and facilities within the region's or center's jurisdiction, and shall be made available for inspection by employees and their authorized representatives. The ACP shall be reviewed annually and updated as necessary.

b. Facility Asbestos Coordinator (FAC). A FAC shall be designated to manage the asbestos control program at a facility. One person may serve as the FAC for more than one local facility. This individual shall meet OSHA's requirement for "competent person" by maintaining current standing as an accredited asbestos supervisor in accordance with the criteria specified in EPA's Model Accreditation Plan (40 CFR 763, Subpart E, Appendix C).

c. Asbestos Inspection and Abatement Procedures. The ACP shall include procedures for obtaining and maintaining information about the presence, location, and condition of ACM and/or PACM in all buildings and facilities occupied by FAA employees, including those that are FAA-owned or -leased and those controlled by GSA. Procedures shall include, at a minimum, the following:

(1) All FAA-occupied buildings and facilities constructed prior to 1981 shall be presumed to contain ACM and be treated accordingly. The FAC shall assess whether there is ACM and/or PACM in buildings and facilities constructed in 1981 or later on a case-by-case basis.

(2) Prior to commencement of a renovation or demolition project, the affected facility or the part of the facility where the work will occur shall be thoroughly inspected for the presence of asbestos by the FAC or by a person meeting OSHA's definition of "competent person."

(3) All FAA-occupied buildings and facilities identified as containing ACM and/or PACM shall be visually inspected at least annually by the FAC or another employee designated by the FAC and trained in accordance with paragraph 1506e(2)(b), to assess the condition of the ACM and/or PACM, and to determine if correction is needed. The FAC shall determine the necessity for bulk sampling or area air monitoring during these inspections.

(4) For O&M jobs involving disturbance of PACM building materials, the FAC shall determine whether to implement the controls outlined in the OSHA asbestos standard for construction or to have the building materials analyzed by a qualified laboratory in order to rebut the presumption of ACM.

(5) When a potential health hazard to building occupants exists due to the presence of damaged or friable ACM and/or PACM, abatement procedures shall be initiated as soon as possible.

d. Labels and Signs.

(1) Asbestos warning signs shall be posted at all regulated areas. Signs shall be posted at such distance from a regulated area so that an employee can see them and take protective steps to avoid entering the area marked by the sign.

(2) Signs shall be posted at the entrance to mechanical rooms/areas containing ACM and/or PACM into which employees can reasonably be expected to enter. Signs shall direct employees to the proper protocols document that includes the material that is present, its location, and appropriate work practices to ensure that ACM and/or PACM will not be disturbed.

(3) Where feasible, warning labels shall be affixed to previously identified thermal insulation or surfacing that is ACM and/or PACM, i.e., in areas where routine maintenance takes place and/or where there is reasonable likelihood of contact with these materials. Labels must be attached where they will be clearly visible to employees entering the area, such as at the entrance to a mechanical room. Signs may be posted in lieu of labels if they contain required labeling information.

(4) All signs and labels must be placed or affixed by an EPA-accredited inspector in collaboration with the FAC.

e. Training and Communications.

(1) The appropriate level of asbestos training, as described below, shall be provided at no cost to all FAA employees.

(2) FAA employees required to perform Class III or Class IV work shall be trained as follows:

(a) For FAA employees who will do general Class III work in which ACM is only “disturbed” (see definition of “disturbance” in paragraph 1505t), OSHA requires training equivalent to the EPA Operations and Maintenance course for maintenance and custodial workers, described in 40 CFR 763.92(a)(2). This training requires a minimum of 16 hours and must include hands-on training. In addition, as specified in 29 CFR 1926.1101(k)(9)(v), if the FAC determines that the EPA curriculum does not adequately cover the training needed to perform a given activity, additional training shall be given, including the elements outlined in 29 CFR 1926.1101(k)(9)(viii) and hands-on training related to that activity. Initial training must be completed before the worker’s activity begins, and at least annually so long as the worker is involved with ACM and/or PACM.

(b) Maintenance and custodial workers who will only come into contact with ACM and/or PACM, but will not disturb it (Class IV), shall receive training in accordance with 29 CFR 1926.1101(k)(9)(vi). The training is at least 2 hours, and is equivalent to the EPA awareness course for maintenance and custodial workers, described in 40 CFR 763.92(a)(1). Initial training must be completed before the worker’s activity begins, and at least annually so long as the worker is involved with ACM and/or PACM.

(3) All building/facility occupants and others (e.g., janitorial service employees) who regularly are in the building or facility containing ACM and/or PACM shall be informed about its presence in the building and shall be cautioned against disturbing these materials by, for example, hanging plants from ceilings, driving nails into walls, allowing furniture to dent or to rub abrasively against walls, or digging at TSI or flooring materials.

f. Area, Exposure, and Clearance Determinations.

(1) Area air sampling.

(a) Baseline level sampling. Baseline level air samples are required prior to any Class I and Class II asbestos abatement work. Class III asbestos abatement work may require baseline level air sampling. The type of baseline level sampling will be determined by the clearance sampling method required for a particular project.

(b) Clearance sampling. Area air samples, analyzed by Phase Contrast Microscopy (PCM), shall be used to determine whether a work area or building/facility may be reoccupied after asbestos abatement work has been completed. In certain instances, clearance samples may be analyzed by the Transmission Electron Microscopy (TEM) method.

(c) Periodic monitoring. Periodic area air monitoring shall be performed as part of routine O&M ACM and/or PACM activities as outlined in the O&M Plan; as required by OSHA and/or by the facility asbestos abatement contingency plan for perimeter monitoring during Class I and II asbestos abatement operations; and as deemed appropriate by the FAC.

(2) Exposure assessments. Exposure assessments for FAA employees performing Class III and Class IV work shall be performed in accordance with 29 CFR 1926.1101(f) and as described in paragraphs 1506f(2)(a), (b), or (c). Affected employees or their designated representatives shall be provided an opportunity to observe any monitoring of employee exposure to asbestos.

(a) For FAA employees, initial exposure assessments shall be performed at the beginning of each job involving Class III work. Exposure assessments are conducted to predict whether exposure levels will exceed the PEL's established in the OSHA standards. These assessments are used to decide whether periodic monitoring and other precautions will be needed. This initial exposure assessment shall be based on monitoring conducted pursuant to 29 CFR 1926.1101(f)(1)(iii). The sampling shall be conducted by an industrial hygienist or an air monitoring technician under the direct supervision of the CIH. It must include samples collected under work conditions having the greatest potential for releasing asbestos fibers.

(b) Negative exposure assessments (NEA) for SOP's shall be performed in accordance with 29 CFR 1926.1101(f)(2)(iii). Data supporting the NEA cannot be more than 12 months old at the time of the current or projected job.

(c) The case of an unanticipated or episodic event (e.g., excessive vibration due to construction, earthquake, or forklift rupture) that may have caused a release of airborne asbestos fibers into occupied work spaces shall be addressed in the facility O&M Plan.

g. Class I and II Asbestos Abatement. Class I and II asbestos abatement projects shall be conducted by contractor employees in strict accordance with Federal, state, and local regulatory requirements and FAA orders, particularly AF Order 1050.20.

(1) Asbestos abatement specifications shall be site-specific and include detailed procedures to be used by the abatement contractor to abate the asbestos safely and thoroughly while ensuring the safety and health of employees in the facility.

(2) The abatement contractor shall prepare a written asbestos abatement plan that shall comply with the requirements of the project specifications, and be compatible with the current facility asbestos abatement contingency plan and other applicable FAA orders and guidelines.

(3) Project oversight and environmental monitoring shall be performed by an independent third party CIH employed by an industrial hygiene firm contracted by the FAA.

h. Operations and Maintenance (O&M) Plan. The FAC shall manage ACM and/or PACM that are in place in FAA buildings and facilities through the implementation of an asbestos operations and maintenance (O&M) plan. The goals of this plan are to minimize the possibility of an asbestos exposure event through implementation of an effective in-place management plan that includes SOP's and work practices.

(1) The FAA O&M Plan includes Class III removal of TSI, surfacing ACM, nonfriable asbestos flooring, roofing, and building composite materials, routine operations and maintenance tasks that "disturb" ACM and/or PACM, and Class IV housekeeping activities in locations posted as containing ACM (e.g., mechanical rooms).

(2) The ACP shall include or refer to a written O&M Plan detailing procedures, responsibilities, and accountability in matters concerning management of ACM and/or PACM in both occupied and nonoccupied buildings and facilities.

(3) The written O&M Plan shall follow all applicable OSHA and EPA requirements for the performance of Class III or IV work, including training, demarcation of regulated areas, use of containment controls, negative exposure assessment, area and personal air sampling, signs and labels, respirator and personal protective equipment use, medical surveillance, recordkeeping, and oversight by a "competent person."

i. Facility Asbestos Abatement Contingency Plan (FAACP).

(1) A written facility asbestos abatement contingency plan (FAACP) shall be developed for occupied buildings and facilities that details oversight and response procedures to be followed by facility management, employees, any FAA "competent person(s)," and the independent third party CIH during a Class I or II asbestos abatement project performed by a contractor.

(2) The FAACP shall be kept current and contain at least the following:

(a) Notification listing of primary contacts to be used when an abatement-related asbestos incident has occurred.

(b) Procedures to be followed by management, the project engineer, the FAC, any other applicable FAA "competent person(s)," the independent third party CIH, and any other key individuals when there has been an incident (e.g., breach in containment or loss of negative pressure) resulting in potential release of airborne asbestos fibers. Procedures shall include requirements for area air and personal exposure monitoring.

(c) Procedures for re-occupancy of the building/facility.

j. Medical Surveillance.

(1) A medical surveillance program shall be instituted to cover FAA employees, such as Class III O&M workers and construction abatement overseers, who for a combined total of 30 or more days per year perform such work or have been exposed at or above a PEL, in accordance with 29 CFR 1926.1101(m). The program shall include written procedures for providing the examining physician with the information specified in 29 CFR 1926.1101(m)(3).

(2) Any day in which such worker fully follows the prescribed work practices and engages in O&M work on intact material for 1 hour or less (including cleanup) will not count toward the 30-day total.

(3) If such worker's duties require exposure to asbestos fewer than 30 days in a year, but do require the use of a negative-pressure respirator, then medical surveillance will be limited to determining that the worker is physically able to perform the work and to wear a respirator. The determination will be made in accordance with the requirements of the OSHA respirator standard, 29 CFR 1910.134(e). A physician or other licensed health care professional shall supervise this determination.

(4) Medical surveillance for bystander workers is limited to unanticipated, episodic releases of airborne asbestos fibers in accordance with the information in figure 15-1, Policy Memo #AEE097-01, Medical Surveillance Requirements for FAA Employees Following Unanticipated, Episodic Releases of Asbestos Containing Dust, dated December 23, 1996.

k. Recordkeeping.

(1) Records concerning the identification, location, and quantity of ACM and/or PACM in FAA-owned buildings and/or facilities shall be maintained for the duration of ownership, and shall be transferred to successive owners. For FAA-leased and GSA-controlled buildings and/or facilities, notifications of the presence of ACM and/or PACM are required from building owners and shall be maintained in the buildings and/or facilities for the duration of the occupancy. Copies of all records shall be maintained in locations designated by the region and center ACP.

(2) All facility inspection reports (including bulk and air sampling results) shall be retained in a permanent ACM and/or PACM file in the building/facility or if an unoccupied building/facility or FAA housing then in an office designated by the FAC. Periodic visual inspection records shall be retained in an active file until the next comprehensive asbestos inspection, after which they may be archived. If bulk sampling is performed to demonstrate that PACM does not contain asbestos, the data shall be retained so long as they are relied upon to rebut the presumption.

(3) Following an asbestos abatement project, the final report from the independent third party CIH shall be maintained in an accessible location.

(4) Permanent building/facility records also shall include records of all O&M work on the ACM and/or PACM in the building and/or facility.

(5) Records of all measurements made to monitor employees' exposure to asbestos shall be maintained at least 30 years. Copies of employee exposure records shall be maintained in the region and center human resources office and in locations designated by the region and center ACP.

(6) Employee asbestos medical surveillance records, including written evaluations of employees' ability to wear respirators, shall be maintained for the duration of the employee's employment plus 30 years. Regional flight surgeons shall be the custodians of these records.

(7) Training records shall be maintained for at least 1 year beyond the last date of employment.

l. Quality Assurance/Quality Control (QA/QC) Program.

(1) The written ACP shall include procedures for a QA/QC program to ensure that QA/QC is maintained in the collection and analysis of asbestos bulk samples and both area and personal air samples.

(2) Sampling and analysis shall be performed in accordance with current OSHA and EPA requirements as follows:

(a) Samples shall be identified, stored, and delivered to a laboratory for analysis following chain-of-custody procedures.

(b) Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program like the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) Proficiency Analytical Testing (PAT) program administered by the American Industrial Hygiene Association (AIHA). If microscopy is performed on site, the microscopist must have completed the NIOSH 582 course or equivalent. This person must also be registered with the AIHA Asbestos Analysis Registry (AAR) or have been successful in the most recent four rounds of the PAT program. Sample analysis shall follow the analytical method specified in the sampling strategy identified in the regulations and/or agency guidance.

(c) Asbestos bulk samples (collected during building surveillance and re-inspections) shall be collected according to EPA's revised bulk sample analysis method in "Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116). Samples must be collected by an AHERA-certified inspector or by a CIH.

(d) Asbestos personal air samples, baseline level samples, area air samples, and perimeter monitoring for Class I, Class II, and Class III work shall be collected according to the National Institute of Occupational Safety and Health (NIOSH) Method 7400 and analyzed by Phase Contrast Microscopy (PCM) as specified in 29 CFR 1926.1101 Appendix A. In certain instances, samples will be analyzed by the TEM method.

1507. ACRONYMS. The following acronyms apply to this chapter:

AAR	Asbestos Analysis Registry
ACM	Asbestos Containing Material
ACP	Asbestos Control Plan
AEE	Office of Environment and Energy
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
ANS	NAS Transition and Integration
ARTCC	Air Route Traffic Control Center
ASHARA	Asbestos School Hazard Abatement Reauthorization Act
CIH	Certified Industrial Hygienist
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAACP	Facility Asbestos Abatement Contingency Plan
FAC	Facility Asbestos Coordinator
GSA	General Services Administration
HEPA	High Efficiency Particulate Air
NEA	Negative Exposure Assessment
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute for Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material
PAT	Proficiency Analytical Testing
PEL	Permissible Exposure Limit
PCM	Phase Contrast Microscopy
QA/QC	Quality Assurance/Quality Control
SOP	Standard Operating Procedure
TEM	Transmission Electron Microscopy
TSI	Thermal System Insulation
TWA	Time Weighted Average

1508-1599. RESERVED.

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: ACTION: Policy Memo # AEE097-01.
Medical Surveillance Requirements for
FAA Employees Following Unanticipated, Episodic
Releases of Asbestos Containing Dust

Date: DEC 23 1996

From: Assistant Administrator for Policy,
Planning, and International Aviation, API-1
(Designated Agency Safety and Health Official)

**Reply to
Attn. of:**

To: Regional Administrators
Airway Facilities Division Managers
Air Traffic Division Managers
Regional Flight Standards Division Managers
Airports Division Managers
Regional Flight Surgeons

This policy¹ delineates the position of the agency with regard to medical followup procedures for FAA employees who work in areas adjacent to asbestos-related construction activities and who may have been exposed to airborne asbestos fiber when there has been an unanticipated failure of containment controls on one or more occasions. This policy is in addition to the requirements under 29 CFR 1926.1101(d)(3), which states that all employers of employees exposed to asbestos hazards created by another employer performing construction-related asbestos activities shall comply with applicable protective provisions to protect their employees.

This policy also shall apply to episodic occurrences not originating with construction activities that cause damage to asbestos-containing building materials (ACBM), and result in subsequent release of asbestos dust into the air. Examples of these include earthquakes, vibration due to heavy ground or air traffic, an accidental puncture of insulated piping by a forklift, etc. All will require construction-related activities for repair and, therefore, should be viewed as falling within the scope of the asbestos standard for construction.

"Bystander employees" is a term the Occupational Safety and Health Administration (OSHA) has initiated to describe those workers whose job duties require them to occasionally work near or adjacent to other workers engaged in asbestos abatement or in maintenance activities involving asbestos containing materials (ACM). The FAA's air traffic controllers, employed in facilities where occasional asbestos-related construction activities take place, are examples of bystander employees under the OSHA standard. Construction activities include, but are not limited to, removal of asbestos containing insulation materials, repairing or replacing damaged ACBM, and maintenance of air handling units in areas where ACM could be disturbed.

¹ This policy will serve as interim policy until it is incorporated as an appendix in the agency's asbestos directive (Order 3900.XX), currently under development.

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.

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The OSHA standards for asbestos (29 CFR 1910.1001¹ and 29 CFR 1926.1101¹) do not specifically address medical surveillance requirements for *bystander employees* who are exposed to unanticipated releases of asbestos fibers. In September 1995, a memorandum was drafted by AEE and routed through the Office of the Secretary of Transportation to the OSHA requesting clarification in this matter. OSHA's response was received on December 6, 1995, and is attached.

In accordance with the OSHA, the FAA's policy is that full-scale medical surveillance is indicated for bystander employees only when they have received exposures to airborne asbestos fibers at or above the OSHA permissible exposure limits (PEL's) for a combined total of 30 days or longer per year, as demonstrated by breathing zone air samples which have been analyzed via phase contrast microscopy (PCM). This requirement applies independent of whether or not *bystander employees* have been assigned respirators.

Current OSHA employee (PEL's)¹ include:

- Time-weighted average limit (TWA) of 0.1 fibers per cubic centimeter (f/cc) of air as averaged over an 8-hr time period.
- Excursion Limit (EL) of 1.0 f/cc of air as averaged over a sampling period of 30 minutes.

The procedure for establishing *bystander employee* exposure in excess of the OSHA PEL's, and when inclusion in the FAA medical surveillance program should begin is outlined below.

1. When the exposures of bystander employees are supported by valid employee air monitoring.¹

Collection of valid employee data during most unanticipated releases of asbestos-containing dust will be a rare occurrence, because of their inherent unpredictability. Because of this, a facility contingency plan (or similar emergency planning document) should be in place prior to undertaking Class I, II, or III asbestos work as defined by the asbestos standard for construction, and should include details about when to initiate personal air monitoring of *bystander employees*. Only personal monitoring collected in accordance with OSHA-approved methods legitimately can be used for comparison with OSHA employee exposure limits. This means the sampling cassette (filter) is actually placed within an employee's breathing zone, usually designated as within 1 foot of the employees head, on representative employees. Area or environmental monitoring that

² Amended by OSHA August 10, 1994 (59 FR 40964). The startup date of some provisions of the standard, including medical surveillance, were extended to October 1, 1995 (60 FR 33343, 6/28/95).

³ Formerly 29 CFR 1926.58. The startup dates also were extended as noted above.

⁴ The OSHA Action Level has been discontinued and is not included in the current asbestos standards.

⁵ Air sampling would not be useful or valid, for example, when time has elapsed between the release and its discovery, during which operation of the ventilation system, the settling of dust, the redistribution of asbestos-containing dust, or all of the above also has occurred.

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.

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commonly done to verify the adequacy of containment controls during asbestos abatement work, while informative, shall not be used as surrogate employee exposures.

For documented employee exposures, medical surveillance shall be provided as follows:

A. When exposures meet or exceed the OSHA PEL (TWA or EL) fewer than 30 days in a calendar year.

(1) One-time medical counseling by the Regional Flight Surgeon (RFS) or his/her designee may be provided within 15 working days to an exposed employee following a documented event at FAA's expense, if requested by that exposed employee. A record of the counseling shall be added to the employee's medical folder.

(2) An OWCP form CA-2 may be prepared by the exposed employee within 30 days following exposure for inclusion in his/her medical folder.

(3) The regional safety office shall maintain a record of employee exposures along with supporting air monitoring documentation. Copies of these records shall be made available to appropriate *bystander employees* upon request.

(4) Steps (1) through (3) above shall apply when there has been a positive determination of employee exposure pursuant to paragraph 2.

B. When 30 or more days of exposure have been documented in a single calendar year.

(1) The medical surveillance requirements detailed in 29 CFR 1926.1101(m) shall be activated within 10 days following the 30th day of exposure.

(2) Specific recordkeeping requirements for exposure measurements and medical surveillance covered by 29 CFR 1926.1101(n)(2) and 1926.1101(n)(3), respectively, shall be initiated at this time.

2. When the exposures of bystander employees are not supported by valid employee air monitoring.

A. The Regional Program Manager for Environment and Safety (RPMES), in coordination with the Regional Occupational Safety and Health Manager (ROSHM) and AXX-450, shall collect the information in (1) and (2) below prior to meeting with the RFS for the purpose of deciding together the likelihood that employee exposure above the PELs has occurred.

(1) Assemble complete descriptive information of the event. The RPMES is responsible for collecting and compiling, within 30 days, written descriptive

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.

4 chronologies of events as perceived by: himself/herself, the affected employees, the contracting employer's representative, and others as appropriate. This chronology should include, if available, the information listed below: • Date and time of event. • Number and location of <i>bystander employees</i> at time of event • Floor plan or sketch showing source of asbestos release relative to location of each <i>bystander employee</i>. • Duration of time between actual release and discovery of event. • Length of time between discovery of event and installation of controls, including work stoppage, evacuation of employees, donning of respirators (if applicable), repair of critical barriers, shutting off ventilation, etc. • Additional information as needed to complete the evaluation. (2) <u>Assemble relevant air monitoring data.</u> Any air monitoring and analytical data collected subsequent to the event shall be obtained by the RPMEs. The data should include: • Description of air monitoring pumps, flow rates, calibration dates and times, length of time between incident and initiation of air monitoring (or best estimate), monitoring duration times, number of blanks submitted with samples, etc. • For personal monitoring, each employee's name and location; for area monitoring, the locations of pumps should be shown on building floor plans. • Laboratory accreditation number for the lab which analyzed the samples, or other proof of its participation in the American Industrial Hygiene Association Proficiency Analytical Testing (PAT) Program. • Laboratory analytical results based on phase contrast microscopy (PCM) performed in accordance with OSHA-approved methods. Note: Supplementary data from transmission electron microscopy (TEM) performed using the NIOSH Method 7402 may be included. AHERA TEM analytical data will not be used for assessing employee exposures. • Additional information as required for evaluation purposes.
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Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.

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(3) Prepare written recommendation. The RFS shall forward to AEE-200 a written rationale, prepared in coordination with the RPMES, ROSHM, and other qualified regional staff, for recommending whether or not the above data support a determination that bystander employees' exposure was in excess of the PEL's.

B. Determination. The determination of whether a *bystander employee* has received a recordable exposure in excess of either or both of the PEL's shall be made by AEE-200, following the review of all relevant information contained in paragraphs 2A(1) and 2A(2), plus the rationale for the recommendation submitted by the RFS. The review shall be performed in coordination with the Federal Air Surgeon or his designated representative within 30 days.

- (1) If the determination supports bystander employee exposure in excess of one or both of the PEL's then paragraph 1 applies.
- (2) If the determination does not support bystander employee exposure in excess of one or both of the PEL's, then no further action is required under the OSHA standards.

C. Report. A brief report detailing reasons for the determination pursuant to paragraph 2B shall be prepared by AEE-200 or designated representative and provided to the Federal Air Surgeon or his designated representative for inclusion in each applicable *bystander employee's* medical folder. A copy will be sent by AEE to the RFS who submitted the recommendation. The RFS will then use the report as notification to each affected *bystander employee* within 15 working days following the report's official date.

3. Retention of Records.

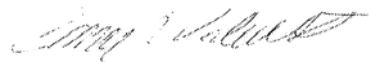
- A. Employee exposure records. Each employee exposure record shall be preserved and maintained for at least thirty (30) years.
- B. Employee medical records. Each employees's medical records shall be preserved and maintained for at least the duration of employment plus thirty (30) years.

This policy is effective immediately and is not retroactive, i.e., it affects only future unanticipated exposures as described on the first page of this policy memorandum. Employees already included in employee asbestos monitoring programs will not be removed from those programs.

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.

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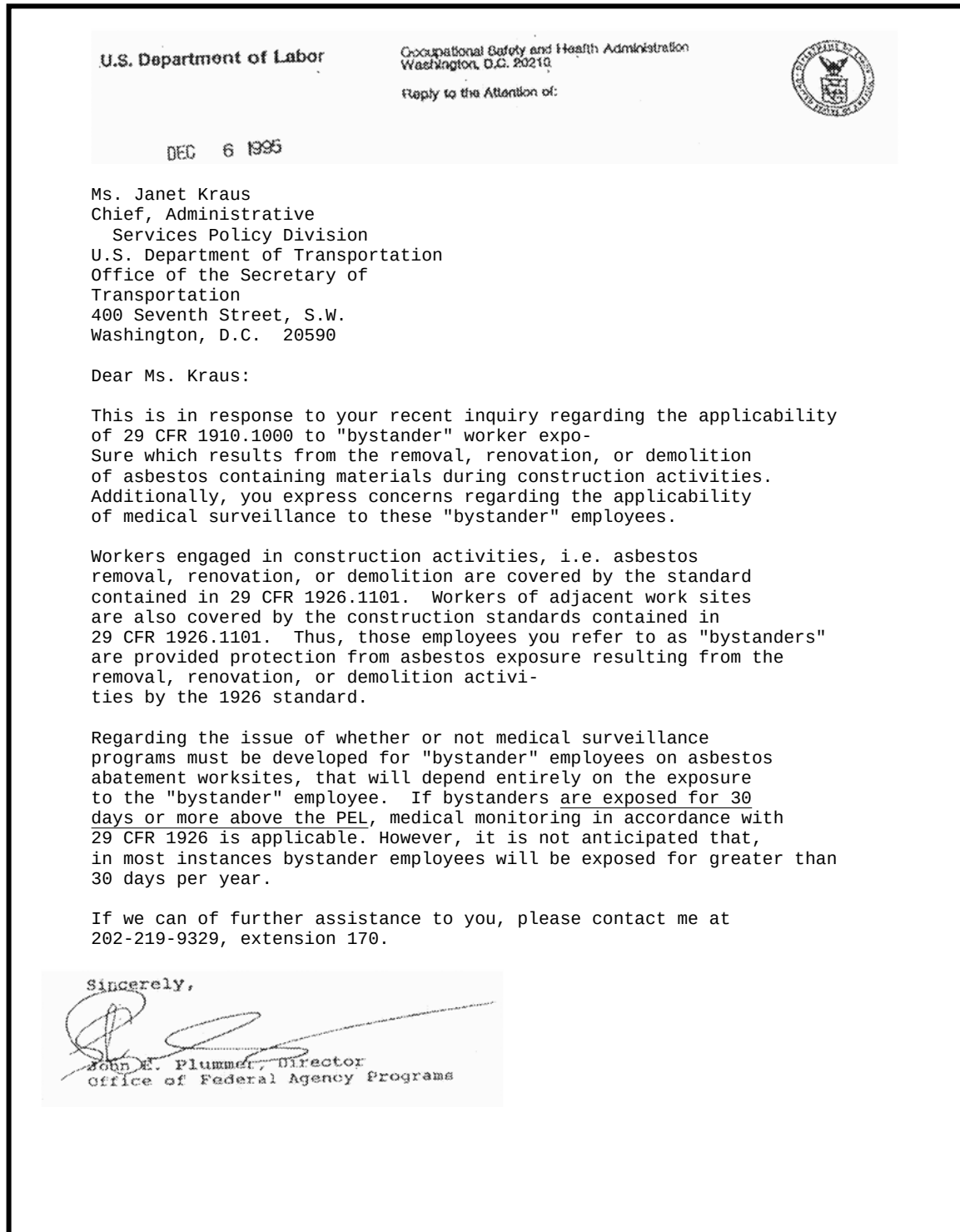
If you have questions concerning this policy, please contact Jeanne Kosch, Occupational Safety and Health Program Manager for Policy, AEE-200, at (202) 267-9719.



Barry L. Valentine

Attachment

Figure 15-1. POLICY MEMO #AEE09-01, MEDICAL SURVEILLANCE REQUIREMENTS FOR FAA EMPLOYEES FOLLOWING UNANTICIPATED, EPISODIC RELEASES OF ASBESTOS CONTAINING DUST, DATED DECEMBER 23, 1996, contd.



CHAPTER 16. THERMAL STRESS PREVENTION PROGRAM

1600. GENERAL. The Thermal Stress Prevention Program protects Federal Aviation Administration (FAA) employees from injury caused by exposure to extremely hot or cold environments in the course of their work duties.

Although there are no Federal regulations specifically for the protection of workers from thermal stress, there are domestic and international standards for the limits of safe exposure to both heat and cold. This chapter presents the key program elements and references to exposure criteria to be used for safeguarding employees. It does not apply to issues of thermal comfort, which are addressed in Chapter 18, Building Air Quality Programs.

1601. BACKGROUND. FAA employees work under a variety of thermal conditions, both indoors and outdoors. Some of those working conditions have the potential of creating thermal stress. Outdoor examples include accident investigation conducted at the scene in hot weather, repair and painting of radar antennas in southern locations in the summer, and winter inspection of remote facilities in Alaska. Indoor examples include routine maintenance procedures, such as those performed on air handling units, often in a hot attic, by a technician wearing personal protective equipment (PPE) for protection from asbestos fibers, and non-routine procedures, such as the removal of bird nest and debris from the rafters of old, unventilated warehouses, also while wearing PPE. The Thermal Stress Prevention Program will ensure awareness of potential problems by employees who might encounter thermal stress in the performance of their work duties, and their supervisors, and will provide guidelines for handling those problems.

1602. STANDARDS.

a. In Section 2 of the OSH Act of 1970, Congress declared the Act's purpose and policy "to assure so far as possible for every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources." However, the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) has published no regulations specifically for the protection of workers from heat stress or cold stress. The U.S. Department of Health and Human Services, National Institute of Occupational Safety and Health (NIOSH) and OSHA have issued advisory documents on heat stress, and the American Conference of Governmental Industrial Hygienists (ACGIH) has published an advisory document on cold stress. These advisory documents are consistent with standards on the subject published by the International Standards Organization (ISO). The ISO documents are widely referenced and used; they are legally binding on the FAA only if they are included in state or local laws, labor contracts, or other agreements.

b. The most recent detailed OSHA document is Section II, Chapter 4, Heat Stress, in Technical Manual Directive TED 1.15A (1/20/99). OSHA has also published fact sheets on both heat stress (95-16, Protecting Workers in Hot Environments - 1/1/95) and cold stress (98-55, Protecting Workers in Cold Environments - 12/22/98). The most recent NIOSH document on heat stress is Criteria for a Recommended Standard - Occupational Exposure to Hot Environments, Revised Criteria 1986, Publication No. 86-113, 1986. The ACGIH document on cold stress is Cold Weather Workers Safety Guide, Publication 9758 (1995). Their recommended exposure guidelines appear in TLVs® and BEIs®: Threshold Limit Values for Chemical Substances and Physical Agents; Biological Exposure Indices, published annually by the ACGIH in Cincinnati, OH.

c. The pertinent ISO standards (published in Geneva, Switzerland) are:

(1) Ergonomics of the thermal environment -- Estimation of the thermal insulation and evaporative resistance of a clothing ensemble, ISO 9920 (1995).

(2) Ergonomics of the thermal environment -- Principles and application of relevant International Standards, ISO 11399 (1995).

(3) Ergonomics of the thermal environment -- Medical supervision of individuals exposed to extreme hot or cold environments, ISO/DIS 12894 (1993).

(4) Hot environments -- Analytical determination and interpretation of thermal stress using calculation of required sweat rate, ISO 7933 (1989).

(5) Hot environments -- Examination of the heat stress on working man, based on the WBGT-index (wet bulb globe temperature), ISO 7243 (1989).

(6) Thermal environments -- Instruments and methods for measuring physical quantities, ISO 7726 (1985).

1603. DEFINITIONS.

a. Acclimatization. The physiologic changes which occur in response to a succession of days of exposure to environmental heat stress that reduce the strain caused by the heat stress of the environment.

b. Chilblain. A nonfreezing, painful cold injury which causes little or no permanent impairment. It appears as red, swollen skin which is tender, hot to the touch, and may itch. It can develop in only a few hours of exposure to moist cold.

c. Cold stress. The loss of body of heat in cold weather conditions, when the deep body temperature falls below 36°C (96.8°F). For the purposes of this document, cold stress conditions can be assumed to exist whenever the weather parameters dictate that the regular break schedule be modified, as indicated by the ACGIH guidelines.

d. Deep body temperature. The internal temperature of the human body. For normal functioning of organs, the body must regulate this temperature between 36°C (96.8°F) and 38°C (100.4°F).

e. Frostbite. A condition that involves local tissue destruction resulting from freezing. The skin becomes numb and turns to a gray or waxy-white color. The area will be cold to the touch and may feel stiff or wooden. Ice crystal formation and lack of blood flow to the frozen area damage the tissues.

f. Frostnip. A condition that involves freezing of water on the surface of the skin. The skin becomes reddened and swollen. Usually there is no further damage after re-warming.

g. Heat cramp. A heat-related illness characterized by spastic contractions of the voluntary muscles (mainly arms, hands, legs, and feet), usually associated with a restricted salt intake and profuse sweating without dehydration.

h. Heat exhaustion. A heat-related illness characterized by muscular weakness, distress, nausea, vomiting, dizziness, pale clammy skin, and fainting; usually associated with lack of heat acclimatization and physical fitness, low health status, and an inadequate water intake.

i. Heat rash. A condition, also known as prickly heat, which occurs when sweat glands are plugged and inflamed from exposure to heat, humidity, and sweat. Tiny blister-like red spots appear on the skin.

j. Heat stress. The buildup in the body of heat generated by the muscles performing work combined with the heat coming from hot environments, when the deep body temperature rises above 38°C (100.4°F). Mental performance can be affected with an increase of 2° F above normal (98.6°F), and death can result if the body temperature rises as much as 5° F. For the purposes of this chapter, heat stress conditions can be assumed to exist whenever the weather parameters dictate that the regular work regimen be modified, as indicated by the ACGIH guidelines.

k. Heat stroke. An acute medical emergency arising during exposure to heat from an excessive rise in body temperature and failure of the temperature regulating mechanism. It is characterized by a sudden and sustained loss of consciousness preceded by vertigo, nausea, headache, cerebral dysfunction, bizarre behavior, and body temperatures usually in excess of 41°C (105.8°F). Normally, there is a lack of sweating, and the skin feels hot and dry.

l. Heat syncope or heat collapse. The collapse and/or loss of consciousness during heat exposure without an increase in body temperature or cessation of sweating, similar to vasovagal fainting except heat induced.

m. Hypothermia. A life-threatening condition in which the body cannot generate heat as fast as it is being lost and the deep body temperature falls below 95° F. Symptoms of possible hypothermia include confusion, slurred speech, uncoordinated movements, altered vision, and withdrawn or bizarre behavior.

n. Metabolic heat. The heat generated within a person's body due to normal body functions as well as muscle contractions from increased activity or exercise.

o. Qualified person. A person capable by education and/or specialized training of anticipating, recognizing, and evaluating employee exposure to temperature extremes. This person will be capable of specifying the necessary controls and personal protective equipment to ensure worker safety.

p. Thermal stress. Heat stress or cold stress.

q. Trenchfoot. A very serious nonfreezing cold injury which develops when skin of the feet is exposed to moisture and cold for periods of 12 hours or more. The combination of moisture and cold softens skin, causing tissue loss and, often, infection. Untreated, trenchfoot may eventually require amputation. Often the first sign of trenchfoot is itching, numbness, or tingling pain. Also known as "immersion foot."

r. Wet Bulb Globe Temperature (WBGT) Index. A temperature measurement that combines the effects of radiant heat, humidity, air movement, and dry bulb temperature. It is an indicator of deep body temperature and can be measured using a commercially available WBGT instrument.

1604. KEY PROGRAM ELEMENTS.

a. Plan. A regional or center Thermal Stress Prevention (TSP) Plan shall be developed, implemented, and maintained where there is the potential for thermal stress illness. It shall be made available for inspection by employees and their authorized representatives. The Plan must include, at a minimum, the program elements identified in this paragraph (subparagraphs c through g below).

b. Program Administrator. A program administrator shall be designated to manage the regional or center TSP Program, and must meet the requirements of a "qualified person" (paragraph 1603o). The program administrator may coordinate program activities with other qualified persons in the region and center.

c. Employee Information and Training.

(1) Heat. All FAA employees, and their supervisors, whose work responsibilities include tasks where, if no preventive actions (e.g., work practice modifications, PPE) are taken, there is a risk of heat stress injury, must receive training in the seriousness of heat stress. The trainer must be approved by the program administrator, or by another "qualified person" designated by the program administrator. The employees must be taught the symptoms, treatment, and prevention of heat stress, including heat stroke, heat syncope, heat exhaustion, heat cramp, and heat rash. Employees should be alerted to the local conditions and sites which are potentially

problematic. In addition, employees must be furnished with a chart showing the maximum heat stress exposure limits and the required rest periods for different levels of work activity.

(2) Cold. All FAA employees and their supervisors, whose work responsibilities include tasks where, if no preventive actions (e.g., work practice modifications, PPE) are taken, there is a risk of cold stress injury, must receive training in the seriousness of cold stress. The trainer must be approved by the program administrator, or by another “qualified person” designated by the program administrator. The employees must be taught the symptoms, severity, treatment, and prevention of hypothermia, frostbite, frostnip, trenchfoot, and chilblain. Employees should be alerted to the local conditions and sites which are potentially problematic. In addition, employees must be furnished with a chart showing the maximum cold stress exposure limits and required warming periods for different combinations of temperature, wind speed, and work activity level.

(3) Risk Factors. Heat stress and cold stress training shall include discussion of the risk factors which vary according to the individual, including diseases (e.g., diabetes, heart, vascular, and thyroid problems), general physical fitness, age, and medications. Training shall also emphasize the importance of the individual remaining hydrated, with suggestions for what is likely to be required to accomplish this under various conditions.

(4) Refresher training on thermal stress exposure shall be conducted as needed. The need will be determined by the program administrator, based on an employee’s change of work location or demonstration of inadequate knowledge of thermal stress. The extent of the refresher training will be determined by the TSP program administrator or the qualified person.

d. Acclimatization. The TSP Plan shall address the issue of acclimatization, recognizing that work in conditions of high or low temperature extremes should, where feasible, be performed by workers acclimatized to those conditions.

e. Preventive Measures. The TSP Plan shall address the prevention of thermal stress by means of work practices, personal protective equipment, and engineering controls, as specified in the subparagraphs below:

(1) Work Practices. The TSP Plan shall require that specific work practices to reduce thermal stress are in place for all locations where thermal stress is likely to occur.

(2) Personal Protective Equipment (PPE). If appropriate for the region’s and/or center’s particular climatic or facility conditions, the TSP Plan shall include a section addressing the use of personal protective equipment as a means of thermal stress prevention.

(3) Engineering Controls. The TSP Plan shall require that appropriate engineering controls to reduce thermal stress are in place for all locations where thermal stress is likely to occur. This may include sheltered areas for necessary rest periods.

f. Program Evaluation. The TSP Plan shall include a section addressing periodic evaluation of the regional or center TSP Program.

g. Exposure Limits. The TSP Plan shall present exposure limits for thermal stress. The FAA adopts the limits set forth by the ACGIH in the current annual edition of TLVs[®] and BEIs[®]: Threshold Limit Values for Chemical Substances and Physical Agents; Biological Exposure Indices.

CHAPTER 17. BLOODBORNE PATHOGENS CONTROL PROGRAM

1700. GENERAL. This chapter establishes the requirements for a Federal Aviation Administration (FAA) bloodborne pathogens (BBP) control program and is a condensed version of the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogens Standard, 29 CFR 1910.1030. Refer to this CFR section and OSHA compliance documents if clarification is needed. The purpose of this program is to ensure the protection of FAA employees from exposure to hepatitis B virus (HBV), human immunodeficiency virus (HIV), and other bloodborne pathogens that they may encounter in their work. Additional implementation guidance should be developed as necessary by affected organizations.

1701. BACKGROUND. In January 1994, the Civil Aeromedical Institute (CAMI), published Order AC 3790.14, to apply only to CAMI employees and to students employed by CAMI who may be occupationally exposed to blood or other potentially infectious materials (OPIM). In September 1994, the Office of Accident Investigation implemented a BBP exposure control program for Accident Investigation personnel, (FAA Order 8020.11A, Chapter 11). These organizational policies will not be rescinded, but are to supplement this policy. Organization-specific policies should be reviewed to ensure they are in compliance with this chapter.

1702. GOALS AND OBJECTIVES. The objective of this FAA BBP control program is to ensure consistency of procedures to make certain that all FAA employees at risk are identified, covered by an organizational plan or program, and adequately informed about the risks involved, the procedures to follow, and the personal protective equipment (PPE) to use to minimize exposure to BBP.

1703. SCOPE. The requirements of this program apply to FAA employees who, in the course of their assigned duties, could reasonably be expected to come into contact with blood or OPIM via skin, eye, mucous membrane, or parenteral contact.

a. FAA employees who may have occupational exposures to bloodborne pathogens include aircraft accident investigators, health care workers, laboratory technicians, and designated first aid responders. FAA contractors and sub-contractors who have employees at risk for exposure to BBP must have their own BBP program and comply with 29 CFR 1910.1030. For the purposes of this chapter, persons responsible for conducting regulatory inspections to determine compliance with regulations on the safe transport of hazardous materials are not included as FAA employees who may have occupational exposure in the course of their assigned duties.

b. Unanticipated "Good Samaritan" acts such as one FAA employee voluntarily assisting another FAA employee with an injury or providing CPR in an emergency situation are not considered by OSHA to constitute "occupational exposure" and are therefore excluded from coverage by the BBP standard. However, since OSHA encourages employers to offer follow-up procedures to an employee who experiences an exposure incident as the result of performing a "Good Samaritan" act in the workplace, FAA will allow a medical consultation based upon current medical protocols for an employee involved in such an incident.

1704. DEFINITIONS..

a. Bloodborne Pathogens. Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

b. Designated First Aid Responder. An employee who, as a part of his or her job-related duties which are stipulated in writing (e.g., in the position description or performance plan), will respond to a workplace emergency situation and provide first aid if necessary. There are two categories of designated

responders: those who render assistance on a regular basis such as doctors and nurses, and those who render occasional assistance as a collateral duty.

c. Engineering Controls. Controls that isolate or remove the BBP hazard from the workplace.

d. Exposure Determination. A process by which a written list is developed of all the job classifications in which all employees in those job classifications have occupational exposure, as well as a list of job classifications in which some employees have occupational exposure, and a list of all tasks and procedures or groups of closely related tasks and procedures in which occupational exposure occurs and that are performed by employees in the job classifications listed.

e. Exposure Incident. A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or OPIM that results from the performance of an employee's duties.

f. Occupational Exposure. Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of an employee's duties.

g. Other Potentially Infectious Material (OPIM). Human body fluids including semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, all body fluids in situations where it is difficult or impossible to differentiate between body fluids and any unfixed tissue or organ (other than intact skin) from a human (living or dead).

h. Parenteral Contact. Piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

i. Personal Protective Equipment (PPE). Specialized clothing or equipment worn by the employee to protect against exposure to human blood or OPIM in the workplace. Examples are gowns, face shields, gloves, splash goggles, and resuscitator devices. General work clothes not intended to protect against a BBP hazard are not considered to be PPE.

j. Responsible Program Office. Any FAA organization having direct responsibility for the occupational safety and health of its employees, for example, the Office of Accident Investigation or the Office of Aviation Medicine. More information regarding occupational safety and health responsibilities may be found in Chapter 1 of Order 3900.19B.

k. Universal Precautions. An approach to infection control in which all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other BBP.

1705. KEY BLOODBORNE PATHOGENS PROGRAM ELEMENTS.

a. Exposure Control Plan (ECP).

(1) Each responsible program office with employees having a reasonable anticipation of occupational exposure to blood or OPIM shall develop and implement a written BBP ECP within their respective organizations which includes, at a minimum, the key BBP program elements. The ECP shall include detailed exposure determination information for affected employees, the method and schedule of implementation for all required compliance methods (para.1705b-e), and the procedure for the evaluation of exposure incidents.

(2) Each responsible program office with employees having a reasonable anticipation of occupational exposure to blood or OPIM shall prepare a written exposure determination which shall be made without regard to the use of PPE.

(3) The ECP shall be reviewed and updated at least annually and whenever necessary.

b. Methods of Compliance.

Each responsible program office with employees having a reasonable anticipation of occupational exposure to blood or OPIM shall:

(1) Designate a point of contact (POC) to whom exposure incidents shall be reported and who will ensure that the key program elements are carried out.

(2) Observe universal precautions to prevent or minimize contact with blood or OPIM. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

(3) Institute appropriate engineering and work practice controls.

(4) Provide appropriate personal protective equipment (PPE) at no cost to employees.

(5) Ensure that the worksite is maintained in a clean and sanitary condition and that any spills of blood or OPIM on work surfaces are cleaned with an appropriate disinfectant.

c. Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up.

(1) General. FAA shall make the hepatitis B vaccine and vaccination series available to all employees who have been determined to have risk for occupational exposure, and post-exposure evaluation and followup to all employees who have had an exposure incident. All medical evaluations and procedures shall be made available at no cost to the employee at a reasonable time and place, performed by or under the supervision of a licensed physician or other licensed healthcare professional, and provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place.

(2) Hepatitis B Vaccination.

(a) The hepatitis B vaccination shall be made available after receiving the required training and within 10 working days of initial assignment to all employees who have occupational exposure. These requirements do not apply if the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

(b) In the case of a collateral duty, designated first aid responder, the vaccination may be deferred until the employee renders assistance in a first aid incident involving the presence of blood or OPIM, at which time the hepatitis B immune globulin (HBIG) must be offered within 72 hours of the exposure incident.

(c) If the employee initially declines hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the vaccination shall then be made available.

(d) All employees who decline the hepatitis B vaccination offered shall sign the OSHA-required waiver indicating their refusal. FAA Form 8020-22, Hepatitis B Virus Vaccination Consent/Decline Form may be used and should be filed in the employee's Official Personnel File (OPF).

(e) If a routine booster dose of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster doses shall be made available.

(3) Post-Exposure Evaluation and Follow-up. Following a report of an exposure incident, the corresponding Regional Flight Surgeon office or the Occupational Health Division shall make a confidential medical evaluation and initial treatment available to the employee within 24 hours. The evaluation and follow-up shall be in accordance with 29 CFR 1910.1030.

(4) Information Provided to the Healthcare Professional. The healthcare professional responsible for the employee's exposure incident evaluation shall be provided with a copy of 29 CFR 1910.1030, a written description of the exposed employee's duties as they relate to the exposure incident, written documentation of the route of exposure and circumstances under which exposure occurred, results of the source individual's blood testing, if available, and all medical records relevant to the appropriate treatment of the employee including vaccination status.

(5) Healthcare Professional's Written Opinion. The affected employee shall be provided with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation. The healthcare professional's written opinion for hepatitis B vaccination shall be limited to whether the vaccination is indicated for an employee, and if the employee has received such vaccination. The healthcare professional's written opinion for post exposure followup shall be limited to a statement that the employee has been informed of the results of the evaluation and a statement that the employee has been told about any medical conditions resulting from exposure to blood or OPIM which require further evaluation or treatment. All other findings or diagnoses shall remain confidential and shall not be included in the written report.

d. Communication of Hazards to Employees.

(1) Labels. The universal biohazard symbol shall be used and labels shall be fluorescent orange or orange-red. Red bags or containers may be substituted for labels. Regulated wastes must be handled in accordance with the rules and regulations of the applicable Federal, state, or local regulatory agency.

(2) Training to be Provided for Employees. Training shall be provided at the time of initial assignment to tasks where occupational exposure may occur and shall be repeated annually within 12 months of the previous training. Training content shall be as specified in 29 CFR 1910.1030, tailored to the education and language level of the employee, and offered during the normal work shift. The individual conducting the training shall be knowledgeable in the subject matter and allow for interactive questions and answers.

e. Recordkeeping.

(1) Medical Records. An accurate record shall be established and maintained for each employee with an occupational exposure to BBP. The records shall be kept confidential and maintained for the duration of the individual's employment plus 30 years. The records shall include the following:

- (a) The name and social security number of the employee.
- (b) A copy of the employee's HBV vaccination status, including the dates of vaccination.
- (c) A copy of all results of examinations, medical testing, and follow-up procedures.
- (d) A copy of the information provided to the healthcare professional, including a description of the employee's duties as they relate to the exposure incident, documentation of the routes of exposure and circumstances of the exposure, a copy of the healthcare professional's written opinion, and any other relevant information.

(2) Training Records. Training records shall be established and maintained to document the training received by affected employees. The records shall be maintained for three years from the date of training and shall contain the following information:

- (a) The dates of the training sessions.
- (b) An outline describing the material presented.

(c) The names and qualifications of persons conducting the training.

(d) The names and job titles of all persons attending the training sessions.

(3) Availability of Records. All employee medical and training records shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health, for examination and copying. Employee training records shall be provided upon request for examination and copying to employees or employee representatives. Employee medical records shall be provided upon request for examination and copying to the subject employee or to anyone having written consent of the subject employee.

(4) Reporting of Incidents. All BBP exposure incidents should be reported in the same manner as any other occupational injury or illness as described in Order 3900.19B, Chapter 7.

CHAPTER 19. FAA HAZARD COMMUNICATION PROGRAM

1900. GENERAL. This chapter establishes minimum requirements for the evaluation of potential hazards for all chemicals used by the FAA as well as the evaluation of the potential for non-user exposure to hazardous chemicals, both of which require the transmission of that information to managers and employees under the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA), *Hazard Communication* Standard (HCS), 29 CFR 1910.1200. Additional implementation guidance will be developed by responsible organizations to support this policy, and shall be followed.

1901. BACKGROUND. OSHA promulgated its HCS to provide workers with the right to know the hazards and identities of the chemicals they are exposed to while working, as well as the measures they can take to protect themselves. According to the National Institute for Occupational Safety and Health (NIOSH) there may be over 650,000 hazardous chemicals used in the workplace, and some 40-50,000 manufacturing workers experienced chemical source injuries and illnesses each year. There is no expectation that chemical exposure is widespread in the FAA; however, there is sufficient exposure to warrant a program of employee protection.

1902. SCOPE. This chapter applies to all personnel in FAA-owned or leased buildings and/or facilities and all FAA personnel in General Services Administration (GSA)-controlled buildings and/or facilities. This includes, but is not limited to, employees involved in purchasing, receiving, using, and disposing of chemicals in the workplace. This chapter also covers employees who do not use hazardous chemicals but who may be exposed to chemicals during normal operations or in a foreseeable emergency; e.g., boiler maintenance, aircraft accident investigation, or aircraft certification inspections. FAA contractors and sub-contractors who use or transport chemicals must have their own hazard communication program and comply with paragraph 1905d of this chapter. *Exceptions:* The HCS and this chapter have limited application for laboratories and distributors like the Logistics Center at the Aeronautical Center. (See paragraphs 1910.1200(b)(3) and (4) of the HCS.) Also, office workers who occasionally change the toner in copying machines are not covered by the HCS.

1903. GOALS AND OBJECTIVES.

a. Before any employee is exposed to any chemical in the workplace, the health and physical hazards of that chemical shall be evaluated, and the information obtained from that evaluation shall be communicated to the employee, including methods of protection from the hazards.

b. All FAA organizations shall review their acquisition procedures to ensure that purchased or otherwise acquired chemicals are evaluated for hazard potential, that their containers are labeled in accordance with the HCS, and that a Material Safety Data Sheet (MSDS) is available at the worksite prior to use.

c. All chemicals used or stored in FAA workplaces that are covered by the HCS shall be identified for inclusion in an annually updated inventory or listing.

d. An effort to identify reasonably foreseeable non-use exposure to hazardous chemicals in FAA workplaces or work sites shall be undertaken for the purpose of communicating to employees the potential for exposure and ways that the potential for exposure can be eliminated or reduced.

1904. DEFINITIONS.

a. Carcinogen. A substance that can cause cancer in humans. See 1910.1200(d)(4) for names of publications accepted by OSHA as sources of information for establishing the carcinogenicity of chemicals.

b. Chemical. Any element, compound, product, or mixture of elements and/or compounds as liquids, solids, gases, vapors, or fumes that are stored, handled, used, or disposed of at FAA facilities. As defined by the OSHA standard, chemicals do not include foods, medicine, or items prepared and used for personal consumption. It does not include any consumer product or hazardous substance (such as office supplies) used in the workplace

for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended.

c. Excessive exposure. An exposure to a hazardous chemical that is in excess of an OSHA standard for toxic and hazardous substances listed in Subpart Z of the regulations or, in the absence of a quantitative OSHA standard, in excess of current Threshold Limit Values published by the American Conference of Governmental Industrial Hygienists or current Recommended Exposure Limits published by the National Institutes for Occupational Safety and Health. An FAA medical officer or certified industrial hygienist may be consulted to determine if an exposure is excessive.

d. Exposure. The process in which an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g., accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g., inhalation, ingestion, skin contact, or absorption.)

e. Exposure evaluation. Exposures through inhalation can be measured by monitoring airborne levels of the chemical and comparing estimates of exposure durations with work shifts and duties. Evaluation of exposures through ingestion and contact with the skin must include determining the concentration of the chemical, duration of contact with different parts of the anatomy, and other factors.

f. Hazard determination. The determination of whether a chemical potentially could cause a physical or health hazard when stored, used, handled, disposed, or if otherwise known to be present during the performance of workplace duties.

g. Hazardous chemical. Any chemical which is a physical hazard or a health hazard.

h. Hazardous chemical inventory. An annually updated list of all hazardous chemicals in each facility. The list includes the product and manufacturer's name and other appropriate information, and is maintained with that facility's written hazard communication plan.

i. Health hazard. A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. Appendix A of the HCS provides additional information on what constitutes a health hazard.

j. Material Safety Data Sheet (MSDS). An MSDS provides detailed information (see the HCS for detailed requirements) on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics, recommendations for appropriate protective measures, and safe disposal. A manufacturer must prepare an MSDS if a product contains 1% or more of a hazardous chemical and/or 0.1% or more of a hazardous chemical that is also a carcinogen. Additional research may be conducted on each chemical; however, MSDSs that contain all required information will be regarded as adequate for the agency program.

k. Physical hazard. A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.

l. Written hazard communication program. A written, facility-specific plan that contains details on how the facility will comply with the HCS, and procedures that will be followed to effectively control and manage the acquisition, use, and disposal of hazardous chemicals. A written hazard communication program is also required if employees are exposed to hazardous chemicals known to be present in a workplace, and must be developed whether FAA generates the hazard or the hazard is generated by another employer.

1905. KEY PROGRAM ELEMENTS. A hazard communication program manager shall be appointed in writing to coordinate overall implementation and oversight of the Hazard Communication Program for all FAA lines of business, both at headquarters and in the regions and centers, where chemicals are used or may be encountered as described in this chapter. Prior to the acceptance of a chemical from an outside manufacturer or the use of any chemical by FAA employees, and prior to the exposure of non-chemical-using employees to hazardous chemicals, a written hazard communication program must be developed and implemented in accordance with applicable sections in the HCS. The written program must be available before an employee may be exposed to chemicals and contain at least the following elements:

a. Hazardous Chemical Identification. A hazard determination must be performed and a hazardous chemicals list prepared, and updated annually, of chemicals and chemical products in the workplace that meet OSHA's definition of a hazardous chemical. See 1910.1200(d) and Appendices A and B of the HCS for assistance. The list must address chemicals in all physical forms. The hazardous nature of the chemical and the potential for exposure are the factors that determine whether a chemical is covered.

b. MSDS. A MSDS must be obtained for each hazardous chemical in the workplace. Procedures must be established to ensure that MSDS's are requested for all newly acquired chemicals, purchased or otherwise. If an MSDS is not found for any hazardous chemical, one must be obtained, if available. MSDS's must be made readily accessible to employees when they are in their work areas during their work shifts. For non-user exposure to chemicals, every effort shall be made to obtain applicable MSDS's or comparable information.

c. Labels and Other Forms of Warning.

(1) In addition to the information available from an MSDS, containers of hazardous chemicals used in the workplace must be labeled in English, tagged, or marked with the identity of the material and appropriate hazard warnings. In this way, when an employee picks up a container containing a chemical, he/she can read immediately what are the hazards of that chemical, and what he/she must do to use the chemical safely. Chemical manufacturers, importers, distributors, or other responsible parties are required to ensure that every container of hazardous chemicals they ship is appropriately labeled.

(2) If a chemical is subsequently transferred in the workplace from a labeled container to another container (for example, a maintenance worker fills a can with some kind of cleaner from a large labeled drum), the individual transferring the chemical will have to label that smaller container with the identity of the material and appropriate hazard warnings. *Exception:* Labeling of the container is not required if the transferred chemical is for the immediate use of an individual and will be under the control of, and used only by, the person who transfers it from a labeled container and only within the work shift in which it is transferred.

d. Requirements for Contractors or Other Outside Personnel.

(1) Whenever contractors or other outside servicing personnel are engaged in work on an FAA-owned or controlled site that may expose them to hazardous chemicals already present at the site, the FAA shall provide the contractors with on-site access to MSDS's for each hazardous chemical the contractor's employees may be exposed to while working; information regarding precautionary measures (e.g., engineering controls or personal protective equipment (PPE)) that need to be taken to protect employees during normal operating conditions and in foreseeable emergencies; and information concerning the labeling system used in the workplace. Contractors will be responsible for providing their own PPE.

(2) Whenever contractors bring hazardous chemicals onto any FAA-owned or controlled site, they must provide the facility manager with copies of MSDS's for each chemical they bring on-site; provide information regarding precautionary measures (e.g., engineering controls) they will take to avoid excessive exposure to FAA employees; and post copies of the MSDS's adjacent to the work project. FAA safety staff and/or representatives will evaluate whether additional engineering controls or PPE should be provided to FAA employees who may be

working in or near the construction work activity.

e. Employee Information and Training.

(1) Each FAA employee who may be exposed to hazardous chemicals must be provided information and training prior to initial assignment to work with a hazardous chemical, and again when the hazard changes. Information and/or training also must be provided to employees who do not use chemicals but who may be exposed to hazardous chemicals during normal work operations or during foreseeable emergencies.

(2) Information and training may be done either by individual chemical, or by categories of hazards (such as flammability or carcinogenicity). If there are only a few chemicals in the workplace or at the work site, then each one can be discussed individually.

(3) Training shall include methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area or at the work site.

(4) Training shall include specific procedures to be followed when performing non-routine tasks, or when potential exists for exposure to chemical agents in unlabeled pipes or equipment.

f. Employee Notification Requirements in Facilities. Employees who will not be engaged in the use or handling of hazardous materials shall be notified by management of the types of hazardous chemicals that are planned for use in the facility, appropriate safety information, and procedures to follow in the event of an emergency. In situations where more than one line of business work in the same building, the official authorizing the use of chemicals in the facility shall be responsible for notifying applicable other local management officials, associated labor organization representatives, and safety and health representatives at that location.

g. Program Evaluation. The written hazard communication program shall include a paragraph addressing periodic evaluation and updating of the region's/center's hazard communication program.

CHAPTER 20. RESPIRATORY PROTECTION PROGRAM

2000. GENERAL. This chapter establishes minimum requirements for the acquisition and use of respirators under the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA) Respiratory Protection Standard, 29 CFR 1910.134 and the corresponding standard for construction, 29 CFR 1926.103. The FAA Respiratory Protection Program (RPP) is designed to minimize occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays or vapors. The FAA will provide applicable and suitable respirators at no cost to FAA employees when such equipment is necessary to protect the health of the employee. Additional implementation guidance will be developed by responsible organizations to support this policy, and shall be followed.

2001. BACKGROUND. On January 8, 1998, OSHA published its revised respiratory protection standard and estimated that its strengthened requirements would provide additional protection to approximately 5 million workers who use respirators at one time or another in 1.3 million establishments nationwide. Within the FAA, respirators are worn periodically by employees in Airway Facilities, Aviation System Standards, Flight Standards Service, Aviation Medicine, the shops at the Aeronautical Center's Logistics Center, the Aircraft Certification Service, the Office of Accident Investigation, and in several other organizations. Emergency-use respirators (including programs for their use) have been established at certain Air Traffic facilities and at FAA research and toxicology laboratories.

2002. SCOPE. This chapter applies to all FAA personnel who are required to purchase (through facility acquisition procedures), maintain, or wear respirators. It also applies to employees providing or overseeing medical or training services to those using respirators. FAA contractors and sub-contractors are responsible for providing a RPP for their own employees. This chapter does not apply to pilot oxygen masks, which are covered by other applicable FAA regulations.

2003. GOALS AND OBJECTIVES.

a. The goal of the FAA RPP is to safeguard employees' health by preventing exposure to respiratory hazards in the workplace. This will be accomplished as far as feasible by accepted engineering control measures. When accepted engineering controls are not feasible, or while they are being instituted, appropriate respirators may be used as specified in this chapter and associated guidance. Respirators also may be used when there is no feasible alternative, often in an emergency situation, and only after procedures have first been established for their use and maintenance.

b. OSHA substance-specific standards, such as those for asbestos (29 CFR 1910.1001 and 29 CFR 1926.1101) and lead (29 CFR 1910.1025 and 29 CFR 1926.62), include additional specific requirements for the use of respiratory protection when these contaminants are present in the workplace.

2004. DEFINITIONS.

a. Air-purifying respirator. A respirator with an air-purifying filter, cartridge, or canister designed to remove specific air contaminants by passing ambient air through the air-purifying element.

b. Atmosphere-supplying respirator. A respirator that supplies the wearer with breathing air from a source independent of a contaminated atmosphere, including supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

c. Canister or cartridge. A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific air contaminants from the air passed through the container.

d. Emergency-use/escape respirators. Respirators required for safe egress from a workplace that experiences an occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant resulting in employee exposure.

e. Employee exposure. Refers to the concentration of an airborne contaminant that would occur if the employee were not using a respirator.

f. Filter or air purifying element. A component used in respirators to remove solid or liquid aerosols from the inspired air.

g. Filtering facepiece (dust mask). A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

h. Fit test. The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

i. Immediately dangerous to life or health (IDLH). An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effect, or would impair an individual's ability to escape from a dangerous atmosphere.

j. Negative pressure respirator (tight fitting). A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

k. Physician or other licensed health care professional (PLHCP). An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of 29 CFR 1910.134.

l. Positive pressure respirator. A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

m. Powered air-purifying respirator (PAPR). An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

n. Qualitative fit test. A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to a test agent.

o. Quantitative fit test. An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

p. Self-contained breathing apparatus (SCBA). An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the wearer.

q. Supplied-air respirator (SAR) or airline respirator. An atmosphere supplying respirator in which the breathing air is not designed to be carried by the wearer.

r. User seal check. A required action conducted by the wearer to determine if the respirator is properly seated to the face prior to entering the hazard area.

2005. KEY RESPIRATOR PROGRAM ELEMENTS. The program must be administered by a suitably trained program administrator (hereafter referred to as "program administrator.") The program

administrator shall be appointed in writing to administer overall implementation and oversight of the RPP for all applicable FAA lines of business, both at headquarters and in the regions/centers.

a. Written Respiratory Protection Program.

(1) Prior to an FAA employee wearing a respirator, a written, worksite-specific respiratory protection program ("written RPP") must be developed and implemented in accordance with the specific requirements of 29 CFR 1910.134. This plan must be updated as necessary to reflect those changes in workplace conditions that affect respirator use, and must contain at least the elements in paragraphs b through l below.

(2) Where respirator use is not required:

(a) If an employee requests a respirator that is not required, the FAA may provide a respirator, or permit the employee to use his/her own respirator, provided it has been determined that such respirator use will not in itself create a hazard.

(b) Except for dust masks, the FAA must implement those elements of the written RPP necessary to ensure that the employee is medically able to use the respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user.

(c) The written RPP is not required to include those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

b. Respirator Acquisition. Acquisition procedures shall be established to ensure that only respirators certified by the National Institute for Occupational Safety and Health (NIOSH) are purchased by the FAA for employee use. (Note: Surgical masks are not certified by NIOSH as respiratory protection.) Also, if respirators are purchased by employees for their voluntary use, Appendix D of the OSHA Respiratory Protection Standard requires that the respirators be NIOSH-certified.

c. Respirator Selection.

(1) Procedures must be developed to ensure that proper respirators are selected to protect employees to the extent required by the OSHA Respiratory Protection Standard or other OSHA substance-specific standard which requires respirator use.

(2) Respirator selection shall be based on an evaluation of all identified workplace, wearer, and equipment factors which affect required fit and performance in accordance with paragraph 1910.134(d) of the standard.

(3) The evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where the employee exposure cannot be estimated, the atmosphere shall be considered Immediately Dangerous to Life or Health (IDLH).

d. Medical Evaluation and Determination of Eligibility.

(1) A medical evaluation by a physician or other licensed health care professional (PLHCP) approved by Aviation Medicine shall be administered to an employee in accordance with 29 CFR 1910.134(e) to determine his/her ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace.

(2) The evaluation shall be administered confidentially during the employee's normal working hours.

(3) The PLHCP shall utilize the standard's medical questionnaire or a medical examination that obtains the same information as the medical questionnaire, and supplemental information as specified in the standard, in his/her evaluation.

(4) In determining an employee's ability to use a respirator, the program administrator shall obtain a written recommendation from the PLHCP regarding the employee's medical eligibility for respirator use, including any limitations on respirator use, or need for follow-up medical evaluations.

(5) If the respirator under consideration is a negative pressure respirator and a PLHCP has determined that use of the respirator could put an employee at increased risk, a powered air purifying respirator (PAPR) shall be provided to the employee, provided the PLHCP supports such use.

(6) Additional medical evaluations shall be performed if:

(a) An employee reports medical signs or symptoms that are related to medical eligibility for respirator use;

(b) The PLHCP, supervisor, or the program administrator determines that an employee needs to be reevaluated;

(c) Information from the RPP or related guidance, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation;

(d) Medical evaluations conducted by previous employers indicate a potential problem; or

(e) A change occurs in workplace conditions (e.g., physical work effort, temperature, humidity, exposure conditions, type/weight of respirator) that results in a substantial increase in the physiological burden placed on an employee.

e. Respirator Fit Testing. Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used (29 CFR 1910.134(f)). Written procedures for ensuring a proper facepiece seal must include the kinds of fit tests allowed, the methodology for testing, and how the results of the fit tests must be used. Fit-testing shall be repeated at least annually.

(1) Employees using a tight-fitting facepiece must pass an appropriate qualitative or quantitative fit, administered in accordance with OSHA-accepted protocols and procedures.

(2) Additional fit tests must be conducted whenever a different facepiece is used, or whenever the employee, PLHCP, supervisor, or the program administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit, such as dental changes or an obvious change in body weight.

f. Respirator Use. Procedures shall be established and implemented to ensure proper use of respirators in accordance with paragraph 1910.134(g) of the standard. These procedures must include at least the following: prohibitions against conditions which may result in facepiece seal leakage, such as beards or other facial hair that will not allow a proper seal; requiring employees to perform user seal checks; preventing employees from removing respirators in hazardous environments; actions to take to ensure continued effective respirator operation throughout the work shift; and establishing procedures for the use of respirators in IDLH atmospheres, if applicable.

g. Maintenance and Care. A procedure must be established in accordance with paragraph 1910.134(h) of the standard for the cleaning and disinfecting, storage, inspection, and repair of respirators used by FAA employees.

h. Breathing Air Quality and Use. A procedure must be established for providing FAA employees using atmosphere-supplying respirators (e.g., supplied-air respirator and Self-Contained Breathing Apparatus (SCBA)) with compressed breathing air that meets at least the requirements for Grade D breathing air in accordance with the specifications in paragraph 1910.134(i) of the standard.

i. Identification of Filters, Cartridges, and Canisters. A procedure must be established to ensure that all filters, cartridges, and canisters used in the FAA workplace are labeled and color coded with the NIOSH approval label, and the label remains legible and intact.

j. Training.

(1) Supervisor Training. Supervisors shall be trained as necessary to support the RPP, and to ensure that employees are using their respirators in accordance with OSHA requirements.

(2) Employee Information and Training.

(a) Employees required to wear respirators, including those who may potentially wear respirators for emergency-use/escape, must receive annual training from instructors competent by training and experience to provide the training, and the training must impart an understanding of how to use respirators properly. Training may be more frequent under certain conditions specified in 29 CFR 1910.134(k)(5). The training should be given in non-technical language appropriate to the level of education, language proficiency, and experience of those being trained.

(b) Training shall conform to at least the elements specified in 29 CFR 1910.134k(1). To ensure that the training has been effective, before an employee is allowed to wear a respirator he/she must be able to demonstrate (1) an understanding of the training required, and (2) the ability to use the respirator properly. All training shall provide an opportunity to handle the respirator, have it fitted properly, test its face-to-facepiece seal, wear it in normal air for a long familiarity period, and finally, to wear it in a test atmosphere.

(c) When the voluntary use of any respirator is permitted (including dust masks), the employee must be provided the information contained in Appendix D of the OSHA standard.

k. Program Evaluation. Periodic inspections of the workplace, conducted in accordance with 29 CFR 1910.134(l), shall be performed by the program administrator to ensure that the written RPP is being properly implemented and that it continues to be effective. The program administrator shall also consult employees required to wear respirators to ensure they are being properly used.

l. Recordkeeping. The program administrator shall retain fit test records until the next fit test is administered, and a current copy of the written RPP. Records of employee medical evaluations shall be retained by Aviation Medicine and made available to employees and employee representatives in accordance with 29 CFR 1910.1020. Employee training records may be destroyed when 5 years old or when superseded or obsolete, whichever is sooner, in accordance with approved records retention standards in FAA Order 1350.15.

CHAPTER 21. HEARING CONSERVATION PROGRAM

2100. GENERAL. This chapter establishes minimum requirements for a Federal Aviation Administration (FAA) Hearing Conservation Program (HCP) as required by 29 CFR 1910.95, Occupational Noise Exposure. Additional implementation guidance will be developed by responsible organizations to support this policy, and shall be followed.

2101. BACKGROUND. Exposure to high levels of noise can cause hearing loss. The nature and extent of the hearing loss depends upon the intensity and frequency of the noise and the duration of the exposure. Noise-induced hearing loss may be temporary or permanent. Temporary loss results from short-term exposure to noise. Normal hearing returns after a period of rest. If exposures continue for extended periods of time, the temporary losses may become permanent. Noise-induced hearing loss resulting from prolonged exposure is irreversible, but it can be arrested and it can be prevented. The OSHA noise standard and the HCP prescribed in this chapter are designed to identify potentially hazardous noise areas or occupations, to reduce the noise to acceptable levels, if feasible, and, if not, to provide proper protection and monitoring for those employees who are exposed.

a. Exposure criteria. The OSHA noise standard requires every employer to establish and administer a continuing HCP for all employees whose 8-hour time-weighted average (TWA) noise exposures equal or exceed an “action level” of 85 dBA. The OSHA noise standard established 90 dBA as the 8-hour TWA permissible noise exposure for continuous noise, with allowable increases of 5 dBA for each halving of exposure duration, up to a maximum of 115 dBA (Figure 21-1).

b. Engineering controls as first line of defense. The OSHA noise standard specifies that feasible administrative or engineering controls shall be utilized to reduce sound levels within the levels shown in Figure 21-1, and, if such controls fail to accomplish that reduction, personal protective equipment shall be provided and a continuing effective HCP administered. The employer must provide hearing protection for affected employees, institute workplace and/or employee exposure monitoring, provide employees with training, and establish an audiometric testing program.

2102. CANCELLATION. FAA Order 3910.04, Hearing Conversation Program, dated September 13, 1985, is cancelled.

2103. SCOPE. This chapter applies to all FAA personnel whose work duties include potential for exposure to workplace noise levels that meet or exceed those specified in the OSHA noise standard.

2104. GOALS AND OBJECTIVES. The goal of the FAA HCP is to safeguard employees' health by protecting employees from exposure to noise hazards in the workplace. This will be accomplished as far as feasible by accepted engineering control measures. When accepted engineering controls are not feasible, or while they are being established, appropriate hearing protection shall be used as specified in this chapter and associated guidance.

2105. DEFINITIONS.

a. Action Level (AL). An 8-hour time-weighted-average noise level of 85 dBA or, equivalently, a noise dose of 50 percent, at which the agency must notify affected employees, develop and implement employee exposure monitoring programs, administer continuing, effective hearing conservation programs, and make hearing protectors available to affected employees.

b. Administrative control. A procedure or policy exercised by a supervisor for protecting employees from harmful noise levels by limiting their exposure time.

c. Area monitoring. Measuring noise levels with sound level meters or noise dosimeters at different locations in the workplace and at different times during the work shift sufficient to make reliable estimates of employee noise exposures.

d. Audiogram. A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

e. Audiologist. A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.

f. Baseline audiogram. The audiogram against which future audiograms are compared.

g. Continuous noise. Broadband noise of approximately constant level and spectrum, to which an employee is exposed for a period of eight hours per day, 40 hours per week.

h. dBA. Sound level in decibels read on the A-scale of a sound level meter. The A-weighting network discriminates against lower and higher frequencies (and for some of the middle frequencies) of an acoustic signal. The A-Weighting network correlates with the response of the human ear to noise at various frequencies.

i. Decibel (dB). A unit related to the logarithm of the ratio of a measured quantity to a reference quantity. It is commonly used to describe levels of sound power, sound pressure, electric voltage, electric power, etc.

j. Engineering control. A means of protecting employees from harmful noise levels by reducing the noise before it reaches the exposed employee by mechanical intervention or design criteria.

k. Hearing loss. A Standard Threshold Shift (STS) which is a change in hearing threshold by an average of 10 decibels (dB) or more at 2,000, 3,000, and 4,000 hertz (Hz) in either ear relative to the current reference baseline.

l. Hertz (Hz). Unit of measurement of frequency numerically equal to cycles per second (cps). 1 Hz = 1 cps.

m. High noise area. Any area where the cumulative noise exposure to employees is above 85 dBA TWA, or a 50% dose.

n. Impulse noise. Noise that is characterized by a sharp rise in sound pressure level to a high peak followed by a rapid decay (e.g., drop forge or gunshot).

o. Intermittent noise. Noise that ceases or subsides between events (e.g., aircraft flyovers).

p. Noise dosimeter. A device, worn by an employee that integrate measurements of sound pressure levels over a period of time in such a manner that it directly indicates the accumulated exposure (dose) and other indices that can be calculated from noise measurements.

q. Noise measurement. A measurement obtained through the integration of all continuous, intermittent, and impulse sound levels from 80 to 130 decibels for the duration of an employee's exposure.

r. Noise Reduction Rating (NRR). The NRR, which indicates a hearing protector's noise reduction capabilities, is a single-number rating (units are in dB) that is required by law to be shown on the label of each hearing protector sold in the United States.

s. Otolaryngologist. A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.

t. Personal monitoring. Measuring employee noise exposure with a noise dosimeter mounted on the employee and the dosimeter microphone positioned near the employee's ear.

u. Qualified audiometric technician. A technician who has been certified by the Council for Accreditation in Occupational Hearing Conservation, or one who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining, and checking calibration and proper functioning of the audiometers being used. The audiometric technician must be supervised by an audiologist, otolaryngologist, or physician.

v. Revised baseline. An annual audiogram that has been substituted for the baseline audiogram, when, in the judgment of the audiologist, otolaryngologist, or physician who is evaluating the audiogram, the STS revealed by the audiogram is persistent, or the hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram. (Reference 29 CFR 1910.95(g)(9).

w. Sound level. The sound pressure level reported in decibels.

x. Sound level meter. A device that measures in decibels the intensity of sound at a given moment.

y. Standard Threshold Shift (STS). A change in hearing threshold relative to the baseline audiogram of 10 decibels or more at 2000, 3000, and 4000 hertz (Hz) in either ear.

z. Time-weighted average (TWA) sound level. That sound level, which if constant over an 8-hour exposure, would result in the same noise dose or sound level as is measured.

2106. KEY PROGRAM ELEMENTS. The program must be administered by a suitably trained HCP administrator (hereafter referred to as "program administrator.") A program administrator for each affected line of business shall be appointed in writing to administer overall implementation and oversight of the HCP for all applicable FAA lines of business, both at headquarters and in the regions/centers. The HCP administrator shall meet the requirements for a technically qualified safety professional as contained in 3900.19B, Chapter 1, paragraph 11h.

a. Written Hearing Conservation Program. Prior to a FAA employee's inclusion in the HCP, a written, worksite-specific hearing conservation program must be developed and implemented in accordance with the specific requirements of 29 CFR 1910.95. This program must be updated as necessary to reflect those changes in workplace conditions that affect noise exposure and/or the use of hearing protection devices, and must contain at least the elements in paragraphs 2106 b through h.

b. Noise Evaluation and Monitoring.

(1) Occupational noise exposure levels shall be monitored by a technically qualified safety professional in a manner that is consistent with 29 CFR 1910.95, and so as to identify employees who are exposed to levels equal to or greater than the 85 dBA, 8-hour TWA (50 per cent dose) Action Level (AL). Measurements shall be made with a sound level meter on the A-Weighting scale, slow response, or a dosimeter.

(2) All continuous, intermittent, and impulsive sound levels from 80 dB to 130 dB shall be integrated into the noise measurements. Although area monitoring is permitted, personal dosimetry monitoring is preferred. Employee representatives shall be permitted to observe monitoring procedures and shall be notified of the results.

(3) When monitoring reveals that the 8-hour TWA exposure level is:

(a) Less than 85 dBA (or 50 per cent dose), no further action is required.

(b) Equal to or greater than the AL, the affected employee(s) shall be provided hearing protection and placed in a Hearing Conservation Program.

(4) Measurement of potentially hazardous sound levels shall be conducted when any information, observation, or calculation shows that an employee could be exposed to a noise level in excess of 85 dBA TWA. This includes, but is not limited to times where there is a need to document representative noise exposures, where employees complain of excessive noise, or where it is difficult to understand a normal conversation when the speaker and listener face each other at a distance of two feet. Noise monitoring should be repeated whenever any changes to facilities, equipment, work practices, procedures, or noise control measures alter potential noise exposures.

(5) Any new equipment (including communication headsets), operation, job, or procedure with the potential for creating work shift noise levels above 85 dBA TWA shall be evaluated with regard to noise emissions prior to startup.

c. Noise Control.

(1) Engineering controls.

(a) Engineering controls shall be utilized, where feasible, to reduce employee noise exposures.

(b) Facilities and equipment shall be procured, designed, operated, and/or modified in such a manner as to minimize exposure to noise levels above 85 dBA. Consideration of noise exposures shall be made as early as possible in the procurement, design, and/or modification decisionmaking process.

(2) Personal hearing protection.

(a) Personal hearing protection is to be used where engineering controls are not feasible, are not practical, or fail to reduce noise exposure to levels below 85dBA TWA.

(b) Earmuffs and/or earplugs shall be required to be worn by employees exposed to continuous, intermittent, or impact noise in excess of 85 dBA, without regard for duration of exposure or character of the noise source.

(c) Use of hearing protection shall be mandatory where requirements are posted, and their use shall be enforced by supervisors as specified in this chapter.

(d) Where applicable, communication headsets used by employees shall be equipped with either zener diode or other similar type of circuitry that limits feedback signals, or tones, to acceptable levels in accordance with OSHA guidelines without compromising clear communication.

(e) Earplugs and earmuffs shall be for the exclusive use of each employee and shall not be traded or shared.

(f) Hearing protectors shall attenuate noise exposure (at the ear) to a level of 85 dBA-TWA or below, based on the Noise Reduction Rating (NRR) of the protector. Estimation of the adequacy of hearing protector attenuation shall be performed according to OSHA-specified methods. The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposures increase to the extent that the hearing protector currently in use may no longer provide adequate attenuation. More

effective hearing protectors shall be provided when necessary. Refer to 29 CFR 1910.95 Appendix B (mandatory), "Methods for Estimating the Adequacy of Hearing Protector Attenuation" for additional information.

(g) When it is determined that hearing protection is necessary, employees will be offered a selection of suitable protection devices from which they will select the one for use.

(h) Special hearing protection equipment, such as sound-attenuating communication headsets, may be used in high-noise areas. These devices should be regularly inspected. Sound-attenuating headsets, which have been damaged, altered, or modified in any way that affects the attenuation characteristics, may not be used. Where replacement parts, such as earcup seals are available, the headsets may be repaired and reused. Where sound attenuating headsets are not permanently issued to individuals, such equipment must be cleaned before being reissued.

(i) Supervisors shall ensure that hearing protectors are available to employees in the HCP, that employees are trained in their use and care, and that the hearing protectors are worn.

(3) Administrative controls.

(a) Where the highest rated hearing protective equipment or engineering controls (or a combination of both) are not sufficient to attenuate noise exposure to less than 90 dBA TWA, an employee's duration of time spent in the noise hazard area shall be limited so as not to exceed the default maximum exposure limit (with hearing protection) of 90 dBA TWA.

(b) For employees who have demonstrated a persistent Standard Threshold Shift, this exposure limit is reduced to 85 dBA TWA in accordance with 29 CFR 1910.95.

d. Medical Evaluation.

(1) Audiometric testing.

(a) The audiometric testing program shall be conducted in accordance with 29 CFR 1910.95(g) and (h), and the provisions of FAA Order 3900.19B, Chapter 12, Medical Surveillance Program, and shall include baseline and annual audiometry for all employees in the HCP. Requirements for testing are contained in the following mandatory appendices:

- 29 CFR 1910.95 App C, Audiometric measuring instruments.
- 29 CFR 1910.95 App D, Audiometric test rooms.
- 29 CFR 1910.95 App E, Acoustic calibration of audiometers.

(b) Testing shall be performed by a certified audiometric technician, under the direction of the medical officer in charge, or by a consultant who specializes in audiometric examinations.

(c) The medical officer in charge shall review audiograms in compliance with 29 CFR 1910.95(g) as needed to determine whether there is a need for further evaluation or referral.

(d) The audiometric tests performed for employees who hold Class 1 or 2 medical certificates shall be acceptable in satisfying this requirement.

(2) Baseline audiograms.

(a) Where feasible, baseline audiograms shall be obtained prior to an employee's first exposure to noise that equals or exceeds the action level. If not feasible, it shall be obtained as soon as

possible, but no longer than 6 months, after it becomes known that the employee is or will be exposed to noise that equals or exceeds the action level.

(b) Baseline audiograms obtained prior to the effective date of this chapter are acceptable baselines provided the medical officer in charge judges them valid.

(c) An annual audiogram may be substituted for the baseline at the discretion of the medical officer in charge in accordance with paragraph 29 CFR 1910.95(g)(9) of the standard.

(3) Annual audiograms.

(a) Annual audiograms shall be compared to the baseline audiogram to determine if an employee's audiogram is valid and if a standard threshold shift (STS) has occurred.

(b) If an STS is identified, the employee shall be informed of this fact in writing within 21 days of the determination and shall be fitted or refitted with adequate hearing protectors and required to wear them in noise areas that are equal to or greater than the AL. In addition, the employer may retest the employee within 30 days if an annual audiogram shows that an employee has suffered a STS.

(c) An annual audiogram may be substituted for the baseline at the discretion of the medical officer in charge in accordance with paragraph 29 CFR 1910.95(g)(9) of the standard.

(d) Upon termination or retirement, an exit audiogram shall be conducted.

(e) Annual audiograms conducted as part of air traffic controller medical exams will satisfy this requirement.

e. Training.

(1) All employees subject to the HCP and their supervisors shall receive training consistent with the requirements of 29 CFR 1910.95(k). Training shall include:

(a) The effects of noise on hearing.

(b) The purpose of hearing protection.

(c) The advantages, disadvantages, and attenuation of various hearing protective devices and instruction on selection, fitting, use and care.

(d) The mandatory requirement to wear hearing protection, and administrative actions which may follow for failure to wear the protection.

(e) The purpose of audiometric testing, an explanation of the test procedures, and the nature of the test results they are entitled to receive.

(f) Procedures to employ in donning and doffing hearing protection.

(2) Training shall be provided at the time of an employee's initial assignment to a task in an area with high noise levels, and refresher training shall be provided annually for each employee in the HCP.

(3) All training shall be properly documented in the appropriate official training information system. Documentation shall include a written certification record that contains the name or other

identifier of the employee trained, the date(s) of the training, and the signature of the person who performed the training.

(4) A general awareness program shall be provided for supervisory and managerial personnel whose employees are exposed above the action level, emphasizing their responsibility in the HCP.

f. Recordkeeping.

(1) Audiometric test results shall be maintained for the duration of the employee's employment. The audiometric record shall include:

- (a) Name and job classification of the employee.
- (b) Date of the audiogram.
- (c) Examiner's name.
- (d) Date of the last acoustic or exhaustive calibration of the audiometer.
- (e) Employee's most recent noise exposure assessment.
- (f) Date of the last hearing conservation training and the name of the person conducting the training.
- (g) A copy of the STS notice.

(2) Noise exposure measurement records shall be maintained for a minimum of two years, or until the next noise exposure measurement tests are conducted and reported.

(3) All noise exposure measurement and audiometric records shall be provided upon request to employees, former employees, representatives designated by the employee, and OSHA in accordance with 29 CFR 1910.1020 and privacy act requirements.

(4) Employee training records may be destroyed when 5 years old or when superseded or obsolete, whichever are sooner, in accordance with approved records retention standards in FAA Order 1350.15.

g. Posting of Personal Hearing Protection Requirements.

(1) Caution signs, which clearly indicate the hazard of high noise levels and state the requirements to wear hearing protection shall be posted at the entrance(s) to, or the periphery of, noise hazard areas.

(2) Decals or placards with similar statements shall be affixed to power tools and machines where noise exposures may be anticipated to exceed 85 dBA TWA.

h. Contracts.

(1) All contracts issued for work involving anticipated noise exposure shall contain a provision that contractors must have a Hearing Conservation Program in accordance with OSHA and state requirements. The HCP Administrator or designated representative must approve the contractors HCP

before any work is initiated. Copies of contractors' safety programs shall be submitted in accordance with contract requirements.

(2) Contractors must provide their own appropriate audiometric testing, personal protective equipment, and training.

(3) Contractors must wear personal protective equipment where required.

Figure 21-1: PERMISSIBLE NOISE EXPOSURE

Sound Level, L (dBA)	Reference Duration, T* (hours)
80	32.0
81	27.9
82	24.3
83	21.1
84	16.4
85	16.0
86	13.9
87	12.1
88	10.6
89	9.2
90	8.0
91	7.0
92	6.1
93	5.3
94	4.6
95	4.0
96	3.5
97	3.0
98	2.6
99	2.3
100	2.0
101	1.7
102	1.5
103	1.3
104	1.1
105	1.0

Sound Level, L (dBA)	Reference Duration, T* (hours)
106	0.87
107	0.76
108	0.66
109	0.57
110	0.50
111	0.44
112	0.36
113	0.33
114	0.29
115**	0.25
116	0.22
117	0.19
118	0.16
119	0.14
120	0.125
121	0.11
122	0.095
123	0.082
124	0.072
125	0.063
126	0.054
127	0.047
128	0.041
129	0.036
130	0.031

$$* T = \frac{8}{2^{(L-90)/5}}$$

** 115 dBA is the maximum exposure limit

CHAPTER 22. FIRST AID PROGRAM

2200. GENERAL. This chapter establishes the requirements for a Federal Aviation Administration (FAA) first aid program. The purpose is to ensure consistency of procedures to make certain that all FAA employees will receive prompt and appropriate emergency medical services if a job-related injury or illness occurs in FAA administrative or field settings. First aid may consist of attention to minor injuries, which require no further treatment or emergency help for the severely injured until professional medical personnel can take over. It may also include the use of cardiopulmonary resuscitation (CPR) in response to medical emergencies. Additional implementation guidance will be developed by responsible organizations to support this policy, and shall be followed.

2201. BACKGROUND. Management guidelines for provision of medical services and first aid are found in the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA) standards 29 CFR 1910.151 and 29 CFR 1926.50. First aid programs must correspond to the occupational hazards which can reasonably be expected to occur in the workplace.

2202. SCOPE. This program applies to all FAA personnel. FAA contractors and sub-contractors must comply with the requirements of 29 CFR 1910.151 and 29 CFR 1926.50. These requirements should be emphasized in bid specifications and contract language.

2203. DEFINITIONS.

a. Designated First Aid Responder. An employee with current training in basic first aid measures and basic life support techniques who, as a part of his or her job-related duties which are stipulated in writing (e.g., in the position description or performance plan), will respond to a workplace emergency situation and provide first aid or cardiopulmonary resuscitation (CPR) if necessary. There are two categories of designated responders: those who render assistance on a regular basis such as clinic or dispensary employees, and those who render occasional assistance as a collateral duty. These individuals are covered under the agency bloodborne pathogens (BBP) policy. (See Chapter 17). Collateral duty employees will be designated only after careful consideration by the responsible program office and agreement of the subject employee.

b. Voluntary First Aid Responder. An employee who, in an unanticipated "Good Samaritan" act, assists another employee with an illness or injury. This type of assistance is voluntary and not required as part of an employee's job description. These actions are not considered by OSHA to constitute "occupational exposure" and so are excluded from coverage by the BBP standard. However, FAA will allow a medical consultation based upon current medical protocols for an employee involved in an exposure incident as a result of performing a "Good Samaritan" act in the workplace.

c. Responsible Program Office. Any FAA organization having direct responsibility for the occupational safety and health of its employees. More information regarding occupational safety and health responsibilities may be found in Chapter 1 of Order 3900.19B.

2204. KEY FIRST AID PROGRAM ELEMENTS

a. General Requirements.

(1) Local emergency response systems shall be the primary source of emergency first aid. In areas where accidents resulting in suffocation, severe bleeding, or other life-threatening injury or illness can reasonably be expected, a 3 to 4 minute response time, from time of injury to time of administering first aid, is required. In other circumstances, i.e., where a life-threatening injury is an unlikely outcome of an accident, a 15-minute response time is acceptable.

(a) If employees can be taken to an infirmary, clinic, or hospital, or if outside emergency assistance can arrive within the allotted times, the FAA is not required to train employees in first aid.

(b) In the absence of professional medical care in near proximity to the workplace to be used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid.

(c) If employees work in rural areas where there is no coverage by a local emergency medical response system (EMRS), the FAA must make provisions for acceptable emergency transportation. This could be any government or privately-owned vehicle (POV) that is available for use in an emergency situation to transport an injured employee to the nearest medical facility.

(2) If the facility or worksite is located where the local emergency medical response system can be utilized, employees of the facility shall be instructed in how to access the system, e.g., by dialing 9-911, to obtain an outside telephone line to summon emergency medical assistance.

(3) Where the eyes or body of any person may be exposed to injurious or corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

(4) The FAA may offer classes in CPR to employees. These classes are voluntary and any employees who attend and become certified are not required to perform CPR if a workplace emergency occurs. For designated responders, basic adult CPR retesting should occur every year and first aid knowledge and skills should be reviewed every three years.

b. Equipment.

(1) Guidelines for first aid kit contents shall be obtained from the American National Standards Institute Z308.1, American National Standard, Minimum Requirements for Workplace First Aid Kits. Guidelines for the use of CPR barrier devices and over-the-counter drug products in first aid kits may be found in the Appendix to Z308.1.

(2) The necessity for, and placement of, emergency shower and eyewash stations must be determined by the responsible program office. Refer to ANSI Z358.1, American National Standard for Emergency Eye Wash and Shower Equipment, for additional requirements.

c. Administrative Guidelines.

(1) Health Clinics and associated employee awareness programs will be administered by the Office of Aviation Medicine (AAM). AAM personnel will provide medical evaluations and advice in support of this policy as indicated.

(2) Employee training called for by the requirements of this chapter will be obtained from nationally recognized organizations and training service vendors. Selection of vendors should be guided by requirements identified and prioritized for FAA occupational safety and health training by ANS. The training will be funded and scheduled by the responsible program office. Training records will be maintained by the responsible program office.

(3) The Office of Environment and Energy (AEE) will provide periodic program evaluations.

(4) All incidents resulting in first aid treatment should be reported in the same manner as any other occupational injury or illness as described in Order 3900.19B, Chapter 7.

(5) Current bargaining unit agreements in regard to first aid services will be honored.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

subject: **ACTION:** Policy Memo #AEE002-01
Clarification of Order 3900.19B, Chapter 22, First Aid Program

Date: DEC 19 2007

From: Acting Assistant Administrator for Policy,
Planning, and International Aviation, API-1
(Designated Agency Safety and Health Official)

Reply to
Attn. of:

To: Regional Administrators
Airway Facilities Division Managers
Air Traffic Division Managers
Regional Flight Standards Division Managers
Airports Division Managers
Regional Flight Surgeons

This memorandum is provided to clarify various terms and concepts in Chapter 22, First Aid Program, which were obtained from Occupational Safety and Health Administration (OSHA) Standards Interpretation and Compliance Letters. Specifically addressed is paragraph 2204a(1), which states the requirements for emergency first aid response times.

Because the OSHA standard 29 CFR 1910.151, Medical services and first aid, is worded very broadly, we used wording from the OSHA Standards Interpretation and Compliance Letters to add more specificity to our chapter. In addition, we reviewed selected FAA injury and illness data.

We found that it is important to differentiate between work-related injuries and illnesses as opposed to medical emergencies, such as heart attack, that may occur at work. While an ideal first aid program will be designed to address all possible work-related occurrences, the employer is only obligated to evaluate the likelihood of incidents relevant to the hazards to be found in the workplace. That is, the employer must evaluate the potential for injury based on a realistic assessment of work-related hazards and provide for first aid accordingly. The likelihood of injury and related need for first aid and medical services would be less for offices than, for example, steel mills.

An OSHA Standards Interpretation and Compliance Letter dated February 9, 1994, states that "in areas where accidents resulting in suffocation, severe bleeding, or other life threatening or permanently disabling injury or illness can be expected, a 3 to 4 minute response time, from time of injury to time of administering first aid, is required. In other circumstances, i.e., where a life threatening or permanently disabling injury is an unlikely

outcome of an accident, a longer response time such as 15 minutes is acceptable.” Another Compliance Letter dated April 20, 1993, states that “sufficient response time for medical assistance is to be based on an assessment of workplace hazards and the possible outcomes that could occur.”

OSHA uses the terms “serious physical harm” and “life threatening injury or illness” interchangeably. OSHA defines “serious physical harm” in its Field Operations Manual as an impairment of the body in which part of the body is made functionally useless or substantially reduced in efficiency on or off the job. Examples of injuries which constitute such harm include amputation, concussion, internal crushing, simple or compound fracture, burns or scald, as well as cut, laceration, or puncture involving significant bleeding and/or requiring suturing.

In summary, FAA management, in collaboration with qualified Occupational Safety Health professionals, has the responsibility to evaluate their employees’ working conditions and associated injury and illness records, and to implement appropriate steps to assure the protection of employees from recognized hazards.

Please contact Tom Holloway, Manager, Environment, Energy and Employee Safety Division, AEE-200, at (202) 267-8114, if you have additional questions.



Louise E. Maillett

CHAPTER 23. JOB HAZARD ANALYSIS

2300. PURPOSE. This chapter establishes minimum requirements for conducting job hazard analyses (JHA's) at FAA facilities.

2301. BACKGROUND.

a. The FAA is committed to providing for the occupational safety and health of personnel, preventing accidental loss of material resources (e.g., property damage), and avoiding interruptions to essential services resulting from accident and other incidents. An effective occupational safety and health program must include procedures to evaluate job hazards and to eliminate or control the related risks to employees or FAA property. Although identification of possible property damage losses is important, the primary objective of a JHA is to identify the risk of injury associated with systems or equipment, a task or series of tasks, and to recommend solutions to reduce the risk to a standard or acceptable level.

b. A JHA facilitates the discovery and evaluation of hazards that exist in the workplace and the selection of control measures to reduce or eliminate the hazard. Once the hazards have been identified, an evaluation by technically qualified safety personnel (as defined in Chapter 1, para. 11h) will determine the priority for the establishment of appropriate control measures. Based on the potential severity and risk of injury or property damage, hazards shall be promptly eliminated or controlled.

c. OSHA standard 29 CFR 1910.132(d) requires that the FAA assess the workplace to determine if the hazards that require the use of personal protective equipment (PPE), such as head, eye, face, hand, or foot protection, are present or are likely to be present. This requirement is also covered in Chapter 25, FAA Personal Protective Equipment, of this order. If hazards or the likelihood of hazards are found, the FAA shall select appropriate PPE and require that affected employees use properly fitted PPE suitable for protection from these hazards. In addition, the FAA must certify, in writing, that a workplace hazard assessment has been performed that identifies the workplace evaluated, the person certifying the evaluation, and the dates of the evaluation. A JHA will satisfy these requirements.

2302. SCOPE. This chapter applies to all FAA personnel who may encounter health and safety hazards while performing their assigned work duties.

2303. GOALS AND OBJECTIVES.

a. The primary goal of a JHA is to break down potentially hazardous jobs into their basic sequential job tasks in order to better identify which tasks are most closely associated with the hazard(s). When the hazards have been identified, then the associated steps will be reviewed to determine what can be done to make them safer to perform. Region and center management must consider all potential for exposures and the likelihood of accidents in their operations when determining the priorities.

b. Ultimate responsibility for implementing a JHA program rests with region and center management in accordance with their responsibilities as outlined in Chapter 1 of this order.

c. The responsibility for conducting JHA's rests with technically qualified safety personnel. Supervisors and other applicable personnel, at the worksite or facility, shall participate since they have the best knowledge of day-to-day job tasks and any related problems. Completed JHA's are to be reviewed by the Regional and Center Safety and Health Managers (R/COSHM).

2304. TRAINING. Prior to any FAA employee being required to conduct a JHA, he/she shall receive training in the JHA process. JHA's shall be conducted by technically qualified safety personnel who have the experience and training to identify hazards in the workplace.

2305. STEPS IN THE JHA PROCESS.

a. Select the job(s), tasks, operations or processes to be analyzed by reviewing injury and illness data. Initial JHA's should be scheduled for those with the highest rates. Where accident data is lacking, a review of the nature of the job and the equipment and/or materials being used can help to determine which jobs should receive a JHA.

b. Break the job down into individual steps and list each step on the FAA JHA Worksheet (Figure 23-1). Note: The Worksheet may be tailored to the needs of the organization provided the minimum information shown on the form is retained.

(1) Prior to breaking the job down into individual steps, the evaluator should examine the location where the job is being performed to determine if there are any apparent hazards, such as poor lighting, live electrical contacts, improperly stored materials or waste, adjacent operations that may affect the safe operation of the job under review, etc. These should be annotated on the JHA Worksheet.

(2) A critical component of this step is to list all of the tasks required to perform the job on the JHA Worksheet. The evaluator should start by interviewing appropriate personnel who are familiar with the job and/or equipment. The intent of the interviews is to determine the orderly sequence of job tasks and any perceived hazards. Note: OSHA Publication 3071, Job Hazard Analysis, provides useful examples of the level of detail needed in a JHA.

(3) Visual observations shall be made, where possible, of employees performing the actual job tasks.

c. Identify all hazards and potential hazards associated with each step and thoroughly document the findings on the JHA Worksheet. Refer to OSHA Publication 3071 for examples.

d. Review the JHA Worksheet to ensure it is thorough, accurate, and that the job is broken down into a sufficient number of steps.

e. Evaluate the hazards and develop solutions.

(1) Once the hazards are identified, they will be evaluated to determine what control measures are necessary.

(2) Apply the Hierarchy of Control Measures. These are approaches that can be taken to reduce or eliminate hazards. They should be considered in the following order of precedence.

(a) Elimination - removing the hazard or hazardous work practice from the workplace. This is the most effective control measure.

(b) Substitution - substituting or replacing a hazard or hazardous work practice with a less hazardous one. For example, substitution of a less hazardous or toxic solvent for a highly flammable or carcinogenic solvent.

(c) Engineering control - if the hazard cannot be eliminated or substituted, an engineering control is the next preferred measure. This may include modifications to tools or equipment such as providing guards to machinery or equipment, or providing local exhaust or general ventilation to control emissions of toxic or hazardous gases, vapors, or particulates.

(d) Isolation - isolating or separating the hazard or hazardous work practice from people not involved in the work or the general work areas. This can be done by marking off hazardous areas, or by installing screens or barriers.

(e) Administrative control - includes introducing work practices that reduce the exposure to workers. Some examples include limiting the amount of time a person is exposed to a particular hazard, demarcating exclusion areas and establishing physical access controls to prevent workers from entering hazardous areas, and ensuring proper training of employees.

(f) Personal protective equipment - should be considered when other control measures are not feasible or as an interim control until one of the other described controls can be implemented. For more information, see Chapter 25, FAA Personal Protective Equipment.

d. Repeat the JHA process as necessary, by evaluating new equipment or work processes, reviewing accident records, and periodically reevaluating the suitability of previously selected personal protective equipment and/or engineering controls.

2305. RECORDS. Records of JHA's shall be maintained in accordance with applicable OSHA requirements. Where OSHA requirements are lacking, the records shall be maintained in accordance with approved records retention requirements in FAA Order 1350.15.

Figure 23-1. JOB HAZARD ANALYSIS WORKSHEET¹**Job:** _____**Date:** _____ **INITIAL or REVISED (circle one)**

Completed by: (1) _____ **Title:** _____ **Signature:** _____
Technically Qualified Safety Person

Input Provided by (1) _____ **Title:** _____ **Signature:** _____

Input Provided by (2) _____ **Title:** _____ **Signature:** _____

Input Provided by (3) _____ **Title:** _____ **Signature:** _____

TASK OR JOB STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROL(S)

¹ This worksheet will meet the minimum for hazard assessment requirements of OSHA's personal protective equipment standard, 29 CFR 1910.132.

CHAPTER 24. FIRE PREVENTION PROGRAM

2400. GENERAL. This chapter establishes minimum requirements to prevent fires, and to protect FAA employees from the hazards of fires, and establishes the Federal Aviation Administration's Fire Prevention Program (FPP). The chapter includes requirements for compliance with the Occupational Safety and Health Administration's (OSHA) *Fire Protection* Standard, 29 CFR 1910, Subpart L, and *Means of Egress* Standard, 29 CFR 1910, Subpart E. This chapter does not cover fire protection and means of egress in air traffic control towers since those requirements are addressed by 29 CFR 1960.20, Alternate Standard for Fire Safety in Airport Traffic Control Towers (ATCT).

2401. GOALS AND OBJECTIVES.

a. The fire prevention and protection policy of the FAA is first to prevent fires, and, second, should fire break out, to ensure that fires create no threat to the public or hazards to employees. Property damage from fire must be held to a minimum, as must the impact of fire and related perils on the FAA mission and programs. A primary objective of the FPP is also to allow mission critical air traffic control operations to continue during a fire emergency for a sufficient time to safely transition air traffic control prior to a facility becoming inoperable or untenable for human occupancy. In order to achieve this objective, specific operations will require additional protection to that specified by applicable laws, regulations or standards. Such operations will rely on early detection of a fire incident, effective protection for critical operations, as well as planning and training of FAA personnel to accomplish this objective. As a minimum, ARTCC's, TRACON's, and ATCT's shall be designed and operated to achieve this objective.

b. This chapter requires adherence to and compliance with all applicable laws, orders, regulations, codes, standards, guidelines, policies, and good practices pertaining to fire prevention and protection. In many cases, state or local fire regulations will require the major attention.

2402. SCOPE. This chapter applies to all FAA personnel. FAA contractors and subcontractors must comply with the minimum requirements of this program.

2403. DEFINITIONS.

a. Automatic fire detection device. A device designed to detect automatically the presence of fire by heat, flame, light, smoke or other products of combustion.

b. Emergency action plan. A plan for a workplace, or parts thereof, describing what procedures the employer and employees must take to ensure employee safety from fire or other emergencies.

c. Emergency exit route. The route that employees are directed to follow in the event they are required to evacuate the workplace or seek a designated refuge area (see National Fire Protection Association (NFPA) 101, the Life Safety Code, for requirements for a refuge area).

d. Fire extinguishing system. A permanently installed system that either extinguishes or controls a fire at the location of the system.

e. Hazardous materials. Those materials presenting dangers beyond the fire problems relating to flash point and boiling point. These dangers can arise from, but are not limited to, toxicity, reactivity, instability, or corrosivity.

f. Means of egress. A continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: the way of exit access, the exit, and the way of exit discharge. A means of egress comprises the vertical and horizontal ways of

travel and shall include all intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts, and yards.

g. National Fire Codes. National Fire Codes are published by the National Fire Protection Association (NFPA), and provide guidance on fire safety issues (e.g., NFPA 101). OSHA has either adopted the wording of these codes in its fire protection standards, or included them by reference. Most local jurisdictions also have adopted these National Fire Codes, although they may supplement them where local circumstances so warrant.

h. Sprinkler system. A system of piping designed in accordance with fire protection engineering standards and installed to control or extinguish fires. The system includes an adequate and reliable water supply and a network of specially sized piping and sprinklers which are interconnected. The system also includes a control valve and a device for actuating an alarm when the system is in operation.

2404. BASIC PROGRAM ELEMENTS. All FAA organizations shall develop a FPP which includes the appointment in writing of a Fire Prevention Program Manager (FPPM) to coordinate overall implementation and oversight of the FPP. The FPP shall be coordinated with the Air Traffic emergency contingency plan, and it shall be consistent with the provisions of the Air Traffic emergency contingency plan. The use of existing facility plans (e.g., the Air Traffic emergency contingency plan) is acceptable provided that all elements called for in this paragraph are included. The FPP shall contain the following elements as a minimum:

a. Fire Protection Plan. There shall be a written fire protection plan for all FAA facilities. Individual and specific plans shall be developed for normally staffed facilities. Facilities that are not normally staffed can be included in a more generic fire protection plan developed by SMO or facility type. Each facility shall develop a list of the major fuel source fire hazards and applicable storage and handling procedures. The plan shall also identify potential ignition sources (such as welding and smoking) and the appropriate fire protection procedures and equipment that will control a fire involving these sources. Where the FAA has leased space or facilities, or facilities with joint or multi-occupancies, every effort shall be made to determine all fuel source fire hazards and ignition sources, including those outside of FAA ownership and control. In addition, where the FAA has leased space, responsibility for fire prevention shall be negotiated with the building owner as appropriate and expressed in writing. The names or regular job titles of those FAA personnel responsible for maintenance of equipment and systems used to prevent or control ignitions or fires must be listed, as well as the names of those responsible for fuel source hazards.

b. Emergency Procedures. Responsible organizations within each facility shall establish a written emergency action plan that addresses the types of personnel evacuation to be used in emergency circumstances, and the alarm system that is to be used to notify occupants of the evacuation. The written plan shall be kept at the workplace and made available for employee review.

(1) Emergency Action Plan (EAP). An EAP addresses those specific actions FAA employees and contract personnel must take to ensure safety from fire and other emergencies. The following elements, at a minimum, shall be included in the EAP:

- (a)** Emergency escape procedures and emergency exit route assignments.
- (b)** Procedures to be followed by previously identified FAA employees who are to remain at their duties to operate critical FAA missions and programs before they evacuate.
- (c)** Procedures to locate and account for all FAA employees and subcontractor employees after emergency evacuation has been completed.
- (d)** Rescue and medical duties for those FAA employees or other employees (by contract or other agreement) who may be requested as volunteers or required to perform them.
- (e)** The preferred means of reporting fires and other emergencies.

(f) Procedures to be followed to assist disabled employees during evacuation.

(g) Names or regular job titles of persons or organizational units who can be contacted for further information or explanation of duties under the EAP.

(2) Evacuation Procedures and Means of Egress. The EAP must address the methods and routes of evacuation to be used by FAA employees in emergency circumstances and be coordinated with existing air traffic contingency plans and orders. All such exits must never be used for storage of any materials, and have non-combustible surface finishes with appropriate surface burning and flame-spread classification. The plan must reflect the following requirements:

(a) Every FAA building or structure designed for human occupancy must be provided with sufficient exits to permit the prompt and safe escape of occupants, including persons with disabilities (PWD), in case of fire or other emergency.

(b) In every FAA building or structure, exits must be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. Special accommodations must be made for PWD's.

(c) Every exit must be clearly visible or the route to reach it must be conspicuously indicated so that every occupant of the building or facility knows the direction of escape. Any door, passage, or stairway that is neither an exit nor a way of exit access, and that is located or arranged so that it is likely to be mistaken for an exit, shall be identified by a sign reading "NO EXIT."

(d) Means of egress in FAA buildings or structures must, as a minimum, meet the requirements of the OSHA Means of Egress Standard at 29 CFR 1910, Subpart E.

c. Training. Before implementing the EAP, FAA organizations shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees, and shall review the plan with each employee covered by the plan initially when the plan is developed, at least annually thereafter, and whenever the plan or the employee's responsibilities or designated actions under the plan change.

d. Housekeeping. Responsible FAA officials shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.

e. Maintenance. Responsible FAA officials shall regularly and properly maintain, according to established procedures, all equipment, fire, and life safety systems. The maintenance procedures shall be included in the written fire prevention plan.

2405. FIRE PROTECTION EQUIPMENT.

a. Fire Extinguishing Equipment. Three basic options exist at the time of a fire emergency. First, FAA supervisors may choose to evacuate all employees from the workplace at the time of a fire emergency. In this case, requirements regarding manual fire extinguishing equipment are mainly not applicable. Second, there are those workplaces where FAA supervisors have chosen to permit certain employees to fight fires with portable fire extinguishers, and to evacuate all other non-essential employees at the time of a fire emergency. Third, there may be those FAA workplaces where FAA supervisors have chosen to permit all employees in the workplace to use portable fire extinguishers to fight fires.

(1) Portable Fire Extinguishers. Where the FAA has chosen to partially evacuate the workplace or the affected area at the time of a fire emergency, and has permitted certain designated employees to remain behind to operate critical operations or to fight fires with extinguishers, those employees who will be remaining to perform incipient stage fire fighting must be trained in the principles of fire extinguisher use and the hazards involved with incipient stage fire fighting. The FAA FPPM is

responsible for the proper selection and distribution of fire extinguishers. The selection and distribution of fire extinguishers must reflect the type and class of fire hazards associated with a particular workplace or facility.

(2) Standpipe Systems (Fire Hoses). Fire hoses may be substituted for portable fire extinguishers. Any substitution must provide the same coverage that portable fire extinguishers provide, and must be readily accessible with the hose attached and ready for service.

b. Fire Detection, Suppression, and Alarm Systems. Fire detection systems must be designed by knowledgeable engineers or other professionals with expertise in fire detection systems, and must be maintained in compliance with applicable codes in an operable condition except during repairs or maintenance. When systems are out of service for repair or maintenance, an alternate means of detection and alarm must be provided (e.g., fire watch). A trained person knowledgeable in the operations and functions of the system must perform maintenance and testing of fire detection systems, including cleaning and necessary sensitivity adjustments.

c. Automatic Sprinkler Systems. Automatic sprinkler systems are the best fire protection system for the workplace.

(1) All automatic sprinkler designs in FAA facilities must provide the necessary discharge patterns, densities, and water flow characteristics for complete coverage in a particular workplace or zoned subdivision of the workplace.

(2) The FPPM shall assure that only code and systems-approved equipment and devices are used in the design and installation of automatic sprinkler systems.

d. Evacuation Alarms. If required by code, an alarm system shall be installed to provide warning for necessary emergency action as called for in the EAP, or for reaction time for safe escape of employees from the workplace or the immediate work area, or both. All alarm systems shall be maintained in operating condition except when undergoing repairs or maintenance, and shall be tested for reliability and adequacy at least monthly. When systems are going to be down for repair or maintenance, an alternate system is required.

2406. FAA FACILITIES & OPERATIONS.

a. Facility Control. Managers of facilities should ensure the following:

(1) That employees have been trained and understand their fire prevention and protection responsibilities within the work environment.

(2) That the facility is in a fire safe condition at all times.

(3) That occupant load information for assembly facilities (NFPA 101) is maintained in the FPPM's office. Every room constituting assembly occupancy and not having fixed seats shall have the occupant load of the room posted in a conspicuous location near the main exit from the room.

b. Airport Traffic Control Towers (ATCT). Requirements for plans concerning emergency action, fire prevention, and fire drills are consolidated in 29 CFR 1960.20, Alternate Standard for Fire Safety in Airport Traffic Control Towers (ATCT).

c. Aircraft Ground Operations. Aircraft ground operations shall meet the requirements of the NFPA 407, Aircraft Fuel Servicing; NFPA 409, Aircraft Hangars; and NFPA 410, Aircraft Maintenance.

CHAPTER 25. FAA PERSONAL PROTECTIVE EQUIPMENT

2500. GENERAL. This chapter establishes minimum requirements for the selection, use and maintenance of personal protective equipment (PPE) by FAA employees. Engineering controls are the preferred course to address any exposure; however, PPE shall be provided when engineering controls are not adequate or when it is necessary by reason of hazards of processes or environment. Examples of such hazards are chemical hazards, biological hazards, radiological hazards, physical hazards, mechanical irritants, or electrical hazards encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact. A significant component of this program is the requirement to assess all workplaces to determine if hazards are present, or likely to be present, which necessitate the use of PPE. This chapter includes requirements for compliance with the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA), Personal Protective Equipment Standard, 29 CFR 1910, Subpart I. The reader is advised to refer to this subpart for additional details as appropriate.

2501. GOALS AND OBJECTIVES. The FAA shall ensure that all workplaces are surveyed for hazards and that, where required, appropriate PPE is provided to FAA employees to address those hazards.

2502. SCOPE. This chapter applies to all FAA personnel. FAA contractors and subcontractors must comply with the minimum requirements of this program.

2503. KEY PROGRAM REQUIREMENTS.

a. General Requirements.

(1) Hazard Assessment. Technically Qualified Safety Personnel (for definition see Chapter 1, paragraph 11h) shall assess the workplace to:

(a) Determine if hazards are present, or are likely to be present, which would require the use of PPE.

(b) Determine what PPE would be appropriate based on the hazard and the capacity of the PPE to protect the employee from the hazard.

(2) Selection and Use of PPE. If hazards are present, or likely to be present, employees shall use and care for assigned PPE in accordance with the training provided in paragraph 2503a(3)(a). In addition, immediate supervisors shall:

(a) Based on the hazard assessment and recommendations of the Technically Qualified Safety Personnel, select and require each affected employee to use the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment.

(b) Communicate selection decisions to each affected employee so that the employee understands the hazard or likely hazard, and why the particular PPE was chosen.

(c) Ensure that any employee-owned PPE or PPE provided by the FAA is adequate to protect the employee and that it is properly used, tested, stored, and maintained.

(d) Verify that the required workplace hazard assessment was performed and documented by a certificate that identifies the workplace evaluated; the person certifying with a signature that the evaluation was performed; and the date(s) of the hazard assessment.

(e) Verify that each affected employee assigned PPE has been properly trained in accordance with subparagraph 2503a(3) below, prior to using PPE.

(f) Immediately dispose of all defective, damaged, inappropriate, or noncompliant PPE in accordance with this chapter, applicable OSHA regulations and guidance, and the manufacturer's instructions.

(3) Training.

(a) The FAA manager shall ensure that the employee's immediate supervisor provides training to each FAA employee who is required by this chapter to use PPE. Each employee shall be trained to know when PPE is necessary; what PPE is necessary; how to properly wear and adjust PPE; the limitations of PPE; and the proper care, maintenance, useful life, and disposal of the PPE.

(b) After the training is completed, each employee shall demonstrate to the satisfaction of the immediate supervisor an understanding of the training specified above, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When there is reason to believe that any employee who has received PPE training does not have the understanding and skill required by paragraph (3)(a) above, the supervisor must see that each such employee is retrained until he or she does have the understanding and skill required.

(d) Circumstances where retraining is required include situations where changes in the workplace, work tasks, or in the type of PPE to be used, render previous training obsolete.

(e) The FAA shall verify that each affected employee has received and understood the required training, which shall be documented by a written certificate, signed by the employee, that contains the name of the employee trained; the date(s) of training; and the subject of the training.

(4) Payment for Protective Equipment.

(a) All protective equipment required by this chapter shall be provided at no cost to employees.

Exception: The FAA is not required to pay for safety-toe protective footwear, or for prescription safety eyewear, provided that all three of the following are met:

(i) The footwear and eyewear are permitted to be worn offsite.

(ii) The footwear or eyewear is not used at work in a manner that would make it hazardous for use off the job, e.g., contaminated by chemicals which could be tracked into the home.

(iii) The footwear or eyewear is not designed for special use on the job.

(b) Current bargaining unit agreements in regard to personal protective equipment will be honored.

b. Requirements for Eye and Face Protection

(1) FAA supervisors shall require that each affected employee uses eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation, or biohazardous materials (e.g., blood or other bodily fluids) which may be transferred by splashing or aerosolization or as dried particulate matter. Refer to ANSI Z87.1, American National Standard for Occupational and Educational Eye and Face Protection, for additional requirements.

(2) FAA supervisors shall require that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protection (e.g., clip-on or slide-on side shields) are no longer acceptable.

(3) FAA supervisors shall require that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design. Eye protection such as safety goggles that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses is allowed.

(4) FAA supervisors shall require that each affected employee uses eye and face protective equipment for protection from injurious light radiation, with filter lenses that have a shade number appropriate for the work being performed.

(5) Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.

(6) Areas in which eye/face protection is required (e.g., battery rooms, soldering stations) be posted with signs which read: "DANGER: EYE AND FACE PROTECTION REQUIRED."

(7) Unvented or indirectly vented chemical splash goggles and face shields are to be used whenever there is a hazard from liquid chemical splashes.

(8) Eye and face protective equipment shall be maintained in a clean condition and stored in such a manner that it does not become contaminated or dirty.

c. Requirements for Head Protection

(1) FAA supervisors shall require that each affected employee wears a protective helmet (hard hat) when working in areas where there is a potential for injury to the head from falling objects or other overhead hazards in accordance with 29 CFR 1910.135 and ANSI 89.1, American National Standard for Personnel Assurance Protection-Protective Headwear for Industrial Workers-Requirements.

(2) FAA supervisors shall require that each such affected employee wears a protective helmet designed to reduce electrical shock hazard when near exposed electrical conductors that could contact the head.

(3) Areas in which protective helmets are required shall be posted with signs that read: "DANGER: HARD HAT AREA."

d. Requirements for Protective Footwear. FAA supervisors shall require that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or where such employee's feet are exposed to electrical hazards. Footwear shall comply with 29 CFR 1910.136 and ANSI Z41, American National Standard for Personal Protection-Protective Footwear.

e. Requirements for Hand Protection.

(1) FAA supervisors shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; vibration; or harmful temperature extremes.

(2) FAA supervisors shall base selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the tasks(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

f. Requirements for Electrical Protective Devices. Requirements for electrical protective devices are generally more technical and specific than those for other PPE. Please refer to 29 CFR 1910.137 for more detailed requirements.

(1) Design Requirements. Insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber shall meet the following design requirements:

(a) Manufacture and Marking.

- (i) Blankets, gloves, and sleeves shall be produced by a seamless process.
- (ii) Each electrical protective device shall be clearly marked as to the appropriate class or type.
- (iii) Other relevant markings, such as the manufacturer's identification and the size of the equipment may also be provided.

(iv) Markings shall be nonconducting and shall be applied in such a manner as not to impair the insulating qualities of the equipment.

(v) Markings on gloves shall be confined to the cuff portion of the glove.

(b) Electrical Requirements.

(i) Electrical protective equipment shall be capable of withstanding the a-c proof-test voltage or the d-c proof-test voltage specified by OSHA in 29 CFR 1910.137(a)(2)(i – ii).

(ii) Equipment that has been subjected to a minimum breakdown voltage test may not be used for electrical protection.

(iii) Material used for Type II insulating equipment shall be capable of withstanding an ozone test, without visible effects. The ozone test shall reliably indicate that the material will resist ozone exposure in actual use. Any visible signs of ozone deterioration of the material, such as checking, cracking, breaks, or pitting, is evidence of failure to meet the requirements for ozone-resistant material.

(c) Workmanship and Finish.

(i) Electrical protective equipment shall be free of harmful physical irregularities that can be detected by the required tests or inspections.

(ii) Surface irregularities that may be present on all rubber goods because of imperfections on forms or molds or because of inherent difficulties in the manufacturing process and that may appear as indentations, protuberance, or imbedded foreign material are acceptable if the indentation or protuberance blends into a smooth slope when the material is stretched, or if foreign material remains in place when the insulating material is folded and stretches with the insulating material surrounding it.

(2) In-Service Care and Use. All protective equipment required by this chapter shall meet the following criteria:

(a) Electrical protective equipment shall be maintained in a safe, reliable condition.

(b) All electrical protective equipment shall be used, stored, maintained, periodically inspected, repaired, replaced and tested in accordance with the manufacturer's instructions and applicable OSHA requirements and guidance.

(c) FAA supervisors shall either certify that equipment has been tested as required in paragraph 2503f(2)(b) or obtain such certificates from the manufacturer of the safety equipment. The certificate shall identify

the equipment that passed the test and the date it was tested. *Note:* Marking of equipment or entering the results of the tests and the dates of testing onto logs are two acceptable means of meeting this requirement.

g. Other Requirements for Protective Equipment. Specific requirements for respiratory protection, hearing protection, and protective clothing for exposure to blood and body fluids are covered in other chapters of this Order.

CHAPTER 31. OFFICE SAFETY PROGRAM

3100. GENERAL. The purpose of the Office Safety Program is to protect Federal Aviation Administration (FAA) employees from injury caused by FAA office hazards. All organizations are obligated to provide employees with safe working conditions. This chapter presents the key program elements needed to fulfill that obligation.

3101. SCOPE. This chapter applies to facilities operated by the FAA for office work. It does not include office space set up in employees' homes to facilitate telecommuting.

3102. STANDARDS.

a. Congress enacted the Occupational Safety and Health (OSH) Act of 1970 "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources." Section 19 (Federal Agency Safety Programs and Responsibilities) mandates that "the head of each agency shall (after consultation with representatives of the employees thereof) ... provide safe and healthful places and conditions of employment, consistent with the standards set under section 6." However, the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) has issued no standards specifically for the protection of workers from office safety hazards.

b. While there are no OSHA standards which specifically address office hazards, there are standards in 29 CFR 1910, such as Subpart D, Walking-Working Surfaces; Subpart E, means of Egress; Subpart K, Medical and First Aid; Subpart J, General Environmental Controls; and Subpart L, Fire Protection which are applicable to all workplaces, including offices. This order includes chapters for many of the applicable standards, and more are planned.

c. Consistent with the OSH Act, Executive Order 12196, Section 1-201(a), requires each Federal agency to "furnish to employees places and conditions of employment that are free from recognized hazards that are causing or are likely to cause death or serious physical harm."

d. Finally, as part of the Department of Transportation, the FAA is instructed, in the Department's OSH Management Manual (DOT M 3902.7B, 7/13/95), to have an OSH program which includes the identification of hazardous conditions and work practices in all workplaces.

3103. KEY PROGRAM ELEMENTS.

a. Plan. A regional/center/headquarters Office Safety Program Plan shall be developed, implemented, and maintained. It shall be made available for inspection by employees and their authorized representatives. The Plan must include, at a minimum, the program elements identified in this paragraph (subparagraphs c through f below).

b. Program Administrator. A program administrator shall be designated to manage the regional/center/headquarters Office Safety Program. This person must meet the requirements of a “qualified person.” For the purposes of this chapter, “qualified person” means a person capable by education and/or specialized training of recognizing, evaluating, and prescribing mitigation for office safety hazards. The program administrator may coordinate program activities with other qualified persons in the region/center/headquarters.

c. Periodic Inspections. Formal inspections to identify hazardous conditions and/or work practices shall be conducted annually in all FAA office workplaces, as provided for in FAA Order 3900.19B, Chapter 2. Such inspection shall be conducted by technically qualified safety personnel, as defined in FAA Order 3900.19B, paragraph 11h. Hazards discovered shall be remediated or mitigated.

d. Employee Awareness. All FAA employees who work in office spaces must be provided with information about office hazards and the prevention of injury in their office environment. The method of information delivery (e.g., training sessions, printed messages, etc.) shall be determined by the program administrator, or by another qualified person designated by the program administrator. The information conveyed must be appropriate to the specific facility. Figure 31-1 presents a suggested topic list.

e. Hazard Reporting Procedure. The Office Safety Program Plan must provide for, and publicize, a procedure whereby employees are encouraged to report hazards. The procedure must be consistent with the provisions of FAA Order 3900.19B, Chapter 9, Reports by Employees on Hazardous Conditions, and ensure that reported hazards are addressed in a timely manner.

f. Program Evaluation. The Office Safety Program Plan shall include a section addressing periodic evaluations of the Office Safety Program, to be developed by the program administrator. Written documentation should include a description of implementation activities and an assessment of their effectiveness. Office Safety may be reported as a component of a more comprehensive OSH evaluation report.

Figure 31-1. EXAMPLES OF OFFICE SAFETY TOPICS**A. Hazards**

1. Falls: *Falls are the most common type of office accident, accounting for the greatest number of disabling injuries. They typically result from slips, trips, and falls from chairs and elevations.*
 - a) Slipping: *Immediately clean up all liquid spills, pencils, paper clips, and other items that present a slipping hazard.*
 - b) Tripping
 - (1) Cords in aisles: *Keep all electrical cords and phone cords out of traffic paths to prevent tripping. If this is absolutely impossible, securely tape the cord throughout its length to the walking surface or use a rubbercord ramp specifically designed to minimize the risk of tripping.*
 - (2) Clutter: *Aisles and walkways need to be kept free of obstructions. All employees need to practice good housekeeping.*
 - (3) Steps: *Differences in floor elevation need to be clearly marked, and handrails should be provided where there are four or more risers. Stairs need to be well lighted and free of defects or obstructions. Unless made of unpainted wood, they should have anti-slip treatment.*
 - (4) Defective (torn) carpet: *Rugs and mats with holes, tears, or other disrepairs which constitute a hazard shall be repaired or removed.*
 - c) Dangerous climbing: *Use step stools and ladders with braking devices, and not chairs, to reach objects which are too high to reach without assistance.*
 - d) Chairs
 - (1) Leaning back: *Excessive leaning or tipping while seated in a chair can result in falls.*
 - (2) Defective chairs: *Chairs should be periodically inspected and taken out of service if found to be defective.*
2. Falling objects
 - a) Top-heavy file cabinets: *Avoid overloading the top drawers of file cabinets. Open only one drawer at a time. Don't store heavy materials on top of cabinets.*
 - b) High furniture: *All furniture, such as bookcases, over 64" in height should be secured to the wall.*

3. Collisions

- a) Open drawers: *Keep desk drawers, file drawers, and pull-out writing surfaces shut when not in use.*
- b) Running, horseplay: *Never run in the office. Horseplay can cause injury and should not be tolerated.*
- c) Walking: *Carry only what you can reasonably handle while keeping your balance and a clear view of where you are going. Do not walk and read at the same time.*

4. Cuts

- a) Sharp objects: *Put away sharp objects which are not in use. For guillotine paper cutters, make sure the blade is left down and locked when not in use.*
- b) Sharp edges: *Guard the sharp edges of furniture.*
- c) Electric fans: *Electric fans located within 7 feet of the floor must be guarded (with not over ½-inch mesh) to prevent contact with the blades.*
- d) Paper: *Paper has sharp edges and can cause painful cuts. Use a sponge or other wetting device for envelopes.*
- e) Staples: *Use caution when unjamming a stapler. Never put your fingers into an automatic stapler.*
- f) Proper waste disposal: *Broken glass and similar sharp material should not be mixed with other contents of wastebaskets, unless the glass is wrapped separately and labeled prominently.*

5. Electrical

- a) Ungrounded appliances: *All electrical equipment should be grounded in accordance with the National Electrical Code.*
- b) Frayed wires: *All electrical cords should be examined on a routine basis. Do not use electrical cords if the cord insulation is broken or separated from the plug or the machine. The outlet covers and receptacles should also be examined for defects.*

6. Fire evacuation

- a) Unobstructed egress: *Office doors shall be free of obstructions at all times to permit egress.*
- b) Sprinkler heads: *Under no circumstances should materials be stacked within 18 inches of ceiling sprinkler heads or Halon nozzles.*

- c) Diagram displayed: *A plan or diagram of designated emergency egress routes shall be posted in a place readily available to employees. Information about the locations of fire extinguishers and related equipment shall also be made available.*
 - d) Fire drills: *Fire drills must be conducted at least annually.*
 - e) Microwave: *Attend the microwave when heating potentially combustible materials, such as bags of popcorn.*
7. Other
- a) Furniture hand traps: *When closing drawers in desks or filing cabinets, make sure your hands are held against the drawer face; grasp the handle if possible.*
 - b) Toner dust: *Only personnel who have been instructed in the proper toner replacement techniques should perform this duty.*
- B. Use of proper tools: *Use tools only for the specific purpose for which they are designed, e.g., a staple remover to remove staples.*
- C. Crime: *Be aware of potential situations where assaults may occur, such as in employee parking lots after hours. Implement measures such as escort requests where there is a reasonable fear of incident.*
- D. Reporting of building problems: *All employees need to be informed of the proper contact to make for emergency and non-emergency problems they may discover in their workplace.*

CHAPTER 33. TOXIC AND HAZARDOUS SUBSTANCES EXPOSURE CONTROL PROGRAM

3300. GENERAL. This chapter covers the establishment of a Federal Aviation Administration (FAA) program to control employee occupational exposures to toxic and hazardous substances that may occur through inhalation, by absorption through the skin, by ingestion, or through surface contact with the skin. Toxic and hazardous substances applicable to this chapter may be found in a variety of forms including liquid, solid, gaseous, etc. These exposures may arise from work tasks and processes that involve the handling or use of toxic and hazardous substances.

3301. GOALS AND OBJECTIVES. The goal of the FAA Toxic and Hazardous Substances Exposure Control Program is to provide programs and procedures that will ensure the protection of FAA employees from excessive exposure to these substances.

3302. SCOPE. This chapter applies to all personnel in FAA-owned or leased buildings and/or facilities and all FAA personnel in GSA-controlled buildings and/or facilities. This includes, but is not limited to, employees involved in purchasing, receiving, handling, and using toxic and hazardous substances in the workplace. In addition, FAA contractors and sub-contractors who use or transport toxic or hazardous substances must have their own hazard communication program and comply with paragraph 1905d, Requirements for Contractors or Other Outside Personnel, of Chapter 19, Hazard Communication Program.

3303. STANDARDS AND GUIDELINES. Federal, state, and local governments have promulgated regulations concerning exposure to toxic and hazardous substances. OSHA standards and other guidelines that apply to FAA workplaces include, but are not limited to, the following:

- a. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances
- b. 29 CFR 1926, Subpart Z, Toxic and Hazardous Substances
- c. The American Conference of Governmental Industrial Hygienists (ACGIH) 2001 *TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents*. A current edition may be purchased from ACGIH, Kemper Woods Center, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634. See also <http://www.acgih.org> for ordering information.

3304. PROGRAM REQUIREMENTS.

a. General. The following process is to be utilized for establishing a program to evaluate employee exposure to toxic and hazardous substances in FAA workplaces:

(1) Evaluate the workplace to identify the presence or potential for toxic and hazardous substances. If the presence of a toxic or hazardous substance(s) is identified, appropriate testing should be conducted by technically qualified safety personnel (see 3900.19B, Chapter 1, General, Definitions, paragraph 11h) for exposure determination.

(2) If the exposure determination reveals that acceptable levels are exceeded, a hazard control program should be established to remove or reduce the hazard, or substitute the substance with a less hazardous material.

(3) Chapter 15, Asbestos Control Program, addresses asbestos control programs and is to be followed if potential asbestos exposures exist.

b. Exposure Limits. FAA shall comply with all applicable standards and this chapter to reduce or minimize toxic or hazardous substance exposures.

(1) No FAA employee working on FAA premises shall be exposed to any toxic or hazardous substance in excess of the permissible exposure limits (PELs) specified in 29 CFR 1910, Subpart Z, or in excess of the threshold limit values (TLVs) as recommended in the current edition of the American Conference of Governmental Industrial Hygienists (ACGIH) *Threshold Limit Values (TLVs) and Biological Exposure Indices - Values for Chemical Substances and Physical Agents*, unless controls, as described in paragraph 3304e, are in place.

(2) In case of conflicts between the OSHA PELs and the TLVs, the more stringent shall prevail.

c. Hazard Identification. Technically qualified safety personnel shall evaluate FAA operations, materials, and equipment for potential to expose workers to toxic and hazardous substances above acceptable limits. (See Chapter 23, Job hazard Analysis, for guidance.) Where such exposures have been identified, a hazard control program must be developed in accordance with Chapter 19, Hazard Communication, and OSHA 29 CFR 1200, Hazard Communication Standard.

d. Testing and Monitoring.

(1) Technically qualified safety personnel shall determine the concentrations of, and related hazards of (i.e., skin contact, physical hazards, etc.), toxic and hazardous substances in accordance with acceptable industry practice to ensure the full evaluation of all hazards. Only laboratories accredited by the American Industrial Hygiene Association (AIHA) or other similar accrediting body shall be used for sample analysis.

(2) When the potential for airborne toxic or hazardous substances exists, employee exposures shall be determined by taking a personal breathing zone air sample. In addition, at the discretion of technically qualified safety personnel, area air samples may be taken.

(3) Employees for whom sampling is conducted shall be notified in writing of the results of any monitoring within 15 working days of receipt of the laboratory report.

e. Exposure Control.

(1) To achieve compliance with exposure limits specified in paragraph 3304b, engineering controls must be evaluated and implemented whenever feasible. Please see the “Hierarchy of Control Measures” in paragraph 2305e(2) of Chapter 23, Job Hazard Analysis.

(2) When engineering controls are not feasible, nor sufficient to reduce exposure to within acceptable limits, administrative controls (such as, rotation of workers, employee training, etc.) shall be evaluated and implemented. Administrative controls shall also be implemented during initiation of engineering controls.

(3) When engineering or administrative controls are not feasible, or are not sufficient, personal protective equipment (PPE) (such as respirators or gloves) shall be instituted, provided the use of PPE reduces the exposure to within acceptable limits. For further information, please see Chapter 25, FAA Personal Protective Equipment.

f. Information and Training. All employees using, storing, or handling toxic and hazardous substances shall receive training on the information contained in the manufacturer's Material Safety Data Sheet (MSDS) for the substance, and any additional safety and health instructions required to understand this information, per Chapter 19, Hazard Communication Program. If applicable, training shall include the proper selection, use and maintenance of PPE.

g. Recordkeeping.

(1) Employee exposure records shall be maintained by the appropriate safety office and made available to employees in accordance with applicable substance-specific OSHA standards, 29 CFR 1910.1020, Access to Employee Exposure and Medical Records, and Chapter 12, Occupational Medical Surveillance Program.

(2) Medical records shall be maintained by Aerospace Medicine in a secure location and made accessible to employees in accordance with applicable substance-specific OSHA standards, 29 CFR 1910.1020, Access to Employee Exposure and Medical Records, and Chapter 12, Occupational Medical Surveillance Program.

CHAPTER 34. ELECTRICAL SAFETY

3400. GENERAL. This chapter establishes minimum safety requirements to protect employees from shock hazards from electrical equipment during installation, or installed or used within or on buildings, structures or other premises. Such installations are pervasive at FAA worksites. This chapter references general requirements for compliance with the Department of Labor, Occupational Safety and Health Administration (OSHA) standards for:

a. General Industry at:

- (1) 29 CFR 1910, Subpart S, Electrical
- (2) 29 CFR 1910.137, Electrical Protective Devices (within Subpart I)
- (3) 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout) (within Subpart J)
- (4) 29 CFR 1910.268, Telecommunication (within Subpart R)

b. Construction at:

- (1) 29 CFR 1926, Subpart K, Electrical

c. The chapter also references:

- (1) National Electrical Code (NEC), NFPA 70
- (2) Standard for Electrical Safety Requirements for Employee Workplaces, NFPA 70E
- (3) FAA Order 3900.19B, Chapter 1, General, paragraph 9c, Consensus Standards
- (4) FAA Order 3900.19B, Chapter 13, Hazardous Energy Control Program (Lockout/Tagout)
- (5) FAA Order 3900.19B, Chapter 24, Fire Prevention Program
- (6) FAA Order 3900.19B, Chapter 25, FAA Personal Protective Equipment

This chapter does not address every requirement of the documents referenced. Relevant portions of the most current version of each these documents should be reviewed in their entirety.

3401. GOALS AND OBJECTIVES. The common goal of the electrical safety programs of the various FAA regions and centers is to ensure that safety hazards associated with exposure to electrical equipment are addressed, so that FAA employees are protected at work. One of the specific objectives is that all employees exposed to electrical hazards shall be trained before they begin work.

3402. SCOPE. Electrical safety programs apply to all employees, both Government personnel and contractors, working at FAA facilities. This includes, but is not necessarily limited to, employees involved in design, acquisition, installation, modification, maintenance, or service work on machines, equipment or systems.

3403. KEY PROGRAM ELEMENTS.

a. Documented Program. As part of a documented electrical safety program, a written electrical safety plan must be developed and implemented to ensure that the following program elements are addressed before employees engage in installation, maintenance, modification, or servicing of machines, equipment, tools, or systems. The written plan must address how (a) each of the elements specified immediately below, and (b) the elements specified in paragraphs 3404 through 3407, will be implemented. Particular emphasis must be placed on those elements addressing training. The designated program administrator must evaluate the plan annually and take any steps necessary to ensure that it continues to address effectively the concerns of the electrical safety program.

b. Designated Program Administrator. A Technically Qualified Safety Person (TQSP), as specified in paragraph 11h of this Order, shall manage the electrical safety program and coordinate the overall implementation and oversight of each regional, center, service area, or Line of Business electrical safety program. A TQSP shall be responsible for each applicable installation, maintenance action, modification, or servicing of machines, equipment or systems.

c. Program Elements.

(1) Examination. Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. Potential safety hazards shall be evaluated through an examination by a TQSP who considers suitability for installation and use; mechanical strength and durability; electrical insulation; heating affects under conditions of use; arcing effects; classification by type, size, voltage, amperage, and specific use. The label of an OSHA-listed Nationally Recognized Testing Laboratory (NRTL) shall be evidence that the equipment is suitable for the specific installation or use, per NFPA 70E.

(2) Installation and Use. Equipment shall be installed and maintained in accordance with manufacturers' specifications and FAA requirements on electrical safety.

(3) Splices. Conductors shall be spliced or joined with splicing devices suitable for the use or by brazing, welding, or soldering with a fusible metal or alloy. Soldered splices shall first be spliced or joined to be mechanically and electrically secure without solder and then soldered. Splices and joints and the free ends of conductors shall be covered with insulation equivalent to that of the conductors or with an approved insulating device suitable for the purpose.

(4) Arcing Parts. Parts of electrical equipment which in ordinary operation produce arcs, sparks, flames, or molten metal shall be enclosed or separated and isolated from all combustible and flammable materials. A fire watch with an appropriate fire extinguisher shall be utilized in these operations to put out any smoldering materials or metals from the operation.

(5) Marking. Electrical equipment shall not be used unless the manufacturer's name, trademark, or other descriptive marking which may identify the organization responsible for the product is present on the equipment. Other markings shall be provided giving the date of manufacture, voltage, current, wattage, or other ratings as necessary. The markings shall be of sufficient durability to withstand the environment involved.

(6) Working Space Around Electrical Equipment. Sufficient access and working space, consistent with the requirements of the National Electrical Code (NEC) in effect at the time of the installation, or the contract date, shall be provided and maintained about all electrical equipment in new installations, to permit ready and safe operation and maintenance. Where "grandfathered" existing installations do not permit compliance with current NEC requirements, additional worker protection must be provided if required.

(a) Clear spaces. Working space required by 29 CFR 1910, Subpart S, or the National Electrical Code shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space shall be suitably guarded. For more detailed guidance consult 29 CFR 1910. 303(g)(1) and 29 CFR 1910. 303 (h)(3).

(b) Access and entrance to working space. At least one entrance of sufficient width and area shall be provided to give access to the working space around electrical equipment.

(c) Front working space. Where there are live parts normally exposed; *e.g.*, on the front of switchboards or motor control centers, the working space in front of such equipment shall not be less than three feet.

(d) Illumination. Proper illumination shall be provided for all working spaces about service equipment, switchboards, panel boards, and motor control centers installed indoors. 29 CFR 1926.56(a) requires a minimum of 10 foot-candles for electrical equipment rooms. For more specifics, the American National Standards (ANSI) A11.1-1965, R1970, Practice for Industrial Lighting, should be consulted.

(e) Headroom. The minimum headroom of working spaces about service equipment, switchboards, panel-boards, or motor control centers shall be 6 feet 3 inches.

(7) Guarding (50-600 volts). Except as required or permitted elsewhere in 29 CFR 1910, Subpart S, live parts of electrical equipment employing a primary (input) power feed within the range of 50 to 600 volts, and having no unprotected or exposed components having a potential exceeding 600 volts, shall be guarded against accidental contact by personnel by means of approved cabinets or other forms of approved enclosures, or by any of the following means:

(a) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

(b) By suitable permanent, substantial partitions or screens so arranged that only qualified persons have access to the space within reach of the live parts. Any openings in such partitions or screens shall be so sized and located that personnel are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them.

(c) By location on a suitable balcony, gallery, or platform so elevated and arranged as to exclude unqualified persons, or by elevation of eight feet or more above the floor or other working surface.

(d) Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

(8) Guarding (more than 600 volts). Electrical feeds of, and equipment using a primary (input) power feed of, 600 or more volts, must comply with paragraphs 3403c(1)-c(7), as well as the following requirements. These requirements do not apply to equipment that is connected directly to the supply side of the service conductors:

(a) Enclosure for electrical installations. Electrical installations in a vault, room, closet, or area surrounded by a wall, screen or fence, access to which is controlled by a lock and key or other approved means, are considered to be accessible to qualified persons only. The entrance to all buildings, rooms, or enclosures containing exposed live parts or exposed conductors operating at more than 600 volts shall be kept secured or be under the observation of a qualified person at all times.

(b) Installations accessible to qualified persons only. Electrical installations having exposed live parts shall be accessible to qualified persons only.

(c) Installations accessible to unqualified persons. Electrical installations that are accessible to unqualified persons shall be made of metal-enclosed equipment, fiberglass cabinets or service boxes, or shall be enclosed in a vault or in an area access to which is controlled by a lock and key or other approved means.

(d) Workspace around equipment. Approved clearances in accordance with the National Electrical Code (NEC) shall be maintained around electrical equipment to permit ready and safe operation and maintenance. Where energized parts are exposed, the minimum clear workspace shall not be less than six feet, six inches high (measured vertically from the floor or platform) or less than three feet from the equipment footprint, or the projection of any protruding parts onto the surface on which the equipment rests, or in the case of equipment mounted on a wall, the projection onto the floor surface below. Adequate illumination shall be provided for all workspaces around electrical equipment according to references in paragraph 3403c (6)(d) above.

(e) Elevated work areas. Permanent ladders or stairways, man-lifts, or bucket trucks shall be provided to give safe access to the working space around electrical equipment installed on platforms, balconies, mezzanine floors, or in attic or roof-mounted rooms or spaces. All portable ladders shall be non-conductive.

3404. USE OF EQUIPMENT.

a. Portable Electrical Equipment. Portable cord-and-plug-connected equipment, and extension cords, shall be visually inspected for external defects before each use. A ground fault circuit interrupter (GFCI) is required for all electrically powered tools used in any environment in which the operator may be situated on a surface that is not insulated with respect to earth ground (*e.g.*, outdoors, or indoors on a damp concrete basement floor). Extension cords shall (a) have voltage and amperage ratings consistent with the requirements of the equipment or tool(s) to which they are providing power, (b) not have splices or taps, and (c) not be connected in series with one another. If there is a defect, or evidence of damage that might result in injury, the defective or damaged item shall be removed from service.

b. Grounded Equipment. An extension cord used with equipment requiring grounding for safety purposes shall have an equipment-grounding conductor, with three-pronged plug and receptacle. Facilities still equipped with duplex receptacles must have the duplex receptacles replaced.

c. Conductive Work Locations. Only battery-powered portable electrical equipment shall be used in any highly conductive environment such as a water-inundated area (*e.g.*, a flooded concrete floor, or wet earth).

d. Hazardous Locations. Equipment, wiring methods, and installations in hazardous (classified) locations shall be intrinsically safe, or approved for the hazardous (classified) location. Hazardous locations are classified in 29 CFR 1910.307 based on the properties of the flammable vapors, liquids or gases, or combustible dusts or fibers which may be present therein and the likelihood that a flammable or combustible concentration or quantity is present.

3405. SELECTION AND USE OF SAFETY-RELATED WORK PRACTICES.

a. General. FAA employees and contractors shall employ safety related work practices to prevent electric shock or other injuries resulting from either intentional or unintentional electrical contacts when work is performed on or near equipment or circuits that are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards. Electrical work shall be performed in accordance with 29 CFR 1910, Subpart S, and NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces, latest Edition.

b. De-energized parts. Live parts to which personnel may be exposed shall be de-energized before anyone works on or near them, unless FAA management can demonstrate that de-energizing introduces additional or increased hazards, or is infeasible because of equipment design or operational limitations. Live parts that operate at less than 50 volts with respect to ground need not be deenergized if there will be no increased exposure, *e.g.*, to an electrical burn or an explosion triggered by electric arcs.

c. Energized parts. If exposed live parts are not de-energized, other safety-related work practices shall be used to protect personnel who may be at risk. Such work practices shall be sufficient to (a) protect employees against bodily contact with energized circuit parts, whether such contact is direct or indirect (*e.g.*, by any conductor of electricity that is not a normal or usual part of the energized circuit); and (b) inadvertent approach to the proximity of circuits of a voltage sufficiently high as to present an electrocution or shock hazard by arcing.

d. Work practices. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts.

e. Lockout/Tagout. While any employee is exposed to contact with electrical equipment or circuits that have been de-energized, the means by which de-energizing was accomplished (*e.g.*, circuit breaker or switch operation, unplugging, fuse removal) shall be secured by being locked in the safe (“off”) position, and/or by tagging in accordance with the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout) and the FAA Order 3900.19B, Chapter 13, Hazardous Energy Control Program (Lockout/Tagout) and associated implementation guidance provided by individual Lines of Business (LOB).

f. Work on energized equipment. Only qualified persons may work on electrical equipment or circuits that have not been de-energized and locked out or tagged out. Such qualified persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

g. Entry. Employees may not enter areas in which there are exposed energized parts, unless they have been properly trained and provided personnel protective equipment as outlined below. Adequate illumination shall be provided for all workspaces around electrical equipment in accordance with the references cited herein in paragraph 3403c (6) (d), above. Additional requirements are required to safeguard the worker if the space being entered is a confined space as described in Chapter 11 of this order, and in 29 CFR 1910.146.

3406. USE OF PERSONAL PROTECTIVE EQUIPMENT.

a. FAA employees and contractors working in areas where there are potential electrical hazards shall be provided with, and shall use, protective clothing or other protective equipment that is appropriate the work to be performed. Contractors shall provide their own personal protective equipment. Personal protective equipment requirements are contained in FAA Order 3900.19B, Chapter 25, FAA Personal Protective Equipment. A Job Hazard Analysis procedure is covered in Chapter 23 of this Order to help identify personal protective equipment and clothing needs.

b. Personal protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested.

c. If the insulating capability of personal protective equipment may be subject to damage during use, it shall be protected; *e.g.*, by an outer covering of leather, as sometimes used for the protection of rubber insulating material.

d. Personnel shall wear nonconductive head protection and protective equipment for the eyes and face wherever there is a danger from electrical shock or burns due to contact with exposed energized parts.

e. Neither wristwatches with electrically conductive cases, wristbands or straps, nor jewelry, shall be worn while performing electrical work. Wedding bands may be left on the ring finger if insulated by a piece of tape placed over the wedding band.

f. Employees shall wear protective equipment for the eyes, face, and head wherever there is danger of injury to same from electric arcs or flying objects resulting from electric arcs or an electrically triggered explosion

g. Fire-rated clothing, with the correct Arc Thermal Performance Exposure Value (ATPV) rating shall be worn whenever there is a flash hazard. The ATPV specification provides performance requirements for clothing worn by electric utility workers and other personnel working around energized parts. In addition to non-thermal requirements, the standard requires the fabric to be flame-resistant; that is, to not ignite and continue to burn after exposure to an ignition source.

h. General protective equipment and tools.

(1) When working near exposed energized conductors or circuit parts, employees shall use insulated tools or handling equipment if the tools or handling equipment might make contact with such conductors or parts. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulation shall be inspected frequently, and any damage repaired, or the tool removed from service. Most insulated tools state on them “Not for personnel protection, but circuit protection.” The proper “real” insulated tools are clearly color coded and marked for the voltage application. Use only properly marked insulated tools, marked for use with the applicable voltage.

(2) Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized.

(3) Ropes and handlines used near exposed energized parts shall be nonconductive.

(4) Protective shields or barriers, or insulating materials shall be used to protect personnel from shock, burns, or related injuries while working near exposed energized parts which might be accidentally contacted or where dangerous electrical heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.

i. Alerting techniques. The following alerting techniques shall be used to warn and protect personnel from hazards that could cause injury from electrical shock, burns, or failure of electrical equipment parts:

(1) Safety signs and tags. Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about electrical hazards that may endanger them.

(2) Barricades. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit access by personnel to work areas exposing them to uninsulated energized conductors or circuit parts.

(3) Attendants. If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees.

3407. TRAINING.

a. Scope of training. FAA employees shall be trained in, and become familiar with, the safety-related work practices that pertain to their respective job assignments where those job assignments place them at risk of electric shock that cannot be reduced to a safe level by engineering controls.

b. Content of training for Qualified Persons. Qualified Persons familiar with the construction and operation of the equipment they will be working with, and the hazards involved, and permitted to work on or near exposed energized parts shall at a minimum be trained and familiar with the following:

(1) The skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment

(2) The skills and techniques necessary to determine the nominal voltage of exposed live parts

(3) The clearance distances specified by the NFPA, and the corresponding voltages to which the qualified person will be exposed.

Note 1: Whether an employee is considered to be a qualified person depends upon various circumstances in the workplace. It is possible, and in fact, likely, for an individual to be considered qualified with regard to certain equipment in the workplace, but unqualified as to other equipment.

Note 2: An employee who is undergoing on-the-job training, and who, in the course of such training, has demonstrated the ability to perform duties safely at his or her level of training, and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

c. Content of Training for Unqualified Persons. The training required shall be of the classroom or on-the-job type. The degree of training provided shall be based on an assessment of the risk of electrical shock by a person with the training to make that determination.

d. Recordkeeping. All training shall be properly documented in FAA's official training information system. Documentation shall include a written certification record that contains the course name or a complete and accurate description of the training, the name or other identifier of the employee trained, the date(s) of the training, and the signature of the competent person who performed the training.

3408. DEFINITIONS. *(Also see OSHA definitions in 29 CFR 1910.399)*

a. Accessible.

(1) As applied to wiring methods (a) capable of being removed or exposed without damage to the building or structure, or finish thereof, in which it is situated; or (b) not permanently enclosed by the building, structure, or finish thereof, in which it is situated. *(See also concealed and exposed.)*

(2) As applied to equipment, admitting close approach, not guarded by locked doors, elevation, or other effective means. *(See also readily accessible.)*

b. Cabinet. With respect to installations of electrical equipment, an enclosure designed either for surface or flush mounting, and provided with a frame, mat, or trim in which a swinging door or doors are or may be hung.

c. Certified.

(1) Of electrical equipment, having been tested or type-tested by an OSHA-listed nationally recognized testing laboratory (NRTL) and found to meet nationally recognized standards, or to be safe for use in a specified manner or given application, and labeled, tagged, or recorded as such.

(2) Of electrical equipment or components, being of a kind whose production is periodically inspected by an OSHA-listed nationally recognized testing laboratory (NRTL), found to meet nationally recognized standards, or to be safe for use in a specified manner or given application, and labeled, tagged, or recorded as such.

d. Circuit breaker. A device designed to open an electrical circuit automatically upon sensing a predetermined overcurrent, and sometimes, upon sensing other faults such as a ground fault, without injury to itself when properly applied within its rating. *Note:* A circuit breaker may also be operated manually to isolate an electrical circuit; *e.g.*, to permit work on the isolated section. It should be recognized that repeated manual operation of some circuit breakers may result in automatic operation, creating an open circuit under a lower-than-specified current.

e. Concealed. Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them. [*See Accessible. (As applied to wiring methods.)*]

f. Conductor. Any substance in which ions or free electrons may facilitate the flow of an electrical current; specifically, a metallic strand or component used for the transfer of electrical energy or a communications signal. *Note:* In electrical power distribution, several classifications of conductor are recognized:

(1) A bare conductor is a conductor having no covering or electrical insulation whatsoever.

(2) A covered conductor is a conductor encased within material of composition or thickness that is not recognized as electrical insulation.

(3) An insulated conductor is a conductor encased within (usually in intimate contact with), or covered by, material of composition and thickness that is recognized as electrical insulation.

g. Explosion-proof apparatus.

(1) Apparatus enclosed in a case that is capable of withstanding (containing) an internal explosion; *e.g.*, of a specified gas mixture or vapor.

(2) Apparatus enclosed in a case that (a) is capable of preventing the ignition (*e.g.*, by sparks, flashes or an explosion generated by the apparatus) of a specified gas, gas mixture, or vapor external to the case, and (b) which apparatus operates at such a temperature that the case that encloses it will not reach a temperature capable of igniting a specified surrounding (external) gas, gas mixture, or vapor.

h. Exposed. With respect to electrically live parts, capable of being inadvertently touched, or approached to an unsafe distance. *See also accessible and concealed.*

i. Fuse. An overcurrent protective device having as its primary component a conducting medium that will melt and disperse when subjected to heating by a specified overcurrent, thus interrupting the flow of current to the protected circuit or apparatus.

j. Ground. A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or allowing the electrical current to be safely dissipated to ground.

k. Grounded.

(1) In electrical contact with earth (“earth ground”).

(2) In electrical contact with a conductor that by design, or inadvertently, serves as a common return path for an electrical current or currents in place of the earth.

l. Ground-Fault Circuit Interrupter (GFCI). A device whose function is to interrupt the electrical circuit to a load when a fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. *Note:* A ground-fault circuit interrupter is used to protect personnel from being subjected to potentially fatal or injurious electrical currents that are insufficient to trigger a circuit breaker, or melt a fuse, designed to protect only the electrical equipment.

m. Labeled. Of electrical equipment or components, referring to the presence of a label, symbol, or other identifying mark of an OSHA-listed nationally recognized testing laboratory (NRTL) which (a) makes periodic inspections of the production of such equipment or components, and (b) whose labeling indicates compliance with nationally recognized standards, or a determination by testing that the equipment or components are safe when used in a specified manner.

n. Location. With respect to installations of electrical equipment, the environment in which the equipment is installed. Several classifications of location, based on the presence or likelihood of moisture, are recognized:

(1) **Damp Location.** A location that is partially protected from direct exposure to wet weather. *Note:* Examples of damp locations are an area under a canopy, marquee, or roofed open porch, a basement subject to water intrusion, and some barns and cold-storage warehouses.

(2) **Dry Location.** A location not normally subject to dampness or water intrusion. *Note:* A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

(3) **Wet Location** A location normally exposed directly to wet weather or water intrusion, such as an underground installation, an installation in direct contact with earth or a concrete slab in contact with earth, and an area used for washing motor vehicles.

Note: Locations at some FAA sites, such as on airport properties, may be subject to intrusion by hydrocarbon fuels. These hydrocarbons can be harmful even if intruding water is quickly dispersed. Hydrocarbons, which tend to coat objects with which they come into contact, even when relatively small quantities are transported by intruding water, can cause rapid deterioration of, *e.g.*, plastics used for insulation or cable jackets. Special protective construction or insulating materials such as polytetrafluoroethylene (PTFE, “Teflon”) may be indicated for such locations.

o. Panelboard. A single panel, or group of panel units assembled to create a single panel, including, *e.g.*, buses or automatic overcurrent devices, and with or without switches, for the control or protection of lighting, heating, or power distribution circuits, *etc.*, and designed to be placed in a cabinet or cutout box recessed within, or mounted on, a wall or partition, and accessible only from the front. (See *also* switchboard.)

p. Qualified Person. One familiar with the construction, safe operation of, and hazards associated with, a given installation, system, or piece or type of equipment.

Note 1: Whether an individual is considered to be a qualified person depends on various circumstances, including level of training and site-specific circumstances. It is quite possible for an individual to be qualified with respect to certain equipment in the workplace, and unqualified with respect to other equipment.

Note 2: See 29 CFR 1910.332 (b) (3) for training requirements that specifically apply to qualified persons.)

Note 3: An individual who is undergoing on-the-job training, and who, in the course of such training, has demonstrated the ability to perform specified duties safely at his or her level of training, and who is under the direct supervision of a qualified person, may be considered to be a qualified person for the performance of those duties.

q. Readily accessible. Capable of being reached quickly for operation, renewal, or inspections, so that those needing access do not have to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (See **Accessible**.)

r. Switchboard. A usually large single panel, frame, or assembly of panels, having, *e.g.*, switches, buses, instruments, or overcurrent or other protective devices mounted on the front or back or both. *Note:* Switchboards are distinguished from panelboards in that they are usually accessible from the rear as well as from the front, and are not intended to be installed in cabinets. *See also* **panelboard**.

s. Voltage. The difference in electric potential, expressed in volts, between two points, *e.g.*, conductors in a circuit. Some related terms are:

(1) Voltage, Nominal. Of a circuit or load, a designated or assigned voltage value, the purpose of which is to express the voltage class (*e.g.*, 120/240, 480Y/277, 600). *Note:* The actual voltage at which a circuit operates will vary from the nominal, but is required to be within a range that permits satisfactory operation.

(2) Voltage Rating.

(a) The range of voltages over which a piece of electrical equipment, or a device, is specified to operate properly.

(b) The highest voltage at which an electrical insulator is specified be effective, or designed to withstand.

(c) The highest voltage that maybe applied to a conductor in conformity with a standard or specification.

(3) Volts, Alternating Current (Vac). The root-mean-square (rms) difference of potential between two conductors, which potential alternates in polarity, usually in a nominally sinusoidal, and sometimes (*e.g.*, in backup or uninterruptible power supplies) in a square-wave, waveform.

Note 1: The rms difference of potential is the effective difference of potential as applied to computing the electrical power, *e.g.*, transmitted by a power line, or consumed by a load.

Note 2: For a sinusoidal waveform, the rms value is approximately 0.707 times the peak voltage value; conversely, the peak value is approximately 1.414 times the rms value.

(4) Volts, Direct Current (Vdc) The voltage between two conductors, which voltage remains unchanged in polarity and is usually understood to be nominally constant in magnitude.