U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

William J. Hughes Technical Center Policy

ORDER

CT 3900.55B

Effective Date:

08/24/2010

SUBJ: Occupational Safety and Health

It is the policy of the William J. Hughes Technical Center to provide a safe and healthful work environment for all employees, visitors, contractor employees, and employees of other Federal agencies.

The Occupational Safety and Health Order has been prepared in an effort to prevent injuries, illnesses, and death from work related causes and to minimize losses of material resources and interruptions due to accidental occurrences. It is directed toward the control of all types of hazards encountered in the performance of official duties.

This Order is a part of a continuing program for providing safety information to personnel. We all share in the responsibility for the safety and health of our employees, contractors, and visitors. Use this Technical Center Order to ensure a safe and healthful working environment for all of us at the Technical Center.

Wilson N. Felder
Director, William J. Hughes Technical Center

08/24/2010
Date Signed

Distribution: Electronic

Initiated By: AJP-7932

RECORD OF CHANGES

DIRECTIVE NO. **REC NO**

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL

TABLE OF CONTENTS

Chapter 1. Administration

Paragraph		Page
1.0	Purpose of This Order	1
1.1	Audience	1
1.2	Where Can I Find This Order	1
1.3	What This Order Cancels	1
1.4	Distribution	1
1.5	Background	1
1.6	Standards	1
1.7	Occupational Safety And Health Program Requirements	2
1.8	Definitions	2
1.9	Responsibilities Of The Center Director and Managers	3
1.10	Responsibilities Of All Center Supervisors And Employees	3

Chapter 2. Personal Protective Equipment

2.0	Purpose	5
2.1	Program Components	5
2.2	Description And Use Of Personal Protective Equipment	6
2.3	Training	8
2.4	Recordkeeping	8
2.5	Procurement	8
2.6	Other Documents	8
2.7	Figure 2-1 Hazard Assessment Certification For Personal Protective Equipment	9
2.8	Figure 2-2 Glove Chart	12

Chapter 3. Medical Surveillance Program

3.0	Purpose	13
3.1	Medical Surveillance Requirements	13
3.2	Medical Examination Requirements	13
3.3	Medical Recordkeeping	14

Chapter 4. Industrial Hygiene Program

4.0	Purpose	15
4.1	Industrial Hygiene Surveys And Hazard Assessments	15
4.2	Workplace Monitoring	15
4.3	Equipment	15
4.4	Recordkeeping	16

Chapter 5. Respiratory Protection Program

5.0 Purpose ---------- 17
5.1 Medical Evaluation ---------- 17
5.2 Selection And Use Of Respiratory Protective Devices ---------- 17
5.3 Respirator Training ---------- 19
5.4 Respirator Fit Testing ---------- 19
5.5 Qualitative Fit Testing ---------- 20
5.6 Quantitative Fit Testing ---------- 20
5.7 Special Problems ---------- 20
5.8 Maintenance And Issuance Of Respirators ---------- 21
5.9 Issuance Of Respirators ---------- 21
5.10 Storage ---------- 21
5.11 Program Evaluation ---------- 21
5.12 Recordkeeping ---------- 22
5.13 Contractors ---------- 22
5.14 Voluntary Use Of Respirators ---------- 22

Chapter 6. Hearing Conservation Program

6.0 Purpose ---------- 23
6.1 Noise Evaluation And Surveillance Procedures ---------- 23
6.2 Noise Control Methods ---------- 24
6.3 Medical Surveillance ---------- 25
6.4 Training ---------- 26
6.5 Program Evaluation ---------- 26
6.6 Recordkeeping ---------- 26
6.7 Other Documents ---------- 26

Chapter 7. Ergonomics Program

7.0 Purpose ---------- 27
7.1 Hazard Identification/Analysis ---------- 27
7.2 Hazard Prevention And Control ---------- 27
7.3 Training ---------- 28
7.4 Recordkeeping ---------- 28

Chapter 8. Indoor Air Quality

8.0 Purpose ---------- 29
8.1 Definitions ---------- 29
8.2 Building Design And Maintenance Considerations ---------- 29
8.3 Indoor Equipment Use ---------- 30
8.4 Investigation Guidelines ---------- 31
8.5 Mold ---------- 31
8.6 Interpretation Of Survey Results ---------- 31
8.7 Remediation And Control ---------- 32

8.8 Table 8-1 Acceptable Ranges of Temperature and Humidity during Summer and Winter -- 32

Chapter 9. Radiation Program

9.0 Purpose ---------- 33
9.1 Procurement ---------- 33
9.2 Inventory ---------- 33
9.3 Ionizing Radiation ---------- 33
9.4 Equipment Containing Sealed Sources ---------- 33
9.5 Labeling ---------- 34
9.6 Non-Ionizing Radiation ---------- 34
9.7 Monitoring ---------- 35
9.8 Training ---------- 36
9.9 Medical Surveillance ---------- 36
9.10 Recordkeeping ---------- 36
9.11 Other Requirements ---------- 36

Chapter 10. Infectious Materials/Bloodborne Pathogens

10.0 Purpose ---------- 37
10.1 Exposure Control Procedures ---------- 37
10.2 Personal Protective Equipment ---------- 37
10.3 Housekeeping ---------- 37
10.4 Hepatitis B Vaccination ---------- 37
10.5 Training ---------- 37
10.6 Recordkeeping ---------- 38
10.7 Evaluating An Exposure Incident ---------- 38
10.8 Contractors ---------- 38

Chapter 11. Biological & Lyme Disease Prevention

11.0 Purpose ---------- 39
11.1 General Requirements ---------- 39
11.2 General Requirements - Stings, Bites, And Allergies ---------- 39
11.3 Poison Ivy, Oak, And Sumac ---------- 41

Chapter 12. Laboratory Safety

12.0 Purpose ---------- 43
12.1 Chemical Hygiene Plan ---------- 43
12.2 Radiological Hazards ---------- 43
12.3 Toxic Materials ---------- 43
12.4 Hazard Warning Signs And Labels ---------- 43
12.5 Hazard Containment ---------- 43
12.6 Safe Work Practices ---------- 44
12.7 Personal Protective Equipment (PPE) ---------- 44
12.8 Compressed Gases ---------- 44

12.9 Safe Use Of Laboratory Equipment And Facilities ---------- 45
12.10 Hazard Waste Disposal Methods ---------- 45

Chapter 13. Temperature

13.0 Purpose ---------- 47
13.1 Cold Environments ---------- 47
13.2 Hot Environments ---------- 47

Chapter 14. Office Safety

14.0 Purpose ---------- 49
14.1 Housekeeping ---------- 49
14.2 Electrical Safety ---------- 49
14.3 Noise ---------- 49
14.4 Indoor Air Quality ---------- 50

Chapter 15. Fire Safety

15.0 Purpose ---------- 51
15.1 Fire Prevention ---------- 51
15.2 Fire Protection ---------- 54
15.3 Employee Life Safety Issues ---------- 54
15.4 Figure 15-1 Hot Work Permit Form ---------- 56
15.5 Figure 15-2 Personal Item Usage Form ---------- 57
15.6 Figure 15-3 Personal Item Inspection Form ---------- 58

Chapter 16. Contractor Safety

16.0 Purpose ---------- 59
16.1 Responsibilities ---------- 59
16.2 Organization Requesting Contract Services ---------- 59
16.3 Contracting Officer's Technical Representative ---------- 59
16.4 Safety Office ---------- 60
16.5 Contractor ---------- 60
16.6 Health And Safety Plan ---------- 60
16.7 Pre-Construction Meeting ---------- 60
16.8 Fire Prevention And Protection ---------- 60
16.9 Noncompliance With Safety And Health Requirements ---------- 61
16.10 Safety Training ---------- 61
16.11 Medical Clearance ---------- 61
16.12 Incident Reporting ---------- 61
16.13 Safety And Personal Protective Equipment ---------- 61
16.14 Documentation ---------- 61

Chapter 17. General Shop Safety

17.0 Purpose ---------- 62
17.1 Employee Training ---------- 62
17.2 Personal Protective Equipment (PPE) ---------- 62
17.3 Shop Layout ---------- 62
17.4 Illumination ---------- 62
17.5 Exits And Exit Markings ---------- 63
17.6 Housekeeping ---------- 63
17.7 Fire Prevention ---------- 63
17.8 Material Storage ---------- 63
17.9 Use Of Tools ---------- 64
17.10 Use Of Compressed Air Sources ---------- 64
17.11 Machine Guarding ---------- 64
17.12 Local Exhaust ---------- 64

Chapter 18. Hazard Communication Program

18.0 Purpose ---------- 65
18.1 Hazard Communication Program ---------- 65
18.2 Multi-Employer Workplaces ---------- 66
18.3 Trade Secrets ---------- 67
18.4 Chemical Purchases ---------- 67
18.5 Eyewash And Emergency Showers ---------- 67
18.6 Other Documents ---------- 67

Chapter 19. Lockout/Tagout Program

19.0 Purpose ---------- 69
19.1 General Requirements ---------- 69
19.2 Training ---------- 70
19.3 Inspection ---------- 71
19.4 Equipment Testing ---------- 71
19.5 Group And Shift-Change Lockout/Tagout Procedures ---------- 72
19.6 Contractors ---------- 72

Chapter 20. Confined Space Entry Program

20.0 Purpose ---------- 73
20.1 Definitions ---------- 73
20.2 General Requirements ---------- 74
20.3 Training ---------- 75
20.4 Personnel Requirements ---------- 76
20.5 Testing And Monitoring ---------- 76
20.6 Acceptable Entry Conditions ---------- 77
20.7 Safety Equipment And Clothing ---------- 77
20.8 Work Practices ---------- 77

20.9 Rescue And Emergency Services ---------- 78
20.10 Contractors ---------- 78
20.11 Other Documents ---------- 78
20.12 Figure 20-1 Confined Space Entry Permit Form ---------- 79

Chapter 21. Machinery and Equipment

21.0 Purpose ---------- 81
21.1 Hand-Held And Portable Powered Tools ---------- 82
21.2 Explosive Actuated Fastening Tools ---------- 83
21.3 Air Compressor And Receiver ---------- 83
21.4 Fork Lifts - General Requirements ---------- 83
21.5 Figure 21-1 Forklift Safety Checklist ---------- 85

Chapter 22. Cutting and Welding

22.0 Purpose ---------- 87
22.1 Operating Procedures ---------- 87
22.2 Personal Protective Equipment ---------- 88
22.3 Fire Prevention And Protection ---------- 88
22.4 Welding And Cutting Tanks, Cylinders, Or Containers ---------- 89
22.5 Arc Welding ---------- 89
22.6 Portable Gas Units ---------- 89

Chapter 23. Painting Operations

23.0 Purpose ---------- 91
23.1 Fire Prevention And Protection ---------- 91
23.2 Ventilation ---------- 91
23.3 Storage And Handling ---------- 92
23.4 Electrical ---------- 92
23.5 Location Of Paint Shops And Spray Finishing Operations ---------- 92
23.6 Airless Paint Spraying ---------- 93
23.7 Paint Spray Booths ---------- 93
23.8 Portable Paint Spray Equipment ---------- 93
23.9 Aerosol Spray Paint Cans ---------- 93

Chapter 24. Lead Paint Removal

24.0 Purpose ---------- 95
24.1 Identification Of Lead-Based Paints (LBP) ---------- 95
24.2 LBP Abatement / Removal ---------- 95
24.3 Work Practices ---------- 95
24.4 General Practices ---------- 96
24.5 Protective Measures ---------- 96
24.6 Cutting/Brazing/Welding ---------- 97
24.7 Waste Disposal ---------- 97

24.8 Other Wastes ---------- 97

Chapter 25. Working At Elevations

25.0 Policy ---------- 98
25.1 Responsibilities ---------- 98
25.2 Ladders ---------- 98
25.3 Scaffolding And Elevated Platforms ---------- 100
25.4 Rooftop Work ---------- 101
25.5 Personal Fall Arrest Systems ---------- 101
25.6 Training Program ---------- 104
25.7 Figure 25-1 Anchorage Plates ---------- 105
25.9 Figure 25-2 Full Body Harness ---------- 106

Chapter 26. Excavation and Trenching

26.0 Purpose ---------- 107
26.1 Excavation And Trenching ---------- 107
26.2 Excavation And Trenching Protective Systems ---------- 107
26.3 Access And Egress ---------- 108
26.4 Exposure To Vehicular Traffic ---------- 108

Chapter 27. Motor Vehicle Safety

27.0 Purpose ---------- 109
27.1 General Requirements ---------- 109
27.2 Motor Vehicle Accident Reporting ---------- 110

Chapter 28. Fitness Activities

28.0 Purpose ---------- 111
28.1 Fitness Center ---------- 111
28.2 Sports Leagues ---------- 112
28.3 Weather Conditions ---------- 112

Chapter 29. Safety Awards Program

29.0 Background ---------- 113
29.1 Recognition ---------- 113
29.2 Procedures ---------- 113
29.3 Eligibility ---------- 113
29.4 Awards ---------- 113
29.5 Figure 29-1 Safety Recognition Nomination Form ---------- 114

Chapter 30. Mishap Reporting and Reporting Unsafe or Unhealthful Conditions

30.0 Purpose ---------- 115
30.1 Procedures ---------- 115
30.2 Reporting Schedule ---------- 115
30.3 Contractor And Contracting Officer Reports ---------- 115
30.4 Other Reporting Procedures ---------- 116
30.5 Figure 30-1 FAA Mishap Report Form ---------- 117

Chapter 31. Safety and Health Plans For Testing Operations

31.0 Purpose ---------- 119
31.1 Policy ---------- 119
31.2 Responsibilities ---------- 119
31.3 Review And Approval Of Test Plans ---------- 119
31.4 Test Plan Format ---------- 120
31.5 Structure For Safety And Health Test Plan ---------- 120
31.6 Outline Of Testing Operation Plan ---------- 120

Chapter 32. Asbestos Program

32.0 Purpose ---------- 122
32.1 Applicable Standards ---------- 122
32.2 Definitions ---------- 122
32.3 Asbestos Inventory and Hazard Assessment ---------- 124
32.4 Abatement/Removal ---------- 124
32.5 In-Place Management/Operations and Maintenance ---------- 124
32.6 Exposure Limits ---------- 126
32.7 Medical Surveillance ---------- 126
32.8 Waste Disposal ---------- 126
32.9 Recordkeeping ---------- 127

Chapter 33. Safety Inspections

33.0 Purpose ---------- 128
33.1 Responsibilities ---------- 128
33.2 Communications and Notifications ---------- 128
33.3 Inspection Process ---------- 128
33.4 Reports and Procedures ---------- 128
33.5 Inspection References ---------- 128

Chapter 34. Seat Belt Safety

34.0 Purpose ---------- 130
34.1 Responsibilities ---------- 130
34.2 Executive Order 13043 ---------- 131

Chapter 35. Occupational Safety, Health and Environmental Compliance Committee (OSHECCOM)

This Section Is Reserved 132

CHAPTER 1. ADMINISTRATION

1.0. PURPOSE OF THIS ORDER.

The purpose of the Federal Aviation Administration (FAA) William J. Hughes Technical Center "Technical Center" Safety and Health Order is to provide employees with general guidelines for implementing a high quality Occupational Safety and Health (OSH) program. It is not an exhaustive source document but rather an approach to safety.

The Order brings together information that will assist employees and supervisors in carrying out their responsibilities in ensuring a safe environment at the Technical Center for visitors, contractors, and employees. All personnel should read this Order and conduct their work accordingly.

1.1. AUDIENCE.

This order applies to all employees, groups that lease and occupy FAA land (i.e. –tenants), and contractors located at the Technical Center.

1.2. WHERE CAN I FIND THIS ORDER.

This order is available electronically at https://employees.faa.gov/tools_resources/orders_notices/

1.3. WHAT THIS ORDER CANCELS.

This revision replaces Order CT 3900.55A, Occupational Safety and Health.

1.4. DISTRIBUTION.

This order is distributed through supervisors, including tenants and contractors. In addition, this order is also located on the Safety and Health Services website.

1.5. BACKGROUND.

This Order is a part of a continuing program for providing safety information to personnel. The information and requirements given in this Order are applicable to all areas of the Technical Center and represent only general minimum standards. They do not substitute for special operation Orders used in certain buildings or laboratories to meet specific situations. This Order will serve as a basis to which supervisors shall add safety measures relevant to their laboratory or work operations.

It must be emphasized that this is a Technical Center Order. The procedures and requirements are established based on the facilities and resources available at the Technical Center. They represent, nonetheless, a code of standard safe work practices for use at other institutions.

1.6. STANDARDS.

The Occupational Health and Safety Program is established in accordance with the following references:

a. Executive Order 12196, Occupational Safety and Health Programs for Federal Employees.

b. Section 19(a), Public Law 91-596, Williams - Steiger Occupational Safety and Health Act, Federal Agency Safety Programs and Responsibilities.

c. Basic Program Elements for Federal Employee Occupational Safety and Health Programs; Final Rule, Occupational Safety and Health Administration (OSHA), Department of Labor, 29 CFR 1960.

d. 29 CFR 1910, "Occupational Safety and Health Standards for General Industry, " and 29 CFR 1926, "Safety and Health Regulations for Construction."

e. Existing FAA OSH orders. This Center's OSH program and related FAA orders shall be periodically reviewed for currency with OSHA standards and FAA organizational changes. For Center safety orders found to be inconsistent due to changes in OSHA standards, the most current OSHA standard shall apply.

f. 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), Environmental Protection Agency (EPA), National Fire Protection Agency (NFPA), National Institute for Occupational Safety and Health (NIOSH), and the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).

1.7. OCCUPATIONAL SAFETY AND HEALTH PROGRAM REQUIREMENTS.

The Center 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 consistent with this order and with OSHA regulations.

2. Safety and health committees at the Center level. Occupational Safety, Health and Environmental Compliance Committee (OSHECCOM) was established in 2009 and takes the place of SAFERCOM which was established in January 1993. This committee advises and assists management in implementing and monitoring safety and health programs and provides 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.

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 or line of business, ensuring appropriate financial and other resources are requested for OSH program implementation and administration.

7. A safety and health management information system (SMIS) to record and track accidents, injuries, and illnesses on-line.

8. A program to transmit information on pending safety and health legislation or new regulations to appropriate staff: e.g. use of intranet homepages, subscription to a reporting service, staff meetings, etc.

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.

c. Workplace inspection and abatement**.** Formal facility inspections shall be conducted annually and recorded through the workplace inspection tool (WIT). WIT is a tool to assist inspectors in conducting Environmental and Occupational Safety and Health inspections at Center facilities. Formal procedures for hazard abatement will be established and tracked through the Center's work request system.

d. Measures of effectiveness**.** The Center OSH program will be audited and evaluated to track its success quantitatively and to identify areas requiring increased attention. In addition to the auditing performed to maintain certification in International Standards Organization (ISO) 9001 Quality Management System for certain OSH functions, the entire Center OSH program will be subject to periodic reviews by headquarters.

e. Dissemination of occupational safety and health program information**.** A copy of this order and related headquarters OSH orders and implementation guidelines shall be made available for inspection to each supervisor, OSHECCOM committee members, employee representatives, and employees.

1.8. DEFINITIONS

a. Center refers to the 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. At the headquarters level, the DASHO is the Group Manager of the Environmental, Energy, Occupational, Safety and Health (EEOSH) Group at ATO-W EEOSH Services. At the Center, the Center Director will appoint a Designated Region/Center Safety and Health Official (DR/CSHO) based on need.

c. Facility is a single physical location where business is conducted or where services or operations are performed. This includes those operations occupied by contractors or tenants.

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

e. 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.

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

1.9. RESPONSIBILITIES OF THE CENTER DIRECTOR AND MANAGERS.

a. The Director, Technical Center shall**:**

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

2. Ensure that the Center's 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 a safety and health official as the DR/CSHO based on 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.

6. Provide OWCP information through the Safety Management Information System for accident prevention purposes.

b. Facilities Services and Engineering Group Managers shall**:**

1. Provide top management commitment and support for OSH program.

2. Manage and coordinate the implementation of the Center OSH program across group/staff office boundaries to include planning and funding functions, as applicable.

3. Assist group/staff offices in implementing the OSH program in their organizations.

4. Ensure Center resource requirements for OSH programs identified by all groups are submitted to HQ.

5. Provide an adequate number of technically qualified staff to support the Center OSH program.

6. Ensure procedures are in place to respond to employee reports of unsafe conditions.

7. Ensure written guidance and procedures are in place to expedite the notification of safety-related accidents, fatalities, and incidents to the emergency operations facility.

c. All Center Group 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.

4. Ensure all groupal programs and projects address current OSH requirements.

5. Designate a representative as a contact point to work with on OSH issues.

6. Require supervisors to identify employee OSH training needs and provide input during the annual budget formation.

7. Provide appropriate representation and participation at the OSHECCOM.

8. Appoint and train collateral duty safety personnel to assist in OSH program responsibilities.

1.10. RESPONSIBILITIES OF ALL CENTER 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.

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 it is dictated by job requirements.

4. Ensure that accidents are investigated and that reports are completed to determine why they occurred.

5. Utilize the safety committee, collateral duty, and OSH 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. Responding to the safety office within 30 days of receipt of inspection reports.

8. Provide commitment to the safety and health program.

b. All Center employees (including tenants and contractors) shall**:**

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

2. Promptly report unsafe and/or unhealthful working conditions, situations, work-related injuries, illnesses, and accidents to supervisors.

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. PERSONAL PROTECTIVE EQUIPMENT

2.0. PURPOSE.

The objective of the Personal Protective Equipment (PPE) Program is to protect employees from the risk of injury by creating a barrier against workplace hazards. Personal protective equipment is not a substitute for good engineering, administrative controls, or good work practices, but should be used in conjunction with these controls to ensure the safety and health of employees. Personal protective equipment will be provided, used, and maintained when it has been determined that its use is required and that such use will lessen the likelihood of occupational injury and/or illness.

This program addresses eye, face, head, foot, body and hand protection. Separate programs exist for respiratory and hearing protection since the need for participation in these programs is established through industrial hygiene monitoring and medical surveillance.

2.1. PROGRAM COMPONENTS.

a. Hazard Assessment and Equipment Selection. The Safety Office, in conjunction with the supervisors, will conduct a hazard assessment of each work area to identify sources of hazards, including impact, penetration, compression, chemical, heat/cold, dust, electrical sources, material handling, and light radiation. This hazard assessment will include a written certification that identifies the workplace evaluated, the person who performed the evaluation and the date the assessment was conducted (see Figure 2-1).

Once the hazards of a workplace have been identified, the Safety Office will determine the appropriate PPE that will ensure a level of protection greater than the minimum required to protect the employees. Care will be taken to recognize the possibility of a multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be provided.

b. Protective Devices. All personal protective clothing and equipment will be of safe design and construction for the work to be performed and shall be maintained in a sanitary and reliable condition. Protective clothing and equipment must meet NIOSH (National Institute of Occupational Safety and Health) or ANSI (American National Standards Institute) standards. Careful consideration will be given to employee comfort and fit of PPE in order to ensure that it will be used. Consideration should be taken to ensure that the right size is selected. Defective and damaged PPE must not be used.

c. Protective Clothing. In certain environments, it is necessary to provide protective clothing to employees at the Technical Center during daily operations. For example, PPE may be necessary for the job to be completed in heat/cold stress related situations and outside work. Another example might be the clothing necessary during test flights on research and development aircraft (Nomex suits, jackets and/or gloves). Suitable protection will provide the employee with the proper protective clothing to both complete the job safely without causing additional problems. It is important to remember that clothing is to be used for work-related events only; it is not intended to be used for personal reasons.

d. Eye and Face Protection. Prevention of eye injuries requires that all persons who enter eye hazard areas wear protective eyewear. All safety eyewear shall comply with ANSI Z87.1-1989, American National Standard Practice for Occupational and Educational Eye and Face Protection. This includes employees, visitors, researchers, contractors, or others passing through an identified eye hazard area. Suitable protection shall be used when employees are exposed to hazards from flying particles, molten metal, acids or caustic liquids, chemicals, gases, or vapors, or potentially injurious light radiation.

1. Contact lens wearers must also wear appropriate eye and face protection devices in a hazardous environment. Contact lenses may be worn when appropriate eye protection is utilized to prevent inadvertent eye contact with chemical hazards.

2. Side protectors shall be used when there is a hazard from flying objects.

3. Goggles and face shields shall be used as protection from chemical splashes.

4. Face shields shall only be worn over primary

eye protection (safety glasses).

5. Protectors shall be marked to identify the manufacturer.

6. Equipment fitted with appropriate filter lenses shall be used to protect against light radiation (i.e. welding/cutting, laser operations). Acceptable filter lenses need to be marked or identified as such.

e. Prescription Safety Eyewear. OSHA regulation 29CFR1910.133(a)(3) requires that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. Personnel requiring prescription safety glasses must contact the Safety Office to have their request processed.

f. Emergency Eyewash Facilities. Emergency eyewash facilities meeting the requirements of ANSI Z358.1 will be provided in all areas where employees may be exposed to corrosive materials. Eyewash facilities should be readily accessible in an emergency situation.

g. Head Protection. Head protection will be furnished to, and used by, all employees engaged in construction. Head protection is also required to be worn at work sites when hazards from falling or fixed objects, or electrical shock are present.

h. Foot Protection. Safety shoes shall be worn in areas determined by the Safety Office. All safety footwear shall comply with America Society for Testing and Materials (ASTM) International Standards F2412-05 (Standard Test Methods for Foot Protection) and ASTM F2413-05 (Standard Requirements for Protective Footwear), American National Standard for Personal Protection - Protective Footwear. Safety shoes or boots are required to be worn in work areas involving the carrying or handling of materials such as packages, objects, parts or heavy tools, and for other activities where objects might fall onto or over the employee's feet, or cause a puncture if stepped on.

1. Purchasing Safety Shoes. Safety shoes can be purchased at commercial shoe stores, through catalogues, or any other acceptable means. The supervisor is responsible for making this determination and must submit the purchase request through the Safety Office to receive approval prior to the actual purchase of safety shoes. Any safety shoes purchased at a commercial shoe store must be submitted to the Safety Office for verification that they meet the ANSI standard before being worn on the job.

2. Reimbursement for Safety Shoes. The Technical Center will either pay or reimburse up to $150 for one pair of safety shoes every other year except where the supervisor has justified the purchase of an additional pair every year due to excessive wear and tear (i.e.- shops). Should the cost of the shoes exceed $150, then the employee must pay the difference except in cases where prescribed protection or special sizing is required. These exceptions will be handled on a per case basis by the supervisor and the Safety Office.

i. Hand Protection. Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, and harmful temperature extremes are present. Glove selection shall be based on the performance characteristics of the gloves, work conditions, duration of use, and hazards present. The first consideration in the selection of gloves for use against chemicals is to determine, if possible, the exact nature of the substances to be encountered. Instructions and warnings listed on chemical container labels and Material Safety Data Sheets (MSDS) will recommend a glove type for protection.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and other characteristics are known.

The Safety Office can assist in determining the specific type of glove material that should be worn for a particular chemical.

2.2. DESCRIPTION AND USE OF PERSONAL PROTECTIVE EQUIPMENT.

a. Eye Protection.

1. Safety Glasses. Protective eyeglasses are made with safety frames, tempered glass or plastic lenses, temples, and side shields which provide eye protection from moderate impact and particles encountered in job tasks such as carpentry, woodworking, grinding, scaling, etc. Safety glasses are also available in prescription form for those persons who need corrective lenses.

2. Single Lens Goggles. Vinyl framed goggles provide adequate eye protection from many chemical splash hazards and impact hazards. These goggles are available with clear or tinted lenses; perforated, port vented or non-vented frames. Single lens goggles provide similar protection as spectacles and may be worn in combination with spectacles or corrective lenses to ensure protection along with proper vision.

3. Welding/Chipping Goggles. These goggles are available in rigid and soft frames to accommodate single or two eyepiece lenses.

   (a) Welding goggles provide protection from sparking, scaling, or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.

   (b) Chipping/Grinding. Goggles provide eye protection from flying particles. The dual protective eyecups house impact resistant clear lenses with individual cover plates.

4. Face Shields. These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance, and light ray filtering capacity. Face shields will be used in operations when the entire face needs protection and should be worn to protect eyes and face against flying particles, metal sparks, and chemical splash.

5. Welding Shields. These shield assemblies consist of vulcanized fiber or glass fiber body, a ratchet/button type adjustable headgear or cap attachment, and a filter and cover plate holder. These shields will be provided to protect worker's eyes and face from infrared or radiant light burns, flying sparks, metal spatter, and slag chips encountered during welding, brazing, soldering, resistance welding, bare or shielded electric arc welding, and oxyacetylene welding and cutting operations.

b. Head Protection. Head injuries are caused by falling or flying objects, or by bumping the head against a fixed object. Head protectors, in the form of protective hats, must resist penetration and absorb the shock of a blow. The shell of the protective hat is hard enough to resist the blow and the headband and crown straps keep the shell away from the wearer's skull. Protective hats can also protect against electrical shock. Protective hats are made in the following types and classes:

1. Type 1. Helmets with a full brim.

2. Type 2. Brimless helmets with a peak extending forward from the crown.

   (a) Class A or G. General service, limited voltage. Intended for protection against impact hazards. Used in mining, construction, and manufacturing.

   (b) Class B or E. Utility service, high voltage. Used by electrical workers.

   (c) Class C. Special service, no voltage protection. Designed for lightweight comfort and impact protection.

c. Foot Protection. There are many types and styles of protective footwear and it is important to realize that a particular job may require additional protection other than listed here. Footwear that meets established safety standards will have an American National Standards Institute (ANSI) label inside each shoe.

1. Steel-Reinforced Safety Shoes. These shoes are designed to protect feet from common machinery hazards such as falling or rolling objects, cuts, and punctures. The entire toe box and insole are reinforced with steel, and the instep is protected by steel, aluminum, or plastic materials. Safety shoes are also designed to insulate against temperature extremes and may be equipped with special soles to guard against slip, chemicals, and/or electrical hazards.

2. Safety Boots. Safety boots offer more protection when splash or spark hazards (chemicals, molten materials) are present:

   (a) When working with corrosives, caustics, cutting oils, and petroleum products, neoprene or nitrile boots are often required to prevent penetration.

   (b) Foundry or "Gaiter" style boots feature quick-release fasteners or elasticized insets to allow speedy removal should any hazardous substances get into the boot itself.

   (c) When working with electricity, special

electrical hazard boots are available and are designed with no conductive materials other than the steel toe (which is properly insulated).

d. Hand Protection. Skin contact is a potential source of exposure to toxic materials and it is important that the proper steps be taken to prevent such contact. Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat.

Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use.

Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The types of glove materials to be used in these situations include leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

The following is a guide to the most common types of protective work gloves and the types of hazards they can guard against:

1. Disposable Gloves. Disposable gloves, usually made of lightweight plastic, can help guard against mild irritants.

2. Fabric Gloves. These gloves are made of cotton or fabric blends and are generally used to improve grip when handling slippery objects. They also help insulate hands from mild heat or cold.

3. Leather Gloves. These gloves are used to guard against injuries from sparks or scraping against rough surfaces. They are also used in combination with an insulated liner when working with electricity.

4. Metal Mesh Gloves. These gloves are used to protect hands from accidental cuts and scratches. They are used most commonly by persons working with cutting tools or other sharp instruments.

5. Aluminized Gloves. Gloves made of aluminized fabric are designed to insulate hands from intense heat. These gloves are most commonly used by persons working with molten materials.

6. Chemical Resistance Gloves. These gloves may be made of rubber, nitrile, neoprene, polyvinyl alcohol, or vinyl, etc. The gloves protect hands from corrosives, oils, and solvents. When selecting chemical resistant gloves, be sure to consult the manufacturer's recommendations, especially if the gloved hand will be immersed in the chemical. (See figure 2-2 for general guidelines for chemical glove performance.)

7. High Voltage Gloves. These gloves are typically rubber and provide protection against electric shock. Also used are rubber sleeves, which offer added protection further up the arm.

e. Miscellaneous Protection. Miscellaneous protection includes items as bucket linings and special blankets to protect against electrocution and electric shock during work.

2.3. TRAINING.

Any employee required to wear PPE shall receive training in the proper use and care of PPE. Periodic retraining shall be offered by the Safety Office to both the employees and the supervisors, as needed. The training shall include, but not necessarily be limited to, the following subjects:

a. What PPE is necessary.

b. When PPE is necessary to be worn.

c. How to properly don, doff, adjust, and wear PPE.

d. The limitations of PPE.

e. The proper care, maintenance, useful life, and disposal of PPE.

2.4. RECORDKEEPING.

The Safety Office shall maintain training records for at least 3 years including the persons trained, the type of training provided, and the dates of training.

2.5. PROCUREMENT.

All purchase requests or credit card purchases for safety equipment must be approved by the Safety Office.

2.6. OTHER DOCUMENTS.

Technical Center Environmental and Safety Sub-Team Safety Office Personal Protective Program.

Figure 2-1 **HAZARD ASSESSMENT CERTIFICATION FOR PERSONAL PROTECTIVE EQUIPMENT**

Date:	Location:	Organization:
Assessment Conducted By:		
Job Title(s):		
Specific Tasks Performed at this Location:		

Hazard Assessment and Selection of Personal Protective Equipment

I. Overhead Hazards

Hazards Identified:
_____ Suspended loads that could fall
_____ Overhead beams or loads that could be hit against
_____ Energized wires or equipment that could be hit against
_____ Employees work at elevated site who could drop objects on others below
_____ Sharp objects or corners at head level
_____ Other _____

Head Protection Required	**Yes**	**No**
Hard Hat Type: ____**Type A or G** (impact and penetration resistance, plus low-voltage electrical insulation) ____**Type B or E** (impact and penetration resistance, plus high-voltage electrical insulation) ___**Type C** (impact and penetration resistance)		

II. Eye and Face Hazards

Hazards Identified:

_____Chemical splashes

_____ Dust
_____ Smoke and fumes
_____ Welding operations
_____ Lasers/optical radiation
_____ Bioaerosols
_____ Projectiles
_____ Other_____

Eye Protection Required	**Yes**	**No**
____ Safety glasses w/ side shields ____ Goggles ____ Face Shield ____ Other_____		

III. Hand Hazards

Hazards Identified:
_____Chemicals ____ Sharp edges, splinters, etc. ____ Temperature extremes ____ Biological agents ____ Exposed electrical wires ____ Sharp tools, machine parts, etc. ____ Material handling ____ Other_____

Hand Protection Required	Yes	No
Gloves: ____ Chemical resistant ____ Temperature resistant ____ Abrasion resistant ____ Other _____		

IV. Foot Hazards

Hazards Identified
____ Heavy materials handled by employees ____ Sharp edges or points (puncture risk) ____ Exposed electrical wires ____ Unusually slippery conditions ____ Wet conditions ____ Construction/demolition ____ Other _____

Foot Protection Required	Yes	No
Safety Shoe Types: ____ Toe protection ____ Metatarsal protection ____ Puncture resistant ____ Electrical insulation ____ Other (Explain) _____		

V. Other Identified Safety and/or Health Hazards:

Hazard	Recommended Protection

I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on _____.
(Date)

_____
(Signature)

Figure 2-2 **Glove Chart**

Type	Advantages	Disadvantages	Use Against
Natural rubber	Low cost, good physical properties, dexterity	Poor vs. oils, greases, organics. Frequently imported; may be poor quality	Bases, alcohols, dilute water solutions; fair vs. aldehydes, ketones.
Natural rubber blends	Low cost, dexterity, better chemical resistance than natural rubber vs. some chemicals	Physical properties frequently inferior to natural rubber	Same as natural rubber
Polyvinyl chloride (PVC)	Low cost, very good physical properties, medium cost, medium chemical resistance	Plasticizers can be stripped; frequently imported may be poor quality	Strong acids and bases, salts, other water solutions, alcohols
Neoprene	Medium cost, medium chemical resistance, medium physical properties	NA	Oxidizing acids, anilines, phenol, glycol ethers
Nitrile	Low cost, excellent physical properties, dexterity	Poor vs. benzene, methylene chloride, trichloroethylene, many ketones	Oils, greases, aliphatic chemicals, xylene, perchloroethylene, trichloroethane; fair vs. toluene
Butyl	Specialty glove, polar organics	Expensive, poor vs. hydrocarbons, chlorinated solvents	Glycol ethers, ketones, esters
Polyvinyl alcohol (PVA)	Specialty glove, resists a very broad range of organics, good physical properties	Very expensive, water sensitive, poor vs. light alcohols	Aliphatics, aromatics, chlorinated solvents, ketones (except acetone), esters, ethers
Fluoro- elastomer (Viton) ™ *	Specialty glove, organic solvents	Extremely expensive, poor physical properties, poor vs. some ketones, esters, amines	Aromatics, chlorinated solvents, also aliphatics and alcohols
Norfoil (Silver Shield)	Excellent chemical resistance	Poor fit, easily punctures, poor grip, stiff	Use for Hazmat work

*Trademark of DuPont Dow Elastomers

CHAPTER 3. MEDICAL SURVEILLANCE PROGRAM

3.0. PURPOSE.

A medical surveillance program shall be established for the diagnosis and treatment of acute and chronic occupational injuries and illnesses, including collaboration with an employee chosen physician (if desired), to document and assess diagnosis, treatment and care in conjunction with return to work without hampering the healing process. The program will also provide for: fitness for duty examinations, baseline health data to be compared to any subsequent exposures and resultant health effects, and detection of early indicators of excessive exposure to allow for implementation of corrective actions to prevent further exposure.

3.1. MEDICAL SURVEILLANCE REQUIREMENTS.

The Technical Center is required to establish and implement a medical surveillance program and to maintain employee records according to Occupational Safety and Health Administration (OSHA) standards.

The medical surveillance program will be implemented in accordance with Federal requirements of OSHA, Environmental Protection Agency (EPA), Nuclear Regulatory Agency (NRA) and Department of Transportation (DOT). Inclusion in the program will be determined by the results of industrial hygiene data. In the absence of exposure monitoring data, if sufficient evidence exists to demonstrate a potential for exposure above an OSHA action level, the employee shall be provisionally included in the medical surveillance program.

Each affected department must identify the employees who qualify for medical monitoring based upon job requirements and inclusion in specific occupational safety and health program (e.g., asbestos respirator use, noise exposure, hazardous materials, etc.) and identify the facilities where the employee works. Some requirements of the program are as follows:

a. Employees must complete the appropriate medical work/history form prior to reporting to the designated medical facility. This form is available in the Safety Office.

b. The medical examination shall be performed by a licensed occupational health professional at no cost and without loss of pay to the employee.

c. Medical exams and results of the exam will be provided to the employee in a timely manner.

d. Employees shall be given an exam upon termination of employment or removal from job activities which warranted inclusion in the program.

3.2. MEDICAL EXAMINATION REQUIREMENTS.

a. Frequency of medical examinations. The frequency of medical examinations should be performed according to the following criteria:

1. Prior to a job assignment where medical surveillance is required.

2. Re-examination frequency as mandated by specific program, at least once every 12 months, or more frequently as deemed necessary by the attending physician.

3. Upon termination of employment or when the employee is reassigned to a new area/job classification not requiring medical surveillance (when the employee has not been examined within the previous 6 months), or when the employee's work practices or environmental conditions change and there is no longer an exposure to the hazardous environment that required inclusion in the program.

4. As soon as possible upon notification that the employee has developed signs or symptoms indicating a possible exposure to a hazardous substance, or the employee has been injured or been exposed to an environment above the Permissible Exposure Limit (PEL) in an emergency situation.

b. Medical Examination Content. The medical exam should include a past health and work history of the employee with emphasis on symptoms and signs related to exposure to a hazardous substance, the employee's physical fitness related to the job classification, and the ability to wear personal protective equipment (PPE) anticipated to be used in the workplace. The employer must supply the physician with the following:

1. Copy of the medical questionnaire.

2. Copy of the applicable Federal standard and appendices which will include mandatory clinical examination/test requirements.

3. Description of the employee's duties pertaining to exposures.

4. Employee's exposure or expected exposure levels, types of chemicals used or anticipated to be used should be provided.

5. Description of any PPE used.

6. Necessary information from previous medical exams.

The physician shall provide the employer (who will in turn provide the employee) a written opinion of the employee's medical condition pertaining to the job classification, recommended limitations, the results of any medical testing, if so requested by the employee, and a statement that the employee has been informed of the medical exam findings. The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.

3.3. MEDICAL RECORDKEEPING.

All employee medical surveillance records required by this section shall be preserved and maintained for the duration of the employee's employment plus 30 years, as required by 29 CFR 1910.1020 (OSHA), Access to Employees Exposure and Medical Records. The medical records for employees who have worked less than 1 year for the employer, need not be kept past the duration of employment if the records are provided to the employee upon termination.

Employee exposure records contain information regarding the level of an employee's exposure to potentially hazardous agents. These records are to be maintained in a confidential and secure manner by the Safety Office, and in the employee's medical record, when required. Records must be made available to the employee upon request as required by 29 CFR 1910.1020.

CHAPTER 4. INDUSTRIAL HYGIENE PROGRAM

4.0. PURPOSE.

The Industrial Hygiene Program entails the anticipation, recognition and evaluation of physical, chemical, and biological hazards in the workplace and to provide for their reduction or elimination. Periodic field evaluations are conducted to assure the effectiveness of implemented controls. Any new/modified process, material or control change shall be re-evaluated. Industrial hygiene exposure assessment and sampling data will then be utilized for determination of employee inclusion in a medical surveillance program for hazards identified. The full resources of the Industrial Hygiene Program are available to tenant organizations of the Center through applicable Service Level Agreements (SLAs).

4.1. INDUSTRIAL HYGIENE SURVEYS AND HAZARD ASSESSMENTS.

a. Industrial Hygiene Surveys. Industrial Hygiene field surveys are conducted in order to gather the following information:

1. Descriptions of operations and work practices, layout sketches of the work environment, and the time course of events.

2. Identification of hazardous materials that are currently in use or may be brought into the workplace that presents a significant risk.

3. Identification of physical hazards.

4. Description of existing controls and an evaluation of their effectiveness.

5. Identification of personnel assigned to specific operations.

6. Identification of operations that require quantification of health hazards and subsequent sampling/monitoring.

b. Hazard Assessments. Based on the information obtained during the industrial hygiene field survey, the next step is to assess whether or not there is a recognized potential hazard for employee exposure to toxic chemicals, physical hazards, or biological hazards. A hazard assessment shall be made by technically qualified safety personnel and a written record maintained for each workplace where chemical, physical, and/or biological hazards may be found. Rationale should be documented for any negative determinations.

4.2. WORKPLACE MONITORING.

If the hazard assessment indicates that an employee is exposed above the action level and or permissible exposure limit (PEL) to toxic chemicals and/or harmful physical or biological agents, workplace monitoring shall be prepared and implemented. The frequency of monitoring shall be in accordance with Federal Occupational Safety and Health Administration (OSHA) standards, the American Conference of Governmental Industrial Hygienist (ACGIH), or the professional judgment of the technically qualified safety personnel where no standards exist. Sampling and analysis of contaminants shall be in accordance with the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods. Where no relevant NIOSH method exists, standard industry practices shall be employed to ensure the full evaluation of all hazards. Any laboratory assigned to analyze the samples shall be accredited by the American Industrial Hygiene Association (AIHA). All samples collected at the Center and sent for off-site analysis shall be recorded in a sample log book (electronic or hard copy) detailing the following minimum information: sample number, location, media, analyte(s) being tested and the name of the technically qualified safety personnel who collected the sample.

4.3. EQUIPMENT.

The maintenance and calibration of industrial hygiene equipment is critical to ensure that precise and accurate measurements of the workplace are made. Determination of any given employee's actual exposure is a difficult task. Minimizing errors and approximating employee's exposures makes it necessary to have a comprehensive calibration program in addition to professional experience, sound sampling strategies, and established analytical procedures.

The technically qualified safety personnel utilizing the equipment is responsible for ensuring the equipment has been field calibrated prior to use. A record of field calibration or verification must be kept by the Safety Office. Most equipment requires periodic manufacturer's calibration. Any equipment that is not maintained in accordance with manufacturer's recommendations must be marked "Out Of Service" until the equipment is either serviced or excessed. Examples of acceptable

laboratories for calibration would be; those recommended by the manufacturer, those with a demonstrated ability to calibrate a specific piece of equipment and, those with a quality control program such as traceability to the National Institute of Standards and Technology (NIST) or other equivalent system. Frequency of equipment calibration shall be that which is recommended by the manufacturer or more frequently as needed.

4.4. RECORDKEEPING.

The compilation and interpretation of information collected during workplace surveys, subsequent hazard assessments, and quantification shall be accurately documented and maintained. This documentation provides employees with an assessment of the occupational health hazards in their work areas and provides recommendations for engineering, administrative controls, and personal protective equipment, as well as determining hazard based medical surveillance requirements of exposed personnel. Employees for whom personal sampling are conducted shall be notified in writing of the results of any monitoring within 15 working days of receipt of the laboratory report. Industrial hygiene sampling data, including chain of custody and hard copy laboratory report, shall be filed in the Safety Office and maintained for a minimum of 30 years. Sampling data should be included in employee medical records.

CHAPTER 5. RESPIRATORY PROTECTION PROGRAM

5.0 PURPOSE.

It is the policy of the Technical Center to provide employees with a safe and healthful working environment by utilizing facilities and equipment that have all feasible safeguards incorporated into their design. When effective engineering controls are not feasible, or while they are being implemented, respiratory protection shall be used.

5.1. MEDICAL EVALUATION.

A Physician or other Licensed Healthcare Professional (PLHCP) initially will make a determination as to whether or not an employee can wear the required respiratory protection without physical or psychological risk. The Safety Office will provide the PLHCP with information on the type of respirator to be used by the employee, and the frequency, duration and conditions of use. If a medical restriction is applied, the employee, the supervisor, and the Safety Office are to be formally notified of the restriction. Written documentation provided by the PLHCP will determine the status of medical qualification for respirator use.

Medical tests and procedures will be conducted in accordance with OSHA medical surveillance requirements in 29 CFR 1910.134 (e) Medical Evaluation. Prior to the medical evaluation by the PLHCP, employees will complete the mandatory OSHA Medical Evaluation Questionnaire from Appendix C of the OSHA standard 29 CFR 1910.134. This form is obtained from the Safety Office. It is a confidential questionnaire reviewed only by the PLHCP.

5.2. SELECTION AND USE OF RESPIRATORY PROTECTIVE DEVICES.

a. Respirator Use. Personnel working under the following conditions will be authorized to wear respirators:

1. Workers in areas known to have contaminant levels above the permissible exposure limits, or in which contaminants may exceed the permissible limits without warning.

2. Workers performing operations documented to pose health hazards, and those workers unavoidably required to be in the immediate vicinity where similar levels of contaminants are generated.

3. Workers in suspect areas, or performing operations suspected of generating health hazards, but for which adequate sampling data has not been obtained.

b. Respirator Selection. Selection of the proper respirator to be used in any work area or operation at the Technical Center is made only after it has been determined that there is an exposure to employees from contaminants that exceed the permissible exposure limit. This evaluation will be performed prior to the start of any routine or non-routine tasks requiring respirators. Respiratory protective devices will be selected by the Safety Office, using ANSI Z88.2 "Respirator Protection," NIOSH Certified Equipment List, the NIOSH Respirator Selection Decision Logic, and/or MSDS's, if appropriate information is provided. The following items will be considered in the selection of respirators:

1. Estimated maximum concentration of the substance in the work area.

2. Effectiveness of the device against the substance of concern.

3. General environment.

4. Known limitations of the respiratory protective device where concentration of contaminant is unknown or unobtainable.

5. Comfort, fit, and worker acceptance.

6. Other contaminants in the environment or potential for oxygen deficiency. Supervisors shall contact the Safety Office prior to non-routine work that may expose workers to hazardous substances or oxygen deficient atmospheres. Examples of work that may require respiratory protection includes, but are not limited to:

   (a) Asbestos abatement activities.

   (b) Abrasive blasting.

   (c) Cutting or melting lead, or stripping lead-based paints from surfaces.

   (d) Welding or burning.

(e) Painting, especially with epoxy or organic solvent coatings.

(f) Using solvents, thinners, or degreasers.

(g) Any work which generates large amounts of particulate (dusts, mists, fumes, smoke).

(h) Working in confined or poorly ventilated areas.

A review of operations requiring respirators will be made at least annually to determine if respiratory protection continues to be required, and if the previously chosen respirators still provide adequate protection.

c. Types of Respirators.

1. Air-Purifying Respirator (APR). These respirators remove air contaminants by filtering, absorbing, adsorbing, or chemical reaction with the contaminants as they pass through a cartridge attached to the respirator. The air-purifying respirator is to be used only where adequate oxygen (19.5 to 23.5 percent by volume) is available. Air-purifying respirators are not certified for use in immediately dangerous to life or health atmospheres (IDLH).

2. Atmosphere-supplying Respirators. These respirators provide breathing air from a source independent of the ambient atmosphere. Such respirators are to be used when the contaminant has insufficient odor, taste, or irritating warning properties, or when the contaminant is of such high concentration or toxicity that an air-purifying respirator is inadequate.

(a) Methods of Breathing Air Regulation. Breathing air may be regulated by the atmosphere-supplying respirator by the following methods:

(1) Demand. This respirator supplies air to the user on demand (inhalation) when a negative pressure is created inside the face piece. Leakage into the face piece can occur if there is a poor seal between the respirator and the user's face.

(2) Pressure-Demand. This respirator maintains positive pressure inside the face piece, and admits breathing air when the positive pressure is reduced inside the face piece by inhalation.

(3) Continuous Flow. This respirator maintains a continuous flow of air through the face piece at all times, rather than only on demand.

(b) Common Types of Atmosphere-supplying Respirators:

(1) Supplied-air Respirator (SAR) or Airline Respirator. The source of breathing air for this respirator is not designed to be carried by the user, and may be provided by a compressed breathing air cylinder or air compressor designed to provide breathing air. Airline respirators may be demand, pressure-demand, or continuous flow.

(2) Self-Contained Breathing Apparatus (SCBA). The breathing air source is designed to be carried by the user, allowing the user complete independence from a fixed source of air. Training and practice in its use and maintenance is essential. This type of device will be used in emergency situations, oxygen deficient atmospheres, IDLH atmospheres or unknown concentration of contaminants present in the area. This device should only be filled with type 1 Grade D breathing air. SCBA's should never be filled with oxygen. SCBA may be demand or pressure-demand units. Pressure-demand is the most common type of SCBA.

d. Identification of Respirator Cartridges. Respirator cartridges are designed to protect against individual or a combination of potentially hazardous atmospheric contaminants, and are specifically labeled and color coded to indicate the type and nature of protection they provide. (See Figure 1, Air Purifying Respirator, Chemical Cartridge Types).

The NIOSH approval label on the respirator will also specify the maximum concentration of contaminant(s) for which the cartridge is approved.

The most commonly used air-purifying respirator cartridges can be classified as follows:

1. Particulate. These devices filter out dusts, fibers, fumes, and mists.

2. Gas and vapor-removing. These devices remove specific organic vapor and acid gas contaminants listed in the manufacturer's literature. Contaminants are removed by absorption, adsorption, or by chemical reaction. Separate cartridges are available for organic vapors and acid gases, or in combination as one cartridge.

3. Combination particulate/gas and vapor removing respirators combine the removal characteristics of all three types of cartridges, organic vapor, acid gas, and particulate.

e. Warning Signs of Respirator Failure.

1. Particulate Air-Purifying. When breathing difficulty is encountered with a filter respirator (due to partial clogging with increased resistance), the filter must be replaced.

2. Gas or Vapor Air-Purifying. If, when using a gas or vapor respirator (chemical cartridge or canister), any of the warning properties (e.g., odor, taste, eye irritation, or respiratory irritation) occur, promptly leave the area and check the following:

(a) Proper face seal.

(b) Damaged or missing respirator parts.

(c) Saturated or inappropriate cartridge or canister.

If no discrepancies are observed, replace the cartridge or canister. If any of the warning properties appear again, the concentration of the contaminants may have exceeded the design specification.

f. End of Service Life and Change Schedules for Air-Purifying Respirator Canisters and Cartridges . The canisters or cartridges of air-purifying respirators are at the end of their service life when filter resistance precludes further use, or the chemical sorbent is expended as signified by a specific warning property, e.g., odor, taste, or cartridge indicator etc. To ensure that canisters and cartridges are changed before the end of their service life, employees will follow the Change Schedule in the FAA Technical Center Respiratory Protection Program. New canisters, cartridges, or filters shall always be provided as needed.

g. Cartridge Change-Out Schedules. For those organic vapor air purifying cartridges used that do not have an end-of-life-indicator, a schedule of cartridge change-out has been established and can be found in the standard operating procedures developed for each specific work area as applicable.

h. Supplied Air Respirator. When using an airline respirator, leave the area immediately when the compressor failure alarm is activated or if an air pressure drop is sensed. When using an SCBA leave the area as soon as the low pressure alarm is activated.

5.3. RESPIRATOR TRAINING.

Respirator users and their supervisors will receive training on the contents of the Respiratory Protection Program and their responsibilities. The Safety Office will provide the initial and annual training only upon successful completion of the medical evaluation and fit-testing. The training program will include the following:

a. Nature and degree of respiratory hazard.

b. Respirator selection, based on the hazard, respirator capabilities, and limitations.

c. Donning and doffing, positive and negative pressure fit tests including hands-on practice.

d. Care of the respirator, e.g., cleaning, maintenance, storage, and/or replacement.

e. Use and limitations of respirator.

5.4. RESPIRATOR FIT TESTING.

A fit test, conducted by the Safety Office, shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with any respirator with a negative or positive pressure tight-fitting face piece. The test results will be the determining factor in selecting the type, model, and size of the respirator. The OSHA Respiratory Protection Standard, 29 CFR 1910.134, requires either quantitative or qualitative fit tests, and contains fit testing procedures in Appendix A and Appendix B. Personnel must successfully pass the fit test before being issued a respirator.

No FAA employee is permitted to wear a respirator in a work situation until he or she has demonstrated that an acceptable fit can be obtained. Respirator fitting will be conducted upon medical qualification, initially prior to task assignment requiring use of a respirator and annually thereafter.

a. Fit Checking. Each time a respirator is donned, the user will perform positive and negative pressure fit checks. These checks are not a substitute for fit testing. Respirator users must be properly trained in the performance of these checks and understand their limitations.

b. Negative Pressure Check.

1. Applicability/Limitations. This test cannot be carried out on all respirators; however, it can be used on face pieces of air purifying respirators equipped with tight-fitting respirator inlet covers, and on atmosphere supplying respirators equipped with breathing tubes which can be squeezed or blocked at the inlet to prevent the passage of air.

2. Procedure: Close off the inlet opening of the respirator's cartridge(s), or filter(s) with the palm of the hand, or block its inlet so that it will not allow the passage of air. Inhale gently and hold for at least 10 seconds. If the face piece collapses slightly and no inward leakage of air into the face piece is detected, it can be reasonably assumed that the respirator has been properly positioned and the exhalation valve and face piece are not leaking.

c. Positive Pressure Check.

1. Applicability/Limitations: This test cannot be carried out on all respirators; however, respirators equipped with exhalation valves can be tested.

2. Procedure: Close off the exhalation valve with the palm of the hand. Exhale gently. If the respirator has been properly positioned, a slight positive pressure will build up inside the face piece without detection of any outward air leak between the sealing surface of the face piece and the face.

5.5. QUALITATIVE FIT TESTING

The qualitative fit test checks the subject's response to a chemical introduced outside the respirator face piece.

This response is either voluntary or involuntary depending on the chemical used. The two most common are the irritant smoke test, and the odorous vapor test.

a. Irritant Smoke. The irritant smoke test is an involuntary response test. Air-purifying respirators must be equipped with a high efficiency particulate air (HEPA) filter for this test. An irritant smoke is directed from a smoke tube toward the respirator. If the test subject does not respond to the irritant smoke, it is assumed that a satisfactory fit has been achieved. Any response to the smoke indicates an unsatisfactory fit.

b. Odorous Vapor. The odorous vapor test is a voluntary response test. It relies on the employee's ability to detect an odorous chemical while wearing the respirator. Air purifying respirators must be equipped with an organic cartridge or canister for this test. Isoamyl acetate (banana oil) is the recognized and standard method. An isoamyl acetate ampuole is placed near the face piece-to-face seal of the respirator. If the employee is unable to smell the chemical, then it is assumed that a satisfactory fit has been achieved. If the employee smells the chemical, the fit is unsatisfactory.

If the employee cannot smell the chemical, the respirator will be momentarily pulled away from the employee's face, and if they are then able to smell the chemical, a satisfactory fit is assumed. If the employee is unable to smell the chemical without the respirator, this test is inappropriate, and a different test will be used.

This test is limited by the wide variation of odor thresholds among individuals and the possibility of olfactory fatigue. Since it is a voluntary response test it depends upon an honest response.

5.6. QUANTITATIVE FIT TESTING.

Quantitative fit testing is generally performed on both full-face and half-face negative pressure respirators and positive pressure respirators with tight-fitting masks. Fit factors are determined by comparing the particle concentration outside the respirator with the concentration inside the respirator face piece. An acceptable fit is achieved when the respirator wearer successfully completes a series of programmed exercises (normal breathing, deep breathing, moving head up and down, moving head side to side, reading, bending and touching the toes and normal breathing) with a fit factor of at least 100 for the half face respirator and a fit factor of at least 500 for the full face respirator.

5.7. SPECIAL PROBLEMS.

a. Facial Hair. No attempt will be made to conduct a fit test on an employee who has facial hair which comes between the sealing periphery of the face piece and the face, or if facial hair interferes with normal functioning of the exhalation valve of the respirator.

b. Glasses and Eye/Face Protective Devices. Proper fitting of a respirator face piece for individuals wearing corrective eyeglasses may not be established if temple bars or straps extend through the sealing edge of the face piece. If eyeglasses, goggles, face shield, or welding helmet must be worn with a respirator, they must be worn so as not to adversely affect the seal of the face piece. If a full-face piece respirator is used, special prescription glasses inserts are available.

5.8. MAINTENANCE AND ISSUANCE OF RESPIRATORS.

a. Maintenance. The maintenance of respiratory protective devices involves a thorough visual inspection for cleanliness and defects (i.e., cracking rubber, deterioration of straps, defective exhalation and inhalation valves, broken or cracked lenses, etc.). Worn or deteriorated parts will be replaced. No respirator with a known defect shall be issued for use. No attempt shall be made to replace components, make adjustments, or make repairs on any respirator beyond those recommended by the manufacturer. Under no circumstances will parts be substituted, as such substitutions will invalidate the approval of the respirator. Any repair to supplied air respirators or self-contained breathing apparatus, including valves, regulators, alarms, masks, or cylinders, will be conducted by a manufacturer certified technician.

b. Cleaning of Respirators. All respirators in routine use shall be cleaned and sanitized on a periodic basis. Respirators used non-routinely shall be cleaned and sanitized after each use and filters and cartridges replaced. Maintenance of routinely used respirators is the responsibility of the wearer.

Cleaning and disinfecting of respirators must be done frequently to ensure that skin-penetrating and dermatitis-causing contaminants are removed from the respirator surface. Respirators maintained for emergency use or those used by more than one person must be cleaned after each use by the user.

The following procedure is recommended for cleaning and disinfecting respirators:

1. Remove and discard all used filters and cartridges.

2. Wash face piece in warm water with a mild detergent or a cleaner-disinfectant product made specifically for respirators. Solvents or alcohol shall not be used.

3. Rinse completely in clean, warm water.

4. Air dry in a clean area in such a way as to prevent distortion.

5. Clean other respirator parts as recommended by the manufacturer.

6. Inspect valves, head straps, and other parts to ensure proper working condition.

7. Reassemble respirator and replace any defective parts.

8. Place in a clean, dry plastic bag or other suitable container for storage after each cleaning and disinfecting.

5.9. ISSUANCE OF RESPIRATORS.

Respiratory protective equipment shall not be ordered, purchased, or issued to personnel unless the respirator wearer has received a medical evaluation, respirator training and a fit test. New employees who require respiratory protective equipment must be placed into the respirator program before being issued equipment.

Disposable paper dust masks or comfort masks are not a recognized form of respiratory protection and shall not be issued for use at any time on Technical Center controlled premises.

5.10. STORAGE.

After inspection, cleaning, and any necessary minor repairs, store respirators to protect against sunlight, heat, extreme cold, excessive moisture, damaging chemicals, or other contaminants. Respirators placed at stations and work areas for emergency use shall be stored in compartments or covers clearly marked as emergency equipment, and shall be quickly accessible at all times. Routinely used respirators, such as half-mask or full-face air-purifying respirators, shall be placed in sealable plastic bags. Respirators may be stored in such places as lockers or toolboxes only if they are first placed in carrying cases or cartons. Respirators shall be packed or stored so that the face piece and exhalation valves will rest in a normal position and not be crushed.

5.11. PROGRAM EVALUATION.

An appraisal of the effectiveness of the Respiratory Protection Program shall be carried out as necessary to ensure that the provisions of the written program are being effectively implemented. The evaluation will include investigating wearer acceptance of respirators, inspecting respirator program operation, and appraising protection provided by the respirator. The findings of the program evaluation will be documented, and this

documentation will contain the revisions and changes needed to ensure continued effectiveness of the program, and set target dates for the implementation of any action items.

5.12. RECORDKEEPING.

Respirator fit-testing shall be documented and shall include the type of respirator, brand name and model, method of test and test results, test date, and the name of the instructor/tester. The medical clearance form will be kept with the employee's medical records by the Physician or Other Licensed Health Care Professional (PLHCP) providing the medical exams for FAA, and a copy of the form will be given to the employee. The training logs, program roster, and fit-test records will be maintained by the Safety Office.

5.13. CONTRACTORS

Contractors are responsible for providing their own respiratory protection programs and respiratory protective equipment, unless otherwise stated in the contract that the FAA will provide safety- related personal protective equipment. They are required to develop and implement a respiratory protection program for their employees who must enter into or work in areas where exposure to hazardous materials cannot be controlled or avoided. This program must meet OSHA regulations and include issuance of respirators, medical evaluations, fit testing, and training.

5.14. VOLUNTARY USE OF RESPIRATORS

If employees choose to use respiratory protection voluntarily, the requirements of 29 CFR 1910.134 (c)(2) apply. This includes the following:

a. Ensuring that the employee is medically qualified by a PLHCP to wear the respirator.

b. Providing the employee with information contained in 29 CFR 1910.134, Appendix D.

c. Ensuring that the respirator is cleaned, stored, and maintained so that it does not present a health hazard to the employee.

d. Maintaining a completed copy of the Voluntary Respirator User Form for each employee/contractor voluntarily using a respirator. These forms can be obtained from the Safety Office Respiratory Protection Program Manager.

CHAPTER 6. HEARING CONSERVATION PROGRAM

6.0. PURPOSE.

The primary goal of the Hearing Conservation Program is to prevent hearing loss due to exposure to noise in the workplace. The program establishes requirements based on the Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.95, Occupational Noise Exposure, and includes the following elements:

a. Surveillance and monitoring of the work environment to identify potentially hazardous noise levels and personnel at risk.

b. Implementation of engineering controls wherever it is technologically and economically feasible to reduce noise levels to acceptable limits.

c. Implementation of administrative controls and/or the use of hearing protective devices where engineering controls are not feasible.

d. Annual audiometric testing of personnel to monitor the effectiveness of the hearing conservation program. Early detection of temporary threshold shifts will allow further protective action to be taken before permanent hearing loss occurs.

e. Training and education of personnel in the elements of the hearing conservation program to include: the nature of noise-induced hearing loss, the employee's responsibilities under the program, and proper use and maintenance of hearing protective devices.

6.1. NOISE EVALUATION AND SURVEILLANCE PROCEDURES.

a. Identification of Hazardous Noise Areas. The Safety Office will identify work areas within Technical Center facilities where noise levels equal or exceed an 85 dBA action level, based on an 8 hour time-weighted average. Records shall be maintained by the Safety Office and updated regularly to document any alteration in noise levels as a result of new equipment or process change. Those areas where the noise levels are below 85 dBA will not be routinely monitored. Identification of hazardous noise areas and equipment and any subsequent noise monitoring will be conducted by the Safety Office.

Signs will be posted at the entrance to any work area where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. Personnel who work in these areas shall have hearing protection supplied to them, shall be instructed in its proper use, and be required to wear this equipment when in these areas. It is the responsibility of the area supervisor to ensure that these precautions are enforced.

Equipment which produces noise levels greater than 85 dBA, or 140 dB peak sound pressure levels, shall also be appropriately labeled.

b. Noise Measurements and Exposure Assessments. In order to effectively control noise it is necessary that the noise be accurately measured according to standard procedures and that the measurements be properly evaluated against accepted criteria. The 8 hour time-weighted average noise exposure will be determined according to OSHA 29 CFR 1910.95 Appendix A, Noise Exposure Computation, and compared to Table G-16, Permissible Noise Exposure.

The monitoring of employees for noise exposure is made up of two parts, area and personal monitoring. Area measurements are generally obtained first. If noise levels are at or above the 85 dBA action level, personal noise dosimeters shall then be utilized to determine 8-hour time-weighted average exposure levels. All noise exposure monitoring data will be recorded and maintained.

c. Area Measurements. In an area survey, measurements of environmental noise levels are recorded using a sound-level meter to identify work areas where employees' exposures may be above hazardous levels. Area monitoring is conducted using a calibrated sound level meter set to the “A” scale, slow response. Within the area of interest, several different locations will be measured. Typical measurement locations would include:

1. In the hearing zone at the employee's work location.

2. Adjacent to the noise source(s).

3. At the entrance(s) to the work area.

4. At other locations within the area where the employee might spend time.

A detailed diagram of the area will be included with the results indicating the locations where the noise readings were obtained. If the noise levels are below 85 dBA on an 8-hour time-weighted average basis in the area, no additional noise monitoring will be required for that area. Should any of the noise measurements equal or exceed 85 dBA, records shall be maintained as to the noise levels recorded, where they were taken, and the source(s) of the noise. These records shall be updated regularly to determine if any changes have occurred that would warrant additional monitoring of exposed personnel.

d. Personal Monitoring. If initial measurements indicate a potential for an 8 hour time-weighted average exposure at or above 85 dBA, a determination of the actual noise exposure will be accomplished using calibrated personal noise dosimeters. A noise dosimeter will be placed on the employee at the beginning of the work shift, with the microphone placed in the hearing zone, usually on the lapel or shoulder. The dosimeter will be worn for the full duration of the work shift. At the end of the work shift, the dosimeter will be removed and exposure data recorded. Background information will be collected from each employee detailing job description, unusual job activities, potential interferences, etc., for the time period sampled. Those employees whose noise exposure equals or exceeds 85 dBA on an 8-hour TWA will be referred for inclusion in the Hearing Conservation Medical Surveillance Program.

e. Repeat Monitoring of Hazardous Noise Areas. Any area with noise levels that equal or exceed 85 dBA shall be re-monitored whenever a change in production, process, equipment, or controls increase the noise exposure such that 1) additional employees may be exposed to noise levels at or above the 85 dBA action level on a time-weighted average basis, or 2) the attenuation provided by the hearing protectors used by employees may be inadequate. Areas where the noise levels have dropped below 85 dBA shall be eliminated from the monitoring program.

6.2. NOISE CONTROL METHODS.

a. Engineering Controls. The primary means of reducing or eliminating exposure to hazardous noise is through the application of engineering controls defined as any modification or replacement of equipment, or related physical change at the noise source or along the transmission path that reduces the noise level at the employee's ear. Engineering controls shall be utilized where feasible to minimize exposure to hazardous noise levels. Consideration of noise exposures shall be made as early as possible in the procurement, design or modification of equipment.

b. Administrative Controls. Where the highest rated hearing protective equipment, engineering controls, or 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 of 90 dBA TWA.

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.

c. Hearing Protective Devices. Hearing-protective devices shall be the permanent solution only when engineering or administrative controls are considered to be infeasible, or fail to adequately reduce noise. Hearing-protective devices are earmuffs or earplugs that can be worn to reduce the level of sound entering the ear. Hearing protective devices shall be worn by all personnel when they must enter or work in an area where the operations generate noise levels of 85 dBA or greater.

1. Types of Hearing Protective Devices (HPDs). Some types of hearing protective devices include the following:

   (a) Insert Type Earplugs. A device designed to seal the ear canal without being uncomfortable. Insert earplugs include the following:

      (1) Pre-molded earplugs are pliable devices of fixed proportions. Two standard styles are the single flange and triple flange. Pre-molded plugs may come in one size or in various sizes. With pre-molded plugs, a person may need a different size plug for each ear. Pre-molded earplugs are reusable and washable. They should be replaced periodically when they show signs of distortion or deterioration, or when a sealed fit cannot be obtained in the ear canal.

(2) Expandable or Formable earplugs come in just one size. They are made of material that, after being compressed and inserted, expands to conform to the shape of the ear canal. When properly inserted, they provide noise attenuation values that are similar to or exceed those from correctly fitted pre-molded earplugs. Each earplug must be held in place while it expands enough to remain firmly seated. These earplugs may be reusable and washable, but should be replaced frequently, or when they no longer seal the ear canal when properly inserted.

(b) Earmuffs. Earmuffs are devices that completely cover the outer ear to reduce the level of noise that reaches the ear. Their effectiveness depends on a seal between the cushion and the head. Hair, sideburns or temples of glasses can break the seal around the ear, and earplugs should be used.

2. Selection of Hearing Protective Devices. Employees will be given the opportunity to select hearing protective devices from a variety of suitable devices approved by the Safety Office. In all cases the chosen hearing protectors shall have a Noise Reduction Ratio (NRR) high enough to reduce the noise at the eardrum to below 85 dBA.

3. Issuance of Hearing Protective Devices. The issuance of hearing-protective devices is coordinated through the Safety Office. Instruction on the proper use and care of earplugs and earmuffs will be provided whenever HPDs are dispensed. Personnel requiring earmuffs in addition to earplugs will be informed of this requirement and educated on the importance of using proper hearing protection.

4. Use of Hearing Protective Devices (HPD). Always use and maintain HPDs as originally intended and in accordance with instructions provided. Earmuff performance may be degraded by anything that compromises the cushion-to-skin seal. This includes other pieces of personal protective equipment such as eyewear, masks, face shields, and helmets. HPDs shall be for the exclusive use of each employee.

5. Maintenance of Hearing Protective Devices. Reusable earplugs, such as the triple flange or formable devices, should be washed in lukewarm water using hand soap, rinsed in clean water, and dried thoroughly before use. Wet or damp earplugs should not be placed in their containers. Cleaning should be performed as needed.

Earmuff cushions should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but do not allow the inside of the muff to get wet. Allow cushions to completely dry before storing.

d. Hearing Protection Performance Information. HPDs 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 in 1910.95, Appendix B, “Methods for Estimating the Adequacy of Hearing Protector Attenuation.”

An HPD may have a high Noise Reduction Rating, but without properly fitted HPDs, the actual noise reduction may be less because the noise may bypass the hearing-protective device and be transmitted through tissue and bone pathways to the inner ear.

The term "double hearing protection" is misleading. The attenuation provided from any combination earplug and earmuff is not equal to the sum of their individual attenuation values. The Hearing Conservation Program shall emphasize proper use and care of HPDs as a means of reducing noise exposure, rather than reliance on the NRR. Employee training shall included proper interpretation of the NRR, and the need for safety factors when estimating noise attenuation.

6.3. MEDICAL SURVEILLANCE.

a. Notification. Upon identification of employees whose 8-hour TWA equals or exceeds 85 dBA, the Safety Office will enroll them in the Hearing Conservation Program. Information will include the employee’s name, supervisor's name, telephone number, and the noise levels recorded in the employee's work area, including any dosimetry data.

In work locations where either through administrative or engineering controls, noise levels are found to have decreased such that the employee's 8-hour TWA is below 85 dBA, those

employees will no longer be enrolled in the Hearing Conservation Program.

b. Audiometric Testing. All employees enrolled in the Hearing Conservation Program shall receive audiometric testing. Audiometric testing will be provided by a board certified occupational physician or certified audiometric technician under the direction of the physician, and shall include baseline and annual audiometry. The audiometric testing program shall adhere to the requirements outlined in 29 CFR 1910.95 (g) and (h), and Appendices C, D and E.

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.

6.4. TRAINING.

The training and education program will provide information concerning the adverse effects of noise and how to prevent noise-induced hearing loss. At a minimum, all training will cover the following topics:

a. Noise-induced hearing loss.

b. Recognizing hazardous noise.

c. Symptoms of overexposure to hazardous noise.

d. Hearing protection devices--advantages and limitations.

e. Selection, fitting, use, and maintenance of hearing protective devices.

f. Advantages, disadvantages and attenuation of HPDs.

g. Engineering and administrative control measures.

h. Explanation of noise measurement procedures.

i. Hearing conservation program requirements.

j. Audiometric testing purpose, requirements and test procedures.

Supervisors must contact the Safety Office to schedule training for new personnel assigned to work in hazardous noise environments and for retraining of current personnel.

6.5. PROGRAM EVALUATION.

Periodic program evaluations will be conducted to assess compliance with OSHA regulations and FAA program requirements. Both noise exposure monitoring and audiometric testing portions of the Hearing Conservation Program will be reviewed annually to assure its quality and effectiveness.

An evaluation of the Program, including wearer acceptance, appraisal of protection afforded, and field audits of hearing protection use and record keeping will be conducted at least annually. Items to be considered include:

a. Standard operating procedures.

b. Training records and course content for supervisors and employees.

c. Maintenance of HPDs.

d. Field audits of HPD use.

e. Review of recorded threshold shifts on OSHA log.

The findings of the Hearing Conservation Program evaluation will be documented, and this documentation will list plans to correct faults in the program and set target dates for the implementation of the plans.

6.6. RECORDKEEPING.

Hearing Conservation Program will include the following:

a. All non-medical records will be maintained for a period of 5 years. Results of hearing tests and medical evaluations performed for hearing conservation purposes as well as noise exposure documentation shall be recorded and shall be a permanent part of an employee's health record.

b. All personnel who routinely work in designated hazardous noise areas shall be identified and a current roster of such personnel shall be maintained by the Safety Office and updated periodically.

6.7 OTHER DOCUMENTS

FAA WM J. Hughes Technical Center, Environmental and Safety Sub-Team, Safety Office, Hearing Conservation Program.

FAA Occupational Safety and Health Program, Order 3900.19B, Chapter 21, Hearing Conservation Program.

CHAPTER 7. ERGONOMICS PROGRAM

7.0. PURPOSE.

Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of workers. The Technical Center seeks to provide a safe and healthful work environment through the application of ergonomic principles in the identification, evaluation, and control of ergonomic problems. Ergonomic problems arise from a combination of conditions and risk factors: activities that present biomechanical stress to the body (e.g. repetitive motion); poorly designed equipment, work flow or workstation; improper work practices or techniques; insufficient rest/recovery periods, physical condition, and other such factors that may result in muscular skeletal disorders (MSDs). Ergonomically-related MSDs usually reflect a gradual or chronic development, and include cumulative trauma disorders such as carpal tunnel syndrome, tendonitis, and lower back pain. Both work-related and non-work related activities and conditions may individually, or by interacting with each other, give rise to MSDs. Risk factors in the workplace that may contribute or cause ergonomic-related injuries include repetitive, forceful or prolonged exertions; prolonged static positions or awkward postures; frequent or heavy lifting, pushing, pulling or carrying of heavy objects; and vibration from tools or equipment.

The goal of the ergonomics program is to evaluate and design the environment, workstations, and equipment to complement the capabilities of employees, and prevent the potential for fatigue, operator error, accidents, and cumulative trauma disorders.

7.1. HAZARD IDENTIFICATION/ANALYSIS.

Ergonomic risk identification at the Technical Center will consist of the evaluation of workplace injuries and illnesses for identification of trends, the results of worksite ergonomic analyses, and employee concerns. When a workstation, task or operation has been identified for ergonomic analysis, the following methods may be used to determine potential problems, and the corrections needed to control or prevent injury or illness: directly observing the job performance; interviewing employees; workstation measurements; and video monitoring of the job performance. Results of the analysis will be documented to provide necessary data for implementing control measures.

Workstations should be evaluated for risk factors. Checklists for evaluation of ergonomic risk factors in the workplace are available from the Safety Office. If the workstation contains one or more of these risk factors, ergonomic principles and control measures should be applied (e.g. proper work practices, design correction or modification, work flow adjustment, work/rest regimen):

a. Repetition - Repeating the same motion or motion pattern every few seconds or using the keyboard or mouse steadily for several hours per day.

b. Awkward Positions - Raising or working with the hands above the head for prolonged periods of time.

c. Vibration - Tools or equipment that produce vibration.

d. Contact Stress - Frequent or repetitive pressure on the body (e.g., hand, finger, forearm, foot, knee) by a hard or sharp object, e.g. using the hand like a hammer, prolonged kneeling, unpadded tools, levers or handles requiring force.

e. Force - Lifting, pushing or pulling heavy objects

f. Prolonged static postures - Holding of the body or arms in a fixed position for an extended period of time with little or no movement.

g. Using inadequate tools for the required job.

h. Inadequate seating or seat support.

i. Improper lighting.

7.2. HAZARD PREVENTION AND CONTROL

The results of an ergonomic analysis will be used to implement engineering controls and reduce or eliminate ergonomic risk factors. Some engineering controls include: redesign or modification of the workstation, work method, or tool to reduce stress. Administrative controls may be needed in addition to engineering controls. Such things as work/rest regimens and job rotation are considered administrative controls. Proper work practices and ergonomically correct movement is critical to preventing injury and a key element of employee awareness and training. These techniques include proper lifting techniques, posture correction, work object/movement adjustments (positioning objects closer or lower to reduce reaching up or out), and corrective exercises (moving and stretching muscle sets in the

opposite direction of the potentially harmful posture or movement). Training personnel to recognize ergonomic risk factors, to apply proper working techniques and exercises, and to recognize early warning signs of cumulative trauma disorders will assist in early detection and prevention of injury\illness. When plans are developed for new or modified facilities, processes, or equipment, ergonomic analysis should be performed.

a. Engineering Controls. The concept of ergonomic design is to make the job, equipment or tool compatible with the person, not the person compatible to the job.

1. Proper ergonomic design of a workstation should include the following:

(a) Reduction of static loading on muscles.

(b) Proper work surface height, with adjustable features where necessary.

(c) Chair design which may include adjustable heights, swivel, and back/lumbar support.

(d) Reducing reaching distances in front, to the side, overhead, behind the back, far in front, or to the side of the worker.

(e) Padding work surfaces where employees may contact or rest on hard edges.

(f) Workstation layout to facilitate the flow of material and products through the station.

(g) Proper lighting to reduce eyestrain. Inadequate lighting reduces the contrast between surfaces. Bright lighting causes excessive reflection off work surfaces. Video display terminals (VDT) should be positioned to reduce the glare from interior lights and sunlight, and increase the contrast of the images on the screen.

2. Tool Design. Improper hand tool selection and design may contribute to cumulative trauma disorders. Several factors should be considered when selecting a tool. Some of these factors include the following:

(a) Selecting the correct tool for the job and using the tool in the proper manner.

(b) Minimizing vibration.

(c) Selecting tools that are designed to reduce excessive hand gripping to perform a job function.

(d) Selecting hand tools that do not have pre-molded, form-fitting grips on the handle. These grips will fit only one size of hand.

b. Administrative Controls. Administrative controls are applied to limit the duration, frequency, and severity of exposure to the risk factors related to cumulative trauma disorders. Administrative controls do not eliminate risk factors. Administrative controls are designed to allow for stressed and strained muscles and joints to rest and recover. Administrative controls include the following:

1. Employee rotation on a job containing risk factors.

2. Rest breaks.

3. Decreased production rates and limited overtime work.

4. Increasing the number of employees.

c. Personal Protective Equipment. Personal Protective Equipment should be selected in conjunction with, not in place of, other controls. The equipment should be provided in a variety of sizes, and accommodate the physical requirements of the job and the employee.

7.3. TRAINING.

Training should be provided to personnel who are assigned to workstations or tasks involving ergonomic risk factors. The training should include but not be limited to the following topics:

a. How to identify ergonomic risk factors in the workplace.

b. Signs and symptoms of muscular skeletal disorders (MSDs).

c. Reporting procedures for MSD's.

7.4. RECORDKEEPING

Records shall be maintained for all workstation/work activity ergonomic analyses. All MSD injuries and illnesses shall be reported to the Safety Office immediately via the guidelines outlined in Chapter 30, Mishap Reporting and Reporting Unsafe or Unhealthful Conditions.

CHAPTER 8. INDOOR AIR QUALITY

8.0. PURPOSE.

The indoor environment is a result of the interaction among many factors such as: the building's location, climate, construction methods and materials, renovations, occupant activities, furnishings, and equipment. The goal of an indoor air quality (IAQ) program is to proactively anticipate and prevent conditions and/or building systems from contributing to a compromise of the quality of indoor air that may lead to or exacerbate adverse physiological conditions or discomfort among building occupants. Some parameters that can contribute to poor indoor air quality are: extremes of humidity and temperature, lack of outdoor air introduction, off-gassing of furnishings, equipment and construction materials, tobacco smoke, and biological contamination such as fungi, bacteria, and pollen which may be present in stagnant water, air ducts, humidifiers, and drain pans. The indoor air quality investigation serves to identify and abate building conditions contributing to compromised indoor air quality and to prevent similar situations or conditions from recurring. Further guidance for conducting an IAQ investigation can be found in the Indoor Environment Quality Investigator work instruction (TC-WI-3920-0130). Once IAQ concerns are filed or noted by building occupants, an IAQ investigation shall be conducted to identify the nature and severity of the observed IAQ conditions. The information collected during the initial investigation may dictate more advanced IAQ investigation methodologies.

8.1. DEFINITIONS.

a. ASHRAE. American Society of Heating, Refrigeration and Air Conditioning Engineers. The consensus standard organization for heating, ventilating, and air conditioning (HVAC) design.

b. Biological Contaminants. Agents that are living or derived from living organisms, such as fungi, bacteria, viruses, and animal antigens. Such biologicals can be inhaled and may cause allergic reactions, hypersensitivity, and respiratory irritation.

c. Building Related Illness (BRI). Illnesses for which there is a clinically defined etiology and for which there may be confirming laboratory and physical evidence. Examples include legionella, psittacosis, and hypersensitivity pneumonitis.

d. Particulates. Particles, especially allergens and irritants can be present in the air. Particulates may serve as a core carrier for volatile organic compounds (VOCs) or other chemicals.

e. Sick Building Syndrome (SBS). A condition associated with complaints of discomfort that may include headache, nausea, dizziness, dermatitis, upper respiratory irritation, cough, fatigue, eye irritation, and difficulty concentrating. Symptoms generally appear after spending some period of time in the workplace but lessen or disappear after leaving the work site.

f. Volatile Organic Compounds (VOCs). Refers collectively to the organic vapors that contaminate indoor air emanating from building materials, cleaners, paints, adhesives, and solvents.

8.2. BUILDING DESIGN AND MAINTENANCE CONSIDERATIONS.

Many potential IAQ problems can be precluded by designing and constructing new or renovated buildings to meet the latest ASHRAE standards.

a. HVAC System Preventative Measures

1. Replace filters according to the HVAC System manufacturer's recommendations or more frequently as needed. The efficiency of the air filters should be a minimum of 60 percent or that which is feasible for the HVAC system, as recommended by ASHRAE.

2. Draw a minimum of 20 cubic feet per minute (cfm) of outside air per person into the building through the HVAC system. This is necessary to control air contaminants and odors.

3. Ensure that the HVAC system supply and return air grill locations are properly spaced for the thorough mixing and distribution of conditioned supplied air throughout work area.

4. Perform an overall inspection of the HVAC system including the following:

   (a) Verify that the system is properly balanced and adequate air flow is being delivered.

   (b) Ensure the air intake for the HVAC system is located a sufficient distance from the system exhaust stack and any

ventilation pipes.

(c) Check the system for accumulating water or water leaks.

(d) Add appropriate treatment chemicals as indicated by the equipment specifications.

(e) Re-balance system whenever its configuration or the area served has changed.

(f) Perform an overall inspection of the plumbing system including the following:

(1) Water leaks.

(2) Filled drain traps.

(3) Clogged ventilation pipes.

b. Housekeeping.

1. Establish a routine cleaning schedule that includes regular trash storage and pick-up, and cleaning of all surfaces. Store cleaning supplies in a designated room or closet.

2. Inform employees of the application schedules and storage areas for pesticides.

3. Smoking is permitted only in outside designated areas.

8.3 INDOOR EQUIPMENT USE

a. Combustion equipment commonly used indoors such as fork trucks and generators can create serious health risks if used improperly. Combustion pollutants are the gases and particles made by burning any fuel such as wood, natural gas, kerosene, or charcoal. The major indoor combustion pollutants are carbon monoxide (CO), nitrogen dioxide (NO2), particles (PM10), and polycyclic aromatic hydrocarbons (PAHs). Whenever practicable, alternatives to gasoline burning motor vehicle equipment shall be considered when intended to be used indoors at the Center. Alternative power sources with less harmful emissions than gasoline include electricity, liquefied petroleum gas (propane), and compressed natural gas. In instances where no alternative is available, the equipment exhaust shall be vented directly to the outside and away from any air intakes.

b. Air cleaning devices that rely on ion generation and electrostatic precipitation may produce ozone, particularly if they are not properly installed and maintained. Ozone is a lung irritant, producing an unintended secondary indoor air quality hazard. The use of all air cleaning devices must be approved by the Safety Office prior to use. Often, engineering controls can be implemented to abate the indoor air quality concern. All air cleaning devices must be tested by the Underwriters Laboratory (UL) and used in accordance to manufacturer's recommendations.

c. Indoor Temporary Heating Devices

1. Portable electric space heaters intended to be used indoors are permitted for use inside building of the Center only under the following two conditions:

(a) An employee has a medical condition that renders the temperature ranges listed in Table 8-1 unacceptable. A physician's note must be provided to the Safety Office.

(b) Engineering controls are unable to maintain the workspace in the temperature ranges listed in Table 8-1. Temperatures outside of the recommended ranges during normal working hours must be documented by the Safety Office through temperature monitoring.

2. Typical indoor space heaters employ circulating oil or water or ceramic plates to radiate heat. All space heaters must be tested by the Underwriters Laboratory (UL), positioned on the floor of the work area (NOT on top of desks, machines, etc.), and used in accordance with manufacturer's recommendations. Space heaters must have three feet of clearance from the nearest object. Space heaters must be turned off when the employee leaves the area. Furthermore, the following properties should be present in the heater:

(a) Have a tip-over switch that automatically shuts off the unit in the event it is accidentally turned over,

(b) An indicator light that illuminates when the unit is on, and

(c) An element guard to prevent anyone from touching hot elements.

d. Outdoor Temporary Heating Devices

1. Outdoor temporary heating devices are commonly used in construction. These devices are also known as Salamander heaters and Torpedo heaters. Their use is regulated under 29 CFR 1926.154.

2. In general, the area around outdoor heating devices should provide adequate ventilation, be free from combustible materials, and be positioned in a way so as to avoid employees walking closely in front of them. (For additional information see Chapter 15 Fire Safety).

8.4. INVESTIGATION GUIDELINES.

a. The Safety Office will evaluate employee complaints based on a visual inspection and professional experience. IAQ investigations will include:

1. A walk through of the workspace to evaluate the different building systems, the workspace condition, and potential sources of contaminants.

2. A review of the mechanical drawings of the affected area to identify any changes in facility design and function, and to determine if the system is operating as specified.

3. Evaluate the HVAC system to assess the type, review the maintenance and calibration logs; note any changes to the system, certify the system is performing adequately for the current occupancy; ensure the location of the air intake and exhaust on the building exterior is sound; and check the supply and return air registers to guarantee an adequate air mix.

4. Record measurements of temperature, humidity, air flow, carbon monoxide (CO), carbon dioxide (CO_2), and particulate concentrations as warranted. The table below provides the acceptable ranges for temperature and humidity as defined by ASHRAE. ASHRAE recommends the concentrations of CO shall not exceed 9 parts CO per million parts air (ppm) and CO_2 shall not exceed 1,000 ppm. The results of these measurements can be used to evaluate the efficiency of the HVAC system.

b. Quantitative sampling and analysis for environmental contaminants may be conducted at the discretion of the Industrial Hygienist but only as a final option. Once the source has been identified, it should be eliminated or remedied immediately. Laboratory analysis of samples that are collected and submitted on sample media shall be conducted in accordance with National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) analytical methods. The analytical testing laboratory shall be accredited by the American Industrial Hygiene Association (AIHA).

8.5. MOLD

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. It is impossible to eliminate all mold and mold spores in the indoor environment. However, mold growth can be controlled indoors by controlling the moisture level.

Molds reproduce by making spores that usually cannot be seen without magnification. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. Molds gradually destroy the things they grow on.

Many types of molds exist. All molds have the potential to cause health effects. Molds can produce allergens that can trigger allergic reactions or even asthma attacks in people allergic to mold. Others are known to produce potent toxins and/or irritants. Potential health concerns are an important reason to prevent mold growth and to remediate/clean up any existing indoor mold growth.

In most cases, if visible mold growth is present, sampling is unnecessary. In specific instances, such as when the source(s) of the mold contamination is unclear, air sampling for mold may be recommended. Surface sampling may also be useful in order to determine if an area has been adequately cleaned or remediated. Sampling should be done only after developing a sampling plan that includes a confirmable theory regarding suspected mold sources and routes of exposure.

Mold remediation guidelines for commercial buildings set forth by the Environmental Protection Agency will be employed at the Center for all mold related issues.

8.6. INTERPRETATION OF SURVEY RESULTS.

There are currently no OSHA IAQ compliance standards

although there are industry consensus standards and recommendations for some physical, chemical, and biological indoor environmental parameters provided by such organizations as ASHRAE and AIHA. Recommendations and guidelines shall be used with the understanding that there may be other confounding factors or less easily defined contributors involved. Although such factors can profoundly influence the IAQ evaluation, they cannot be easily addressed quantitatively. Extreme caution should be exercised when interpreting sampling results. Individual sensitivities can result in IAQ complaints even though sampling results are well below recommended levels.

8.7. REMEDIATION AND CONTROL.

Successful IAQ remediation depends on reducing or eliminating air contaminant levels and addressing health complaints. IAQ problems are oftentimes the result of a combination of factors, some of which may not be easily resolved. Some general guidelines in the recommendations for remediation and control of indoor air quality concerns should include consultation with building engineers and maintenance personnel with expert knowledge of building design, renovation, and maintenance. In conjunction with the Industrial Hygienist, they can incorporate the following remediation guidelines when recommending the elimination/control of an IAQ concern:

a. Ventilation.

1. Ensure an adequate supply of fresh outdoor air.

2. Assure air diffusers are open and unobstructed for adequate air delivery and mixing.

3. Implementation of routine HVAC preventive maintenance including inspection and replacement of dampers, belts, baffles or louvers, ducts, and filters.

4. Locate external air intakes and exhausts to prevent the drawing in of contaminants.

b. Air Treatment.

1. Maintain temperature and relative humidity in accordance with Table 8-1.

2. Install additional filters to prevent contaminants from being drawn in from outside.

3. Water damaged materials and furnishings shall be discarded, and the area thoroughly cleaned and disinfected.

4. Remove and discard any damaged or damp insulation in the ventilation system. Ventilation ducts should be externally wrapped with foil backed insulation or internally lined with a non-fiberglass, acoustically insulating material (Amorfles).

c. Source Control.

1. Immediately repair or eliminate any water leaks, condensation, and standing water, especially in air handling unit drain pans.

2. Isolate areas being renovated, painted or carpeted, or perform the work when the building is unoccupied.

3. Install local exhausts as necessary to control contaminants generated by specific processes that contribute adversely to IAQ.

Table 8-1
Acceptable Ranges of Temperature and Humidity during Summer and Winter.

RELATIVE HUMIDITY	WINTER	SUMMER
30%	68.5°F - 76.0°F	74.0°F - 80.0°F
40%	68.5°F - 75.5°F	73.5°F - 79.5°F
60%	68.5°F - 74.5°F	73.0°F - 79.0°F

NOTE: Humidity greater than 50 percent is unacceptable because of the potential for microbial growth.

NOTE: In certain environments, these ranges may not be feasible (e.g. – the labs, testing requirements).

CHAPTER 9. RADIATION PROGRAM

9.0 PURPOSE.

The Radiation Program provides guidelines for the use or operation of materials or processes that may pose a potential ionizing or non-ionizing radiation hazard. This program has been developed to ensure compliance with Federal regulations:

a. Ionizing Radiation is regulated by the Nuclear Regulatory Commission (NRC), Title 10 CFR Part 20; and the Occupational Safety and Health Administration (OSHA), Title 29 CFR Part 1910.1096.

b. Non-ionizing Radiation is regulated by OSHA, Title 29 CFR Part 1910.97.

The Radiation Program includes the following elements which will be implemented for the operation of equipment or use of materials that create the potential for exposure above the OSHA Permissible Exposure Limits (PELs): periodic radiation surveys, personal exposure monitoring, medical surveillance, and recordkeeping.

9.1. PROCUREMENT.

Prior to the purchase of any equipment that produces ionizing or non-ionizing radiation, any radioactive source material, or equipment containing sealed radioactive sources, the Safety Office should be notified in order to evaluate potential radiation exposure hazards and to present recommendations for engineering controls.

9.2. INVENTORY.

Providing information on ionizing and non-ionizing radiation sources and equipment to the Safety Office will allow maintenance of a current inventory of all sources for the purposes of exposure evaluation surveys and emergency response in the event of an uncontrolled release or exposure.

9.3. IONIZING RADIATION.

Ionizing radiation, or that radiation which causes ionization of materials, includes: alpha, beta, gamma, x-rays, protons, and neutrons. Some negative effects of ionizing radiation include: radiodermatitis, cancer, cataracts, sterility, and genetic damage. The radiation program as it relates to ionizing radiation supports the concept that all radiation doses should be "as low as reasonably achievable" (ALARA). This indicates that no dose should be acceptable if it can be avoided or is without benefit.

9.4. EQUIPMENT CONTAINING SEALED SOURCES.

All equipment containing sealed sources of radioactive materials must be operated in accordance with manufacturer's operating and safety procedures. Although the levels of activity associated with these sealed sources is typically small, the following requirements must be satisfied for each unit:

Equipment must be marked with a radioactive label identifying the radioactive isotope and activity of the sealed source.

a. Equipment must be operated according to the operating instructions stated in the manufacturer's operating manual.

b. Users of equipment with sealed sources will be responsible for accountability and security of all sealed sources.

c. Equipment relocation and modification shall be reported to the Safety Office prior to scheduled relocation and modification.

d. In addition to the general requirements listed above, the following specific requirements should be satisfied when using Gas Chromatograph (GC) Instruments containing sealed sources:

1. All GC units with radioactive foils must be vented into a chemical fume hood or local exhaust system designated to the equipment to prevent work areas from becoming contaminated.

2. Units with titanium or scandium tritide foils must be used with properly operating temperature control mechanisms to prevent the foil temperatures from exceeding 225 and 325 degree Celsius, respectively.

3. The Safety Office must be notified of sealed sources and foils that are no longer used in the laboratory. Appropriate means for waste disposal will be recommended.

e. In addition to the general requirements listed above, the following specific requirements should be satisfied

when using x-ray producing equipment to ensure minimum exposure to x-ray radiation:

1. Security measures must be developed to prevent the use of the x-ray equipment by unauthorized users.

2. Safety interlocks must be installed in rooms housing stationary x-ray systems. The interlocks must be operationally tested on a regular basis and the results recorded.

f. Users of electron microscopes are not normally subject to significant risk from radiation exposure. In cases of equipment failure, the microscope should be turned off and the manufacturer's representative notified for assistance. Users should not attempt any repairs.

The following radiation hazards are associated with electron microscopes:

1. The high-speed beam of electrons can produce x-rays after undergoing collision with the walls of the electron beam column. These x-rays can penetrate the beam column, resulting in a radiation hazard, if the column is not shielded with an adequate lead thickness. Ensure adequate shielding.

2. The image window on the electron microscope where the micrograph can be viewed is constructed of an appropriate thickness of lead-lined glass. The lead-lined glass is in place to protect against any x-radiation exposure.

9.5. LABELING.

The level of radiation exposure will determine the labeling requirements for the work area. The radiation exposure levels in a work area will be measured and documented by the Safety Office as appropriate. All area labeling will adhere to requirements specified in the OSHA standards and NRC regulations.

9.6. NON-IONIZING RADIATION.

Non-ionizing radiation is that portion of the electromagnetic spectrum that does not produce ionization of materials upon exposure. The regions of the spectrum designated as non-ionizing include: ultraviolet, infrared, visible, microwave, and radio frequency.

Some negative effects of non-ionizing radiation include: corneal burns or cataracts from infrared sources, erythema, or keratoconjunctivitis from ultraviolet sources, chorioretinal burns from high intensity, visible or near infrared light sources, mechanical shock, and tissue rupture of the eye from laser radiation sources, life-threatening electrical shock, and burns from radio frequency sources.

a. Sources. Some sources of non-ionizing radiation identified at the Technical Center include: radar equipment, lasers, welding, and black light in non-destructive testing. The Safety Office should be notified prior to equipment relocation or modification.

1. The following procedures should be implemented when operating radar equipment:

   (a) Evaluate the radio frequency hazards with calculation of the safe distance from the source. This will require data on the power input to the antenna, ratio of power gain of the transmitting antenna, power density as determined by the PEL for the source frequency. Confirm the safe distance calculation with real time measurements.

   (b) Incorporate engineering, administrative, and personal protective equipment controls to eliminate\reduce employee exposure.

   (c) During repair or maintenance on radar systems refer to lock-out/tag-out procedures.

2. The following procedures should be implemented when operating laser equipment:

   (a) Ensure that the laser is classified and labeled by the manufacturer. The classification system provides a practical means of determining the applicable safety requirements for a given laser system. For most industrial, medical, laboratory, and research lasers, use of this classification system precludes any necessity for measurements or calculations since all commercial laser products must by law (21 CFR 1040.10) be classified and labeled by the manufacturer.

      (1) Class I. Lasers which by inherent design cannot emit radiation levels in excess of the permissible exposure limits. These are not hazardous under any operational or viewing condition and require no controls.

      (2) Class II. Low-powered laser systems that emit less than 1 mW visible continuous wave radiation and are not

considered hazardous for momentary unintentional exposure. These lasers carry a CAUTION label.

(3) Class III. Lasers which do not present a diffuse reflection hazard. They are sub-classified as:

(aa) Class IIIa. Low-powered laser systems which emit 1-5 mW visible continuous wave radiation. Lasers or laser systems less than 2.5 mW/cm^2 are not considered to be hazardous for momentary unintentional exposures unless the beam is viewed with magnifying optics. These lasers carry a CAUTION label. Lasers which exceed 2.5 mW/cm^2 carry a DANGER label and should not be viewed even momentarily.

(bb) Class IIIb. Medium-powered lasers or laser systems considered to be potentially hazardous when the direct or specularly reflected beam is viewed without protection. Special care is required to prevent intrabeam viewing and to control specular reflections from mirror-like surfaces. These lasers carry a DANGER label and require the use of protective eyewear.

(4) Class IV. High-powered lasers or laser systems which can be extremely hazardous to the eye from intrabeam, specular reflections, and diffuse reflections. They can also burn the skin or provide an ignition source for flammable materials, causing a fire. These lasers carry a DANGER label. Strict controls are required, including use of protective eyewear, door interlock systems, warning signs and lights, and alarms.

b. Protective Facilities and Devices. The following lists facility requirements and devices for each of the classes of lasers:

1. Class I. No requirements.

2. Class II. Cautionary label warning against continuous intrabeam viewing.

3. Class III. The following facilities and devices are required:

(a) Controlled work space to include personnel control, system interlocks, and posting.

(b) Eliminate specular reflective surfaces by removing the surfaces, interlocking the laser position, or installing travel stops, enclosing the beam.

(c) Terminate the beam with diffuse material and minimum reflection.

(d) Eye protection for direct beam viewing.

4. Class IV. The following facilities and devices are required:

(a) Restricted work space to include: interlocks, combination locks, and posting.

(b) Fail-safe firing circuit to include: lock and key system, delay countdown system, and cover box over switch.

(c) Alarm system to include: sound device, flashing light, auto delay countdown.

(d) Good room illumination to include: illumination, light colored diffuse room surfaces.

(e) Remote firing or enclosure of the laser and associated beam, and the target in a light tight box.

(f) Beam stopper (fire brick), ventilation for the exhaust of any toxic vapors or fumes.

(g) Beam enclosure.

(h) Eye protection.

c. Welding Operations. Eye protection shall be worn during welding processes. The shade specific lenses shall be worn as appropriate for the welding process. Welding leathers shall be worn to protect against skin exposure hazards. In addition to protecting the welding operator, the welding process shall be enclosed to prevent inadvertent or accidental viewing of the process by other shop personnel or visitors. This can be achieved with the use of welding curtains.

9.7. MONITORING.

a. Ionizing Radiation. Radiation surveys and area monitoring will be conducted by the Industrial Hygienist as required by Federal regulations or based

upon professional judgment if no standards exist. Personal dosimetry programs will be administered by the Safety Office for employees who may be exposed to radiation above the OSHA PEL's. Accurate documentation of an employee's radiation exposure history will be maintained by the Safety Office.

b. Non-Ionizing Radiation. Radiation hazard exposure evaluation including real-time monitoring of non-ionizing sources will be conducted by the Industrial Hygienist as required by Federal regulations or based upon professional judgment if no standards exist. Accurate documentation of an employee's radiation exposure history will be maintained by the Safety Office.

9.8. TRAINING.

Training shall be provided to all employees who may be exposed to ionizing and non-ionizing radiation hazards to include:

a. Standard operating procedures for equipment or processes generating the radiation hazard.

b. Health effects of ionizing and non-ionizing radiation exposure.

c. Methods for the control of exposure to radiation hazards to include: engineering, administrative, and personal protective equipment.

d. Emergency procedures for accidental release and/or exposure.

9.9. MEDICAL SURVEILLANCE.

Medical surveillance shall be provided to those individuals exposed to ionizing and non-ionizing radiation at or above the action level as determined by Federal regulations. The content of the medical examination will be determined by Occupational Safety and Health Administration (OSHA) and National Institute of Occupational Safety and Health (NIOSH) standards and recommendations. Medical surveillance is not required for operators of Class I and Class II lasers.

9.10. RECORDKEEPING.

An inventory of all ionizing and non-ionizing radiation sources shall be maintained by the Safety Office and provided to emergency response personnel. All exposure hazard monitoring records, documentation of radiation hazard evaluations, and reports of accidental radiation release and exposure shall be maintained by the Safety Office. Copies of exposure monitoring records shall be included in the employee's medical record.

9.11. OTHER DOCUMENTS

FAA Occupational Safety and Health Program, Order 3900.19B, Chapter 14, *Radiation Safety Program*.

CHAPTER 10. INFECTIOUS MATERIALS/BLOOD BORNE PATHOGENS

10.0. PURPOSE.

Employees in carrying out their job responsibilities may potentially be exposed to blood and other potentially infectious materials (OPIM). The exposure can occur as a result of an occupational injury or a medical emergency involving a fellow employee where one offers their assistance. Blood borne pathogens exist in the blood or other potentially infectious materials including, but are not limited to, Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

10.1 EXPOSURE CONTROL PROCEDURES.

The following procedures are established to reduce or eliminate exposure to blood or OPIM:

a. Identify job classifications or procedures for listing in the written Exposure Control Plan (ECP) as applicable.

b. The following procedures should be followed by personnel who may potentially be exposed to bloodborne pathogens:

1. Implement "universal precautions" when handling blood and unknown body fluids. This system of infection control requires that direct contact with all blood and OPIM be handled as if the bodily fluids are potentially infectious; i.e., HBV or HIV infectious.

2. Use hand washing facilities or antiseptic cleansers or towelettes. Wash exposed body parts with soap and water as soon as feasible after handling or contacting blood or OPIM.

3. Wash hands after removing personal protective equipment.

10.2. PERSONAL PROTECTIVE EQUIPMENT.

a. Wear personal protective equipment (PPE) including disposable gloves, filter masks, face shields, splash goggles, and resuscitation mouthpieces.

b. Remove PPE and wash hands upon leaving the worksite.

c. Discard disposable PPE in the same manner as contaminated materials.

10.3. HOUSEKEEPING.

a. Clean and decontaminate work surfaces with a bleaching agent following contact with blood or OPIM.

b. Store all contaminated waste in proper containers that are closable, puncture resistant, leak proof, and labeled/color coded.

10.4. HEPATITIS B VACCINATION.

A Hepatitis B vaccination must be provided at no cost for all personnel covered by the ECP. If personnel decline the vaccination they are to be made aware of the risk of contracting HBV, and that the vaccination will be available if they reconsider and are occupationally at risk for HBV. A declination statement must be signed by all employees who decline the HBV vaccination.

FAA employees who provide first aid in conjunction with their regular job duties are exempt from the pre-exposure vaccination, but in the event of an exposure incident, the vaccination shall be provided.

10.5. TRAINING.

Training is required for potentially exposed personnel to provide them with information to work safely with blood and OPIM. Training shall be provided at the time of initial assignment and annually thereafter. The training program must include the following elements:

a. Explanation of the Blood Borne Pathogens Standard with an accessible copy of the regulation,

b. Explanation of the modes of transmission, symptoms, and prevention of bloodborne diseases,

c. Explanation of the ECP and a means of obtaining a written copy,

d. Use and limitations of controls, practices, and PPE,

e. Information on the Hepatitis B vaccine, including its efficacy, safety, method of administration, benefits, and that the vaccination will be offered free of charge,

f. Appropriate actions to take and persons to contact in an emergency involving blood or OPIM and the procedure to follow if an exposure incident occurs,

g. Information on the post-exposure evaluation and follow-up.

10.6. RECORDKEEPING.

Required medical records on each occupationally exposed person must be kept confidential and retained for the duration of the person's employment and 30 years following termination. Required training records on each occupationally exposed person must be retained for 3 years following the training course and shall include date of training, content of the training, the trainer, and the name and job title of the person taking the training.

10.7. EVALUATING AN EXPOSURE INCIDENT.

An exposure incident includes any exposure of the eyes, mouth, other mucous membranes, non-intact skin, or parenteral contact with blood or OPIM. The evaluation should include the following:

a. The exposed personnel must immediately report the incident to their supervisor. The supervisor or exposed personnel must report the incident as a medical emergency by dialing 1111 (see Chapter 30 for additional details).

b. Try to identify the source (source individual) of the blood or OPIM. If the source is identified, obtain consent from this person to collect and analyze their blood for HIV and HBV. No blood analysis is necessary if the source individual is known to be HIV or HBV infected. The exposed personnel should be informed of the blood analysis results and be instructed of applicable laws governing disclosure of this information.

c. The exposed personnel should be offered to have their blood collected and analyzed and informed of their right to refuse. Upon collecting the blood sample and it is not tested for HIV, it must be retained for 90 days, in the event the exposed personnel may reconsider.

d. Post-exposure preventative treatment will be offered to exposed personnel. Counseling and evaluation will be provided to exposed personnel at no cost to them.

10.8. CONTRACTORS.

Contractors who are responsible for maintenance and housekeeping at the FAA Technical Center must provide the Safety Office with their written blood borne pathogens program and documentation that their employees have received required training regarding the OSHA standard, the hazards relating to an exposure incident, what precautions to be carried out to prevent an exposure, the cleaning agents used to effectively disinfect blood or OPIM, and the actions that will take place in the event there is an exposure incident.

CHAPTER 11. BIOLOGICAL & LYME DISEASE PREVENTION

11.0. PURPOSE.

Many Technical Center employees are required to work outdoors in grassy areas, fields, or the forest, and are faced with hazards associated with exposure to birds, bats, rodents, and animal carcasses, or allergic reactions from contact with poisonous animals and plants.

11.1. GENERAL REQUIREMENTS.

Bacteria and viruses may come in contact with humans through soil, air, or water and cause disease and/or infection. Recognition and avoidance of conditions that are favorable for the development of these harmful agents are an effective means of avoiding adverse health impacts. Exposure to bacteria and viruses include inhalation, ingestion, or contact with broken skin.

a. Birds and Mammals. Exposure from encounters with birds, bats, rodents, and other animals can cause diseases in humans. Diseases associated with birds and animals can be transmitted through pathogenic microorganisms the animals carry (e.g., rabies), through contact with the animals' feces, or by parasitic organisms associated with the animal such as ticks or fleas which will be discussed separately. Protection against diseases from exposure to bird, bat, rodents, or other animals should include the following:

1. Report areas that have accumulations of bird, bat, or rodent feces to the trouble desk for clean up. Fecal dust can be inhaled or ingested, and cause disease resulting in symptoms similar to the flu or asthma.

2. Report bird roosts and nests adjacent to indoor air intake areas such as building ventilation system intakes and window openings to the trouble desk for removal.

3. Store food, refuse, and water in rodent proof containers. Cleanup areas used to prepare or serve food and clean-up empty food containers and serving utensils when finished.

4. Wear PPE such as latex gloves, protective outer garments, and negative pressure respirators with HEPA filter cartridges when cleaning up areas where bird's or rodent's nest or areas with excessive amounts of bird or rodent feces.

5. Remove dead bird or animal carcasses using a shovel or other suitable tool or wear gloves to pick up the carcass for disposal. It is suggested these activities be conducted with work orders only.

6. Avoid contact with live wild animals. Avoid picking up or moving wildlife babies and youngsters, eggs and nestlings. In areas infested with rodents, control the populations using a rodenticide or traps. Do not attempt to capture animals by hand. If a bat, rodent, skunk, raccoon, or dog appears to be aggressive, the animal may be infected with rabies and all contact should be avoided.

7. Employees bitten or scratched by a bat, rodent, skunk, raccoon, or dog should assume that these animals are infected with rabies and obtain immediate medical attention. Try to obtain the head of the animal or the whole animal if possible so that it can be analyzed for the rabies virus.

b. Animal Carcasses. Bacteria from decaying animals can cause illness from direct contact or through contaminated soil, air, or water. FAA employees should be aware of the potential threat and take the proper precautions.

1. Report animal carcasses present in water supplies or air intake areas to the trouble desk for removal. Do not let debris from animal carcass decay accumulate in areas where employees may be exposed.

2. PPE such as latex gloves, protective outer garments, and negative pressure respirators with HEPA filter cartridges shall be worn by personnel responsible for cleaning up excessively contaminated areas resultant from animal carcass decay. Carcasses should be removed preferably with a shovel or other suitable tool or if removed by hand, always wear gloves.

11.2. GENERAL REQUIREMENTS - STINGS, BITES, AND ALLERGIES.

Stings, bites, and allergies are a significant health consideration for employees working out-of-doors in field situations. Recognition and avoidance of environments

that host threatening organisms, or taking appropriate protective measures when avoidance is not practical, is the most effective methods of employee protection. Employees should be instructed to report wheezing and shortness of breath, flu-like symptoms, and skin rashes if they are bitten or stung by an insect. Supervisors should be made aware by the employee if they have allergies to biological agents.

a. Bee and Wasp Stings. For most people bee or wasp stings are uncomfortable but not fatal. Persons who have allergies to bee or wasp venom may have an exaggerated amount of pain and swelling not only at the site of the sting, but spread over other parts of the body. In extreme cases, shortness of breath, wheezing, asthma-like symptoms, or symptoms of shock such as sudden pallor, perspiration, elevated pulse, lowering blood pressure or prostration may develop. In case of allergenic shock, obtain medical help quickly.

Any person who once had an allergic reaction to a sting is extremely vulnerable to a more dangerous reaction. Employees who are allergic should consult their doctor about precautions, including desensitization treatment or prescription sting kits. Employees should obtain physician-prescribed anti-venoms when working in the field where agents of allergies may be encountered.

Loose-fitting cotton or wool clothing closed at the neck and wrists should be worn in areas where stinging insects are encountered to provide protection against them.

b. Snakes. When conducting field activities in snake prone areas wear heavy boots and thick socks. Exercise care when entering dark, shaded areas, and removing objects such as boards or rocks that may have snakes underneath.

c. Spiders. Venom from spiders such as the black widow can be harmful, and in some cases fatal. Black widow spiders tend to stay in dark quiet areas such as in lumber piles and in building crevasses. The black widow bite will have a target-like appearance at the bite location. The venom attacks the nervous system and the symptoms include rigidity of the abdominal muscles, progressive weakness, abdominal cramps, and pain in the limbs. Convulsions may occur and in extreme cases the bite could be fatal. In cases of illness caused by a spider bite, apply shock preventative techniques and obtain medical care for the victim as soon as possible.

d. Mosquitoes. Mosquitoes may transmit infectious diseases such as yellow fever or malaria. However, in temperate areas of North America the diseases carried by mosquitoes are rare. Mosquitoes are usually found in damp forests, boggy areas, swamps, lakes, or slow moving streams. The procedures described below should be followed to reduce the potential for mosquito bites.

1. Repellents containing the chemical DEET are common and effective against mosquitoes but should be applied sparingly to clothing. DEET can cause adverse skin reaction as well as other adverse health effects when applied directly to the skin in excessive amounts.

2. Wearing clothing that covers the arms and legs can reduce mosquito bites on exposed skin.

3. If problem areas are identified, the Environmental Group would evaluate the need for action with recommendations.

e. Ticks. Many Technical Center employees, contractors, and other agency employees have to work outdoors in grassy areas, fields, or the forest, and are faced with exposure to ticks. The following are some prevention methods:

1. When having to work in the above mentioned areas, wear long-sleeved shirts, long pants or coveralls, high top boots, and high top socks. All clothing should be of a light color, white or light blue.

2. Should an employee work in potential tick infested areas on a frequent basis, it is advisable to dedicate a set or sets of clothing for this work. This clothing should be stored in a sealed plastic bag when not in use, and can be cleaned weekly.

3. Before entering these areas, pant legs should be tucked into socks, and then seal the top of the sock and boot with duct tape or the clear wide packing tape to pant legs. Employees should also tuck shirts into pants, and then tape the waist and shirt sleeves, forming a barrier to keep crawling ticks away from skin. Ticks do not bite through cloth.

4. Apply Permanone to the clothing, especially on boots, pant legs, and around the waist according to the manufacturer's directions located on the container label. This can be done in advance, but it is suggested that applying Permanone every day is

advantageous. Permanone is not recommended for skin applications since human skin and moisture neutralizes the active ingredient, Permethrin. Permethrin is a natural derivative drawn from chrysanthemums.

5. Reactions to Permanone are probably caused by the propellant used to dispense the material from the container. The manufacturers of Permanone are experimenting with new propellants to address this sensitivity. For employees with such sensitivities, it is suggested that the employee set aside dedicated clothing, and heavily pre-treat it, and then let it air dry before wearing. Military personnel have had success with treating dedicated clothing with an entire can of Permanone, allowing it to dry outside before wearing, and then re-treating the clothing every 2 weeks.

6. Apply repellents with at least 35 percent DEET to exposed skin and on hats in accordance with the manufacturer's instructions.

7. Upon leaving the tick area and before entering your vehicle or any building, conduct a thorough tick check of your boots and clothing. Should the employee have a partner, have them check the employee's back. Remove all ticks that are detected. In the event that there are a large number of ticks on your clothing, use the sticky side of the duct tape to remove the ticks, and then dispose of the tape.

8. If the employee observed ticks on your clothing, or skin, it is advisable to again thoroughly check yourself when you get home. Use your fingers and or a fine-tooth comb to check your hair, and then shower immediately.

9. Should the employee find an attached tick, use a device like the Pro Tick Remedy to remove the tick. This device removes ticks without discharging of any tick fluids into your body. While medical sources acknowledge that it takes several hours for a tick to infect you with Lyme disease, this process may be facilitated by squeezing the tick's fluids into the bite. If bitten by a tick, do not wait for the symptoms of Lyme disease to appear; consult your doctor immediately, as early warning signs are not always present.

10. Employees who have definitely been bitten by a tick at work must file a FAA Mishap Report (Form 3900-6) with their supervisor and the Safety Office (see Chapter 30).

11.3. POISON IVY, OAK, AND SUMAC.

Common poisonous plants include poison ivy, poison oak, and sumac, whose symptoms of exposure include skin irritation and allergic dermatitis. FAA employees working in habitats that may contain poisonous plants should be familiar with their appearance and instructed not to come in contact with it unless protective clothing is worn that covers exposed skin. Should an exposure occur, notify your supervisor and seek medical attention.

CHAPTER 12. LABORATORY SAFETY

12.0. PURPOSE.

The laboratories of the Technical Center require hazard containment of radiological, chemical, and physical hazards. Policies and procedures relevant to most laboratory situations will be defined in this chapter.

12.1. CHEMICAL HYGIENE PLAN.

A Chemical Hygiene Plan (CHP) describes work practices, engineering controls and administrative programs to control occupational exposures to employees working in laboratories. Where hazardous chemicals are used in laboratories, a CHP is required by the federal OSHA standard 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories.

A written Chemical Hygiene Plans specific for the laboratory operations at the Technical Center is available in the laboratories and in the Safety Office.

12.2. RADIOLOGICAL HAZARDS.

All projects and activities involving ionizing and non-ionizing radiation at the Technical Center are subject to review and approval by the Safety Office. The purposes of such a review are:

a. To identify hazards and assess the risks associated with the project or activity.

b. To evaluate the adequacy of safety procedures, the facilities, and the equipment.

c. To determine the need for and course of preventive medical measures.

d. Refer to Chapter 9, Radiation Program for further information.

12.3. TOXIC MATERIALS.

For any project involving the use of hazardous agents, a Material Data Safety Sheet (MSDS) must be obtained and submitted to the Safety Office for review.

12.4. HAZARD WARNING SIGNS AND LABELS.

a. Hazard Identification. Hazard identification has four distinct categories:

1. **NOTICE**--states a policy related to safety of personnel or protection of property, but is not for use with a physical hazard.

2. **CAUTION**--indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

3. **WARNING**--indicates a potentially hazardous situation that, if not avoided, will result in death or serious injury.

4. **DANGER**--indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

b. General Information. Prominent signs and labels of the following types are generally posted in and adjacent to laboratories:

1. Emergency phone numbers.

2. Identity labels, showing contents of containers and associated hazards.

3. Location signs for safety showers, eyewash stations, other safety and first aid equipment, and exits.

4. Warnings at areas or equipment where special or unusual hazards exist.

c. Posting of Hazard Signs and Labels. The laboratory supervisor is responsible for posting hazard warning signs as necessary and in compliance with the requirements for each type of hazard encountered.

d. Rules and Procedures. Hazard warning signs showing the name of the hazard must be posted only while a hazard exists and must be removed as soon as the source of danger is removed. Permanent signs must be posted in frames; and temporary signs, less than 1 month, may be installed in permanent frames or posted with tape on appropriate surfaces.

12.5. HAZARD CONTAINMENT.

a. General. Facility design, safety equipment, and practices for containing laboratory hazards vary according to the nature of the agent/substance, the volume and concentration handled, and the

manipulation procedures used.

b. Types of Hazards. Substances posing chemical or radiological hazards require containment, and may require complete isolation.

c. Ventilation Controls. Safety cabinets and fume hoods are primary containment devices designed to protect workers from exposure to hazards by physical barriers or by directing airflow away from the workers.

Fume hoods or chemical glove boxes should be used when handling chemical hazards. Specialized ventilation systems, such as small, HEPA-filtered enclosures, elephant trunks, and canopy hoods may be required in certain instances to control fine powders or processes which release heat or vapors which cannot be placed within a conventional chemical fume hood.

In the event of failure of the laboratory ventilation system immediately stop working with hazardous agents, contain the hazards, leave the laboratory, and call for emergency assistance, extension 1111.

12.6. SAFE WORK PRACTICES.

The following rules and procedures apply to all Technical Center laboratories:

a. Eating, drinking, chewing gum, smoking, application of makeup, or storage of food are prohibited in laboratories except in designated areas.

b. Suction flasks must be properly shielded and trapped.

c. Desk work using writing materials, reference books, and journals must not be done in areas where these materials could become contaminated with hazardous agents.

12.7. PERSONAL PROTECTIVE EQUIPMENT (PPE).

a. Selection and Use of PPE in Laboratories. PPE may be required to reduce the risk of exposure of an employee by absorption, inhalation, or ingestion of a toxic substance, or radioactive material. Personnel utilizing radioactive materials shall follow the requirements for protective equipment and clothing.

b. Laboratory Coats and Gowns. The lab coat can be used to protect street clothing against chemical spills as well as to provide some additional body protection.

c. Foot Protection. Steel-toe safety shoes should be worn in any area where there is a significant risk of dropping heavy objects on the foot. Sandals and other types of open-toed shoes are not permitted in labs using chemicals.

d. Face shields and Eye Protection. Face shields and goggles should be worn whenever procedures with a high potential for splashing and spattering of chemicals exists.

e. Gloves. Appropriate gloves for the chemical agent handled shall be worn in the labs. Refer to Chapter 2, Personal Protective Equipment.

f. Respiratory Protection. Where engineering and administrative controls cannot feasibly contain an air-borne hazard, respiratory protection will be provided with the assistance of the Safety Office.

12.8. COMPRESSED GASES.

a. General Information. Compressed gases in cylinders are hazardous because of the potential energy of compression, and because gas may be toxic, flammable, and/or act as an asphyxiant if released in a confined space.

Compressed gas cylinders must be handled and stored as directed by the National Fire Protection Association, and in accordance with the Compressed Gas Association, Inc., "Handbook for Handling Compressed Gases," 1990.

b. Storage of Cylinders. Compressed gas cylinders shall be stored upright and secured to prevent falling with the valve cap installed. Cylinders should be stored outside or in a separate room designed to meet NFPA standards for storage of compressed gases. When stored outdoors, they must be protected from the weather and tampering by a covered and enclosed area. Full and empty cylinders must be clearly marked and stored separately if possible. Cylinders containing flammable gases shall be separated from the cylinders containing oxidizers by a minimum of 20 feet or 1/2-hour fire rated wall.

c. Handling of Compressed Gas Cylinders.

1. The protective valve cover must be securely in place when moving the cylinders and must be left on the cylinders until they are secured with chain or canvas straps so they cannot fall.

2. Compressed gas cylinders must be moved on carts, hand trucks, or dollies specifically designed for this purpose. Cylinders should not be rolled on their sides or lifted/supported by the valve stem.

3. The cylinder valve should be opened only as far as necessary to produce the required gas flow and easily closed.

d. Empty Cylinders. Empty cylinders must be labeled as such and promptly removed.

12.9. SAFE USE OF LABORATORY EQUIPMENT AND FACILITIES.

a. General information, Rules, and Procedures. Laboratory apparatus must be used only for its designed purpose unless appropriate safety modifications are made. Operating manuals must be consulted for detailed operating instructions for individual pieces of equipment.

b. Heating Devices.

1. Uncontrolled heat sources such as Bunsen burners and heat guns, must not be used near flammable substances, and must not be left unattended in the laboratory.

2. Heating devices (steam baths), which have an inherent cutoff point, are safer than those which do not.

3. Hot plates, heating mantles, and other heaters must have enclosed elements and controls with a thermal shut-off safety device.

c. Laser-Containing Equipment. Has the potential for causing eye and skin damage. Other hazards associated with this type of equipment include exposures to cryogenic coolants and accidental electrocutions.

1. Lasers are classified according to the American National Standards Institute's (ANSI) "Safe Use of Lasers" laser classification scheme (ANSI Z136.1-1992).

2. Safety procedures for each laser application will be determined by the Safety Office.

d. Ultraviolet (UV) Lights.

1. General Information. Ultraviolet radiation includes those portions of the radiant energy spectrum between visible light and X-rays (approximately 3900 to 136 angstrom units).

2. Radiation Exposure. The eyes and skin should not be exposed to direct or strongly reflected UV radiation. Direct exposure may cause skin or retinal burns or other thermal damage.

12.10. HAZARD WASTE DISPOSAL METHODS.

All radioactive and hazardous chemical wastes must be disposed of in accordance with established Federal, state, and local regulations. Contact the FAA Hazardous waste coordinator (or Trouble Desk) to schedule the pick up of hazardous waste materials.

.

CHAPTER 13. TEMPERATURE EXTREMES

13.0. PURPOSE.

FAA personnel may be required to work under both cold and hot environmental conditions that can impair physical health. Factors that affect an individual's perception of cold and heat include environmental temperature, wind velocity, relative humidity, and moisture.

13.1. COLD ENVIRONMENTS

The human body works to maintain a constant temperature. When the body loses heat to the environment faster than it can generate heat to maintain the body core temperature, hypothermia occurs. The two most common types of cold injuries are hypothermia and frostbite.

a. Hypothermia. Clinical hypothermia occurs when the body loses more heat than it can produce and keep to maintain a core body temperature of 35 degrees C (95 degrees F) or above. Normal body temperature is 37 degrees C (98.6 degrees F). There are several stages in the hypothermia condition. Symptoms range from feeling the need to warm up to uncontrollable shivering, uncontrollable movements, slurred speech, shallow breathing and finally unconsciousness.

b. Frostbite. Frostbite occurs when the body tissue freezes. Frostbite can be superficial, affecting the skin or tissue just under the skin or affecting the deeper tissue, nerves and muscles. Symptoms of superficial frostbite are tingling or pain in the area. Skin may appear white and feel hard and tissue underneath may feel soft. Symptoms of deep frostbite may be no pain or feeling in the affected area. Skin appears white and the skin and tissue underneath will feel hard.

c. Protective Control Measures. By following proper work practices, utilizing personal protective equipment (PPE) and engineering controls, it is possible to work comfortably in cold environments.

1. Work Practices.

   (a) Know the weather conditions before performing work outdoors.

   (b) When working in cold environments under windy conditions the equivalent wind chill temperature should be determined.

   (c) Avoid overheating by overdressing and overexerting, which can generate moisture next to the skin. Body heat loss will result due to evaporation of moisture.

   (d) Rotate personnel during extreme cold weather conditions as appropriate.

   (e) Avoid contact with cold surfaces.

2. Personal Protective Equipment.

   (a) Dry insulated clothing should be worn preferably in layers when working in environments where the temperature is below 40°F (4°C).

   (b) Wear windproof clothing and cover the head.

   (c) Shaded eye protection and sunscreen should be used by personnel while working outdoors when the ground is covered with snow.

3. Engineering Controls. Provide a heat source at the work site, such as a portable heater, or a heated warming shelter as feasible.

13.2. HOT ENVIRONMENTS

There are four methods of heat gain that can impact the body: radiant, conduction, convection and metabolic. When the body is unable to control excessive heat gain from the environment, the core body temperature increases and hyperthermia occurs. The three most common heat stress conditions are: heat cramps, heat exhaustion and heat stroke.

a. Heat Cramps. Heat cramps are painful spasms in the muscle due to the loss of salt from excessive sweating and increased fluid intake that dilutes the electrolytes.

b. Heat Exhaustion. This condition is associated with the depletion of body fluids and electrolytes while working in a hot environment. Some symptoms include: fatigue, nausea, headache, clammy or moist skin, flushed complexion, dehydration.

c. Heat Stroke. This condition is the most serious heat disorder due to its rapid progression of debilitating

effects on the body's organs and tissues. The thermoregulatory system of the body shuts down and this condition becomes life threatening. Some symptoms include: hot, dry skin, skin usually appears red and is hot to the touch, mental confusion, loss of consciousness, convulsions, coma and potentially death.

d. Control Measures.

1. To determine the exposure limits of personnel working in hot environments, the level of physical exertion should be determined. Determine if the work activity will be light work, moderate work, or heavy work. Based on the level of work activity and the environmental temperature and relative humidity, an 8-hour workday should consist of a work/rest cycle.

2. In the event that the U.S. Weather Service issues a heat and/or health advisory the information will be disseminated with recommended restrictions. Restrictions will apply to all exercise (e.g., running, walking, biking) normally conducted outdoors on the Technical Center grounds. Exercise during extreme weather can cause severe heat related medical conditions.

   (a) Know the weather conditions before performing work outdoors.

   (b) Provide cooling by using fans to create air currents when appropriate. Fans should not be used when air temperatures are above 95 degrees F. This can cause your temperature to increase and cause heat stroke.

   (c) Take periodic rest breaks from working in the hot environment and allow sufficient time for personnel to cool and hydrate.

   (d) Personnel new to the hot work environment or who have not worked in such an environment for over 5 days should be allowed to acclimatize to it.

   (e) On predicted extremely hot days, outside activities should be performed during the morning hours when it is cooler.

   (f) Recognize the symptoms of heat stress and monitor one another for signs of heat stress.

   (g) Wear loose fitting clothing to allow for proper cooling by perspiration. A hat to shield the eyes and face as well as skin protection and sun block are recommended.

CHAPTER 14. OFFICE SAFETY

14.0. PURPOSE.

The office is like any other work environment in that it may present potential health and safety hazards. Most of these, however, may be minimized or eliminated by designing jobs and workplaces properly, and by taking into account differences among tasks and individuals.

14.1. HOUSEKEEPING.

Good housekeeping is an important element of accident prevention in offices. Poor housekeeping may lead to fires, injuries to personnel, or unhealthy working conditions. Mishaps caused by dropping heavy cartons and other related office equipment and supplies could also be a source of serious injuries to personnel.

Passageways in offices should be free and clear of obstructions. Proper layout, spacing, and arrangement of equipment, furniture, and machinery are essential. All aisles within the office should be clearly defined and kept free of obstructions. This is of particular importance in areas such as stairwells and corridors which assist with entry/egress in emergency situations. Under no circumstances should these areas be used as temporary storage or as a place for excessed equipment.

Chairs, files, bookcases, and desks must be replaced or repaired if they become damaged. Damaged chairs can be especially hazardous. Filing cabinet drawers should always be kept closed when not in use. Heavy files should be placed in the bottom file drawers.

Materials stored within supply rooms must be neatly stacked and readily reached by adequate aisle space. Care should be taken to stack materials so they will not topple over. Under no circumstances will materials be stacked within 18 inches of fire sprinkler heads. Materials shall not be stored so that they project into aisles or passageways in a manner that could cause persons to trip or hinder emergency evacuation. It is recommended that nothing be stored above shoulder height unless correctly secured (e.g. - shrink-wrap) in proper racking. Personnel on base must not place, or cause, or permit to be placed, on any floor or roof of a building or other structure a load greater than that for which such floor or roof is approved by a building official or someone with knowledge of the floor load.

Office personnel should carefully handle and properly dispose of unwanted materials, such as paper and cardboard. Any unwanted or surplus furniture should be properly removed to storage or discarded through the proper channels.

14.2. ELECTRICAL SAFETY.

a. Electric cords should be examined on a routine basis for fraying and exposed wiring. Particular attention should be paid to connections behind furniture, since files and bookcases may be pushed tightly against electric outlets, severely bending the cord at the plug. Electrical appliances must be designed and used in accordance with Underwriter's Laboratory (UL).

b. Extension cords shall be used only in temporary situations such as renovations, or until fixed wiring is installed, but not in place of permanent/fixed wiring.

1. Extension cords shall be kept in good repair, free from defects in their insulation. They must not be kinked, knotted, abraded, or cut.

2. Extension cords shall be placed so they do not present a tripping or slipping hazard.

3. Extension cords shall not be placed through doorways where doors can be closed causing damage the cord.

4. All extension cords shall be of the grounding type (three-plug conductor).

5. All extension cords shall be proper UL rated extension cords and used for the purpose they are intended. They cannot be manufactured from knockout type junction boxes. Extension cords and surge protectors are not to be used in tandem.

14.3. NOISE.

a. Effects of Noise. Noise is defined as unwanted sound. Whether a sound is classified as noise or not depends mostly on personal preferences. For noise levels in offices, the most common effects are interference with speech communication, annoyance, and distraction from mental activities.

The annoying effect of noise can decrease performance or increase errors in some task situations. Also, there is some indication that

unexpected or unpredictable noise can have more of an effect than continuous or periodic noise. The annoyance caused by noise also depends on the individual.

b. Reducing Noise. Many unexpected noises cannot be controlled. For many of the annoying sounds in the office environment, the following measures are useful for reducing the level of noise or its effects:

1. Select the quietest equipment if possible. When there is a choice between two or more products, sound levels should be included as a consideration for purchase and use.

2. Provide proper maintenance of equipment, such as lubrication and tightening of loose parts that can cause noise.

3. Locate loud equipment in areas where its effects are less detrimental.

4. Use barriers, walls, or dividers to isolate noise sources. Use of buffers or acoustically treated materials can absorb noise that might otherwise travel further.

5. Enclose equipment, such as printers, with acoustical covers or housings.

6. Schedule noisy tasks at times when it will have less of an effect on the other tasks in the office.

14.4. INDOOR AIR QUALITY.

Indoor air contaminants in office buildings depend on a variety of conditions: the type and location of the building; building materials; potential sources of contaminants outside the building; location of the air intakes; occupancy levels; types of activities in the building; type and quality of the ventilation system; and temperature and seasonal effects. Guidelines or standards containing permissible exposure limits for non-industrial environments, such as office buildings, are very limited.

Odors may occur from sources inside or outside the office space. Odors may be particularly noticeable during building renovations, or after the installation of new carpeting. Release of low levels of contaminants from newly applied paints, adhesives or sealants, or newly installed office furniture, carpeting, and vinyl wall coverings can be the source of odors or irritation. Plumbing problems may cause “sewer” odors. Sources may exist outside the building, such as truck exhausts at loading docks, construction activities, or re-entrainment into a building of chemicals exhausted from another building or lab.

Air sampling may be used as a tool to aid in the diagnosis of an indoor air problem. However, indoor air sampling results provide limited information, should be interpreted with caution, and should always accompany a complete building inspection. In general, contaminants may be present at very low levels, or may be too low to detect by the sampling and analytical methods used for environmental air samples. Indoor air contaminants may be above or below ambient or “background” levels. However, detectable compounds are generally far below any existing occupational exposure limits or evaluation criteria designed for industrial environments.

An evaluation of the ventilation system is critical in resolving chronic indoor air problems where a specific source cannot be identified. Problems can be minimized by a ventilation system that operates according to recommended standards and guidelines for acceptable indoor air quality, such as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards. A key factor in the design is the provision for make-up air volume and air exchange rates that are adequate for the occupancy level of the building. In order to determine if relationships between the adverse health effects or symptoms and the indoor air quality exist, the Safety Office will conduct an indoor air quality survey which will consist of an evaluation of potential sources of pollutants, a building inspection, a measurement program that involves selecting appropriate instrumentation and sampling methods, interpretation of data, and recommendations for corrections or control measures. In many situations, the cause of the inadequate indoor air quality can be recognized and mitigated.

CHAPTER 15. FIRE SAFETY

15.0. PURPOSE.

The Technical Center through this chapter establishes procedures designed to eliminate the sources that may lead to or sustain a fire situation. Through best practices regarding housekeeping, handling and storage of flammable and combustible substances, electrical wiring, and the maintenance of fire detection and suppression equipment, it is intended to provide protection from a fire to all employees, contractors, tenants, and visitors.

15.1. FIRE PREVENTION.

a. Floor Captains. Supervisors are designated as the organization's Floor Captains. They will inform employees of fire hazards related to the materials and processes to which they are exposed and review with each employee upon initial assignment and annually thereafter those parts of the current fire prevention plan, which the employee must know in the event of an emergency. They will document employee fire prevention training in the employee records.

Floor Captains are responsible for the following actions: initiating work order requests to correct any/all safety issues in their organizations, conducting periodic inspections to ensure compliance with fire safety standards, becoming completely familiar with the fire prevention plan and the emergency action plan in their area(s), and ensuring that the current evacuation maps are posted in conspicuous places where all employees can see them.

b. Housekeeping. All facilities, office areas, shops, and workstations must control the accumulations of combustible and flammable materials in their areas. Employees need to be aware of the hazardous properties of these materials and the degree of hazard each poses. Such materials are easily ignited and are able to sustain large fires or generate dense smoke.

c. Smoking. By order of the Secretary of Transportation, smoking is not permitted in or within 25 feet of any building at the Technical Center or in the Airport Operations Area (AOA). Smoking is only allowed in those designated areas outside of any of the Technical Center facilities.

d. Flammable/Combustible Materials. When conducting any task that requires the use of a flammable or combustible material, caution needs to be taken regarding the presence of ignition sources from open flames, sparks, or electrical arcs.

e. Storage. All flammable/combustible materials must be stored properly when not in use.

1. Bulk materials must be stored in closed containers not exceeding 60-gallon capacity, in designated areas, and be grounded. When dispensing liquids from these drums, a metal-to-metal contact must be maintained between the two containers through bonding to prevent the build up of static electricity.

2. When not in use, flammable/combustible materials must be stored in UL listed cabinets approved for such materials. The cabinets must be kept closed at all times.

3. Flammable/combustible materials are to be stored in an approved safety container of not more than 5-gallon capacity, having a spring-closing lid and spout cover so designed that it will safely relieve internal pressure when subjected to fire exposure.

4. Any wiping cloths or rags that have been contaminated with a flammable/combustible material are dangerous because of the potential of spontaneous combustion. They must be discarded in a metal UL listed container with a self -closing lid.

5. Flammable/combustible liquid spills may be anticipated wherever such products are handled or used. Adhere to the following means necessary to cope with the situation shall be implemented:

   (a) Where practical to limit spillage, a supply of suitable absorptive material together with tools for spreading it should be readily available.

   (b) Take appropriate steps to cut off sources of ignition.

   (c) Promptly ventilate the area to dissipate and prevent the accumulation of flammable vapors.

   (d) The contaminated material should be collected, stored in a compatible container with a lid, and disposed of according to local,

state, and Federal regulations.

6. Drip pans should be located to collect combustible liquids that may leak or drip from either a motor or materials that are coated with lubricating or cutting oils.

f. Hot Work Permits: Hot work permits are required for all welding, cutting, soldering pipes, melting lead, and heating tar kettles in a non-approved area. This applies to all contractors who during the course of their work may need to perform any cutting, burning, or welding. Figure 15-1 provides an illustration of the Hot Work Permit.

1. Approved Areas: Approved areas at the FAA Technical Center are as follows:

   (a) Building 205 Metal Shop Area.

   (b) Building 300 Metal Shop Area.

   (c) Building 301 Mod Shop Welding Area.

   (d) Building 306 East end Shop Area.

NOTE: The Vehicle Repair Shop is NOT an "Approved Area."

2. Permits are issued by the Fire Inspector. A work request is required before the permit is issued. Call the Trouble Desk at extension 4122 for the issuance of a hot work permit. An inspection of the work area will be conducted to determine that the conditions of the permit have been met. The Fire Inspector shall designate any additional precautions as are deemed necessary and shall sign the permit to authorize work.

3. The Hot Work operations shall be stopped if the conditions of the permit change.

4. Before any "Open Flame or Welding" operation is started, the following conditions must be satisfied for a permit to be issued:

   (a) The area within 35 feet of the work must be cleared of any combustible or flammable materials.

   (b) Other combustibles within 35 feet of the work shall be moved or protected with guards, covers, or shields.

   (c) Combustible floors or equipment in or below the work areas shall be wet down or covered with metal shields or fire retardant blankets or tarps.

   (d) All equipment shall be thoroughly cleaned of combustible material and oily residues and any exposed combustible linings shall be removed.

   (e) Combustible dust or flammable vapor producing machinery or operations in the area shall not be permitted to be operating during the hot work.

   (f) Fire protection or detection systems, if provided, shall be in operation during the work unless the work is being performed on the system.

   (g) Floor and wall openings within 35 feet of the work shall be covered or closed, and all open spouts in the work area shall be sealed or plugged.

   (h) The duration of the permit system shall not exceed one shift.

   (i) Hot work shall not be permitted on equipment that is operating.

   (j) Fire protection or detection systems shall not be disabled unless the hot work could activate them. If so, such systems shall be restored to service promptly after the hot work task is completed.

   (k) Regular inspections of the work area shall be made to determine that no smoldering fires develop, and an additional inspection shall be performed prior to closing the area for the day or weekend.

5. A fire watch, as required by National Fire Protection Association (NFPA) 51B, supplied with suitable portable extinguishers or a water hose shall be maintained in any "Non Approved" location during the work and for at least 60 minutes after the work is completed.

   (a) Fire Watchers shall be familiar with facilities and procedures for sounding an alarm in the event of a fire.

   (b) Fire Watchers shall watch for fires in all exposed areas, and try to extinguish them obviously within the capacity of the equipment available, or otherwise sound the alarm.

6. Before the start of any welding or cutting

operations in the Vehicle Repair Shop, all flammable fuels and any vapors in the area shall be secured or the permit will not be issued.

g. Electrical Safety Standards. Electrical wiring and fixtures must comply with National Electric Code (NEC) including:

1. Extension cords that are frayed or defective need to be removed from service and replaced.

2. The number of appliances plugged into an outlet shall be limited to the number of plugs available.

3. A minimum clear space of 36 inches shall be maintained around all electrical panel boxes or circuit breaker boxes.

4. Equipment, wiring methods, and installations of equipment in a hazardous location atmosphere shall be of a type and design that provides protection from the hazards arising from the combustibility and flammability of vapors, liquids, gases, dusts, or fibers.

h. Permitting of Personal Items. Public Law 91-596 or the OSHA Act requires Federal agencies to adhere to NFPA Life Safety Codes in certain situations. The NFPA requires that usage of individual coffee pots, hot pots, and other heating devices of a plug-in nature be limited to certain environments because of the potential for fire potential or on the job injury. However, these devices are permissible for use if the following requirements of this chapter are adhered to.

If personal items are to be used, they must plug directly into an outlet and cannot be connected by the use of an extension cord. Approved items are to be maintained and used only in approved Break Areas/Rooms and will not be permitted to be used at individual work stations (unless exempted by the Safety Office in certain situations e.g. – an employee has a medical condition where immediate access to a refrigerated medicine is required). Each permit request will be evaluated by the Safety Office on a case by case basis.

To establish a personal item such as a coffee station, hot pot and kettle, hot plate, microwave, refrigerator, etc., CT Form 3900-31 (see Figure 15-2), should be submitted by the employee responsible for the establishment of the item to the Safety Office for evaluation. Approval will be based upon the number of participants (minimum of 10) and safety considerations. Individual private appliances will not be approved unless accepted by the Safety Office. A list of all those participants in each station must be filled out as part of the permit.

1. Approved requests will be forwarded to the Fire Inspector for inspection of the equipment and issuance of the license.

2. Records of the licenses will be maintained by the Fire Inspector.

3. Periodic inspections will be conducted by either the Safety Office or the Fire Inspector.

4. Unattended electrical appliances left in the "ON" position may be subject to the revocation of the license and privileges.

5. Non-licensed equipment will be removed.

6. Requirements: The following requirements will apply for licensing and inspection of employee owned coffee makers and hot pots:

   (a) Units shall have an Underwriters Laboratory (UL) or Factory Mutual (FM) approval for their specific use.

   (b) Coffee pots and hot pots shall be housed in approved settings having mill board sides and bottoms or metal bottoms.

   (d) Electrical appliances shall have telltale light switches.

i. Portable Heaters. Portable heaters are prohibited for individual use in any building on the Technical Center. The only exceptions are: (1) if the individual has a current valid and signed physician's note requiring that they have a portable space heater for a medical condition. (A copy of the physician's note should be sent to the Environmental Safety Office for their records); or (2) there is a serious temperature issue in the immediate area. If this condition exists, contact the Trouble Desk (5-4122 or email 9-ACT-TROUBLEDESK/ACT/FAA) and request a temperature survey be conducted. The Work Order Request Number should be forwarded to the Environmental/Safety Office for tracking. Space Heaters must be approved by the Safety Office prior to use. If approved, they must be either ceramic or self-contained oil types. They shall be designed with automatic shut off switches and located so that they cannot be easily turned over. They shall have sufficient operating space at all times and shall be turned off at the end of each day. All portable heaters shall be listed with the Safety Office.

j. Salamanders. Salamander type heaters can be used only in an open environment. Salamanders shall be regularly inspected and certified on an annual basis.

The certificates shall be kept on file by the using organization and made readily available upon request. Any salamander that is not certified shall be taken out of service until it can be certified. It will be marked "DO NOT USE" until that time. A hot work permit must be issued prior to use (see figure 15-1). Salamanders shall be equipped with an approved automatic device to shut off the flow of gas to the main burner and to the pilot, if used, in the event of flame extinguishment or combustion failure. Such portable heaters shall be self-supporting unless designed for cylinder mounting. Cylinder valves, connectors, regulators, manifolds, piping, or tubing shall not be used as structural supports. Heaters manufactured prior to MAY 17, 1967, with an input of more than 50,000 BTU/Hour and those manufactured prior to MAY 17, 1967 with inputs of more than 100,000 BTU/Hour shall be equipped with either of the following:

1. A pilot that must be lighted and found to be in good working condition before the main burner can be turned on; or

2. An approved electronic ignition system.

15.2. FIRE PROTECTION.

a. Fire Detection Systems. Devices that detect the presence of an incipient stage of a fire are to be inspected by the Fire Inspector to ensure their viability. Materials are not to be stored in close proximity to the detector units and employees are to report any damaged units to the Fire Inspector or the Safety Office.

b. Fire Suppression Systems. Sprinklers, standpipe and hoses, and other fire suppression equipment will be inspected and tested by the Fire Inspector to ensure that it is operable and charged. All sprinkler valves are to be clear and accessible. A clear space of at least 18 inches shall be maintained around the sprinkler discharge heads.

c. Fire Extinguishers. Fire extinguishers will be placed at locations to be used by trained and authorized employees only. The extinguishers are to be utilized to extinguish small fires or to permit exit from an area involved in a fire situation. All fire extinguishers will be inspected and tested as per NFPA/OSHA 29 CFR 1910.157 requirements. Fire extinguishers shall be clearly marked, visible, and accessible at all times. Employees need to report any extinguisher that has been discharged or has lost its charge. Unless employees are trained in the proper usage of and the limitations of the portable fire extinguishers, they are not to be used.

1. Classes of Fire Extinguishers are as follows:

   (a) Class A. Used for combustibles such as wood, paper, and textiles.

   (b) Class B. Used for flammable liquids, such as greases, paints, and gasoline.

   (c) Class C. Used for electrical fires, electrical powered machinery, or Class A or B fires in close proximity to electrical equipment.

   (d) Class D. Used for combustible metals such as aluminum, magnesium, and titanium.

2. Fire extinguishers must be placed in readily visible areas unencumbered in any way from easy access and at intervals predicated on the anticipated class of fire and distance of travel by employees to the extinguisher:

   (a) Class A - 75 feet maximum travel between extinguishers.

   (b) Class B - 50 feet maximum travel between extinguishers.

   (c) Class C - As per use as Class A or B.

   (d) Class D - 75 feet maximum travel between extinguishers.

15.3. EMPLOYEE LIFE SAFETY ISSUES.

a. Means of Egress. In every building or structure, means of egress shall be arranged and maintained to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. No lock or fastening device shall be installed to prevent free escape from the inside of any building. Means of egress shall be accessible to the extent necessary to ensure reasonable safety for occupants having impaired mobility.

b. Pathways and Exits. Every exit shall be clearly marked and all exit routes shall be conspicuously indicated in such a manner that every occupant of every building or structure who is physically and mentally capable will readily know the direction of escape from any point. (Please see Chapter 14 – Office Safety for further information).

1. Any doorway of a passageway that is not an exit or a way to an exit, but is capable of being confused with an exit, shall be arranged or marked to prevent occupant confusion with acceptable exits. Every effort shall be taken to

avoid occupants mistakenly traveling into dead-end spaces in a fire emergency.

2. Every exit stairwell or any other vertical opening between floors of a building shall be suitably enclosed or protected, as necessary, to afford reasonable safety to occupants while using this means of egress and to prevent the spread of fire, smoke, and fumes through vertical openings from floor to floor before occupants have exited.

c. Illumination. Adequate and reliable lighting shall be provided to illuminate pathways and exits.

1. Emergency lights shall be powered by a reliable power source that is separate from the facility power.

2. Emergency lighting systems shall be tested routinely to ensure that the system will function in case of a power loss.

d. Notification Systems. The sounding of fire alarms will alert employees to initiate emergency procedures and facilitate the orderly conduct of fire exit drills.

Figure 15-1 Hot Work Permit Form

FAA TECHNICAL CENTER HOT WORK PERMIT

Permit must be posted at job site **Permit Number:_____**

FROM: FIRE INSPECTOR (Name):	JOB SITE/PHONE NUMBER:
TO:(Company Name):	HOT WORK LOCATION:
TYPE OF WORK _____ _____	AREA CERTIFIED CLEAR OF FLAMMABLE VAPOR AND COMBUSTIBLE MATERIALS BY A MINIMUM OF 35 FEET (Y OR N): _____
FIRE WATCH (Name) _____ _____	PERSONAL PROTECTIVE EQUIPMENT USED: Welding face shield_____ Welding gloves_____ Leather apron_____ Respirator_____
PERMIT ISSUE: DATE_____/_____/_____ TIME:_____	**PERMIT EXPIRES:** DATE_____/_____/_____ TIME:_____
PERMIT GRANTED	PERMIT EXPIRES
ORIGINAL PERMIT ISSUED TO (NAME): _____ SITE SUPERVISOR (NAME): _____	FAA FIRE INSPECTOR (Signature): _____ DATE: _____
OTHER COMMENTS, CONDITIONS, OR PRECAUTIONS: _____ _____ _____ _____	**EMERGENCY PHONE NUMBERS:** **REQUEST ADDITIONAL HOT WORK PERMITS OR CONTACT FAA FIRE INSPECTORS:** **Security console 5-5246 or 609-485-5246** **REPORT AN EMERGENCY: X1111 or 5-5246** **FAA SAFETY OFFICE: 5-4821**
Job Site - White	Fire Inspector - Yellow

This Hot Work Permit form complies with OSHA Part 29 CFR 1910.252-255 (all-inclusive) and FAA Technical Center Safety Order 3900.55 Chapter 15.

WARNING

HOT WORK IN PROGRESS

WATCH FOR FIRE

CT Form 3900-39 (2/99) Supersedes Previous Version

Figure 15-2 Personal Item Usage Form

ESTABLISHMENT OF PERSONAL ITEM

Name _____ Building _____

Organization _____ Floor _____

Phone Extension _____ Work Station No. _____

Description and Justification (Type of Equipment, Estimated Number of Users) _____

_____

_____

_____

_____

(Signature of Authorized Requester)

SAFETY OFFICE

Forward to:

___ Approved ___ Fire Inspector

___ Disapproved ___ Originator

Comments _____

_____

_____

_____

_____

_____

FIRE INSPECTOR

Inspection: ___ Approved
___ Disapproved

License No. _____

Date Issued _____

Issued By _____

Comments _____

_____

_____

CT FORM 3900-31 (11-09) Supersedes Previous Version

Check All That Apply **Coffee Station ( )** **Hot Pot and Kettle ( )** **Hot Plate ( )** **Microwave ( )** **Refrigerator ( )** **Misc. ( )**

Figure 15-3 Personal Item Inspection Form

LICENSE NO._____

BUILDING _____ LOCATION _____

ISSUED BY _____ DATE ISSUED _____

DATE	INSPECTED BY	DATE	INSPECTED BY	DATE	INSPECTED BY

CT FORM 3900-31 (11-09) Supersedes Previous Version

CHAPTER 16. CONTRACTOR SAFETY

16.0. PURPOSE.

All firms contracted by the Technical Center, tenant organizations, general contractors or through credit card purchase of services, because they are employers, are required by the Occupational Safety and Health Act (OSHA) of 1970 to provide safe and healthy employment to their employees, and are subject to the requirements of this chapter.

The Technical Center, as an employer, is also responsible for providing a safe and healthful work environment for its employees. Contract work, especially in occupied buildings, may present situations or conditions that may adversely impact on the safety and health of FAA employees.

16.1. RESPONSIBILITIES.

All FAA personnel as designated in this Order will ensure that:

a. Each contractor is provided with warnings of hazards and information about Technical Center programs for abating these hazards.

b. Each contractor is informed of Technical Center safety, health, and environmental requirements.

c. The work is conducted in a safe and responsible manner in compliance with applicable regulations and FAA Technical Center requirements.

16.2. ORGANIZATION REQUESTING CONTRACT SERVICES.

The requesting organization, with the assistance of the Safety Office if necessary, will ensure that the contract Statement of Work or other terms and conditions require the contractor to:

a. Meet all applicable Federal, state, and local health and safety regulations and FAA requirements (violations shall be subject to all of the remedies available under the terms and conditions of the contract).

b. Provide its employees with the necessary training, medical exams, and safety equipment.

c. Ensure that a written comprehensive safety and health plan for the specific contract undertaken is required and submitted at the pre-construction conference.

d. Comply with all applicable Technical Center requirements.

e. Ensure that such requirements are monitored.

f. Be aware that areas of noncompliance or any other condition that poses a serious or imminent danger to health or safety shall be brought to the attention of the Contracting Officer for action in accordance with the remedies available under the terms and conditions of the contract.

16.3. CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR).

The Contracting Officer's Technical Representative and/or Resident Engineer shall, prior to the start of the contract, inform the contractor of the requirement to observe all environmental, health, and safety provisions specified in the contract (provided by statutes/regulations or otherwise required). The COTR/Resident Engineer shall also:

a. Ensure that the contractor's written health and safety plan is available for submission to the Safety Office at the pre-construction conference.

b. Ensure the Safety Office is represented at all pre-construction conferences. That Safety Office shall receive at least one week's advance notification.

c. Provide the Safety Office with a tentative construction schedule for contractor's on-site and immediate written notification of changes.

d. Monitor the contractor's work performance and determine if the contractor is complying with the contract's health and safety plan and pertinent regulations. Any questions regarding compliance with specific regulations should be referred to the Safety Office.

e. Ensure that all required permits are completed by the contractor and provided for review and signature of the designated Safety Office personnel.

f. Notify the Safety Office within 24 hours of any mishaps and provide it with a copy of the

contractor's accident reports. The Safety Office shall be permitted to interview all personnel involved with the mishap (COTR shall also attend this interview).

g. Notify the Safety Office immediately of an OSHA complaint and/or inspection of contractor's job site.

16.4. SAFETY OFFICE.

Where deemed necessary, the Safety Office will conduct a review of any contract procurement request to ensure that all appropriate health and safety regulations, requirements, and pertinent work site hazard information have been incorporated. The Safety Office will document any areas of special concerns.

The Safety Office will review and monitor the contractor's adherence to all applicable health and safety requirements and may review and monitor the contractor's adherence to its health and safety plan.

The Safety Office will provide applicable health and safety training to COTRs/Resident Engineers, as well as Government personnel involved with preparation of procurement requests.

16.5. CONTRACTOR.

A firm or individual contracted by the Technical Center is responsible for meeting all contract terms and conditions and for providing a safe and healthy workplace for its employees. The contractor will:

a. Obtain a Building/Construction Permit from Facility Engineering & Operations Group prior to beginning on-site activities by contacting the Trouble Desk (485-4122) or the Construction Representative.

NOTE: (For additional information see Order CT 4443.1A).

b. Provide for frequent and regular safety inspections of the worksites, materials, and equipment by competent employees.

c. Notify the COTR/Resident Engineer of construction accidents in a timely manner.

d. Notify the COTR/Resident Engineer of OSHA complaint notifications and/or an OSHA inspection of the jobsite.

16.6. HEALTH AND SAFETY PLAN.

The contractor must develop and implement a comprehensive health and safety plan for his or her employees, which covers all aspects of onsite operations and activities associated with the contract. This plan must comply with all applicable health and safety regulations and any project-specific requirements that have been designated. The contractor must, upon request, provide the Contracting Officer, COTR, and/or the Safety Office with a copy of this plan at the pre-construction meeting.

Acceptance of the contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract. It does not relieve the contractor of the responsibility for providing employees with a safe and healthful work environment.

16.7. PRE-CONSTRUCTION MEETING.

Representatives of the contractor shall meet with the Contracting Officer, COTR/Resident Engineer, and Safety Office representative prior to the start of work for the purpose of reviewing safety requirements and discussing implementation of all health and safety provisions pertinent to the work under contract.

The Safety Office representative may review the contractor's site-specific safety and health plan with the contractor as well as review all required Material Safety Data Sheets (MSDS) submitted for products proposed to be used by the contractor.

The Technical Center is required by OSHA standards, most notably 29 CFR 1910.1200, Hazard Communication Standard, to provide information to contractors on the hazards present at the work site. This information will be made available to the contractor in the statement of work as well as at the pre-construction meeting.

The Safety Office will, during the pre-construction meeting, provide the contractor with copies of the Technical Center written procedures such as lockout/tagout and permit required confined space entry.

16.8. FIRE PREVENTION AND PROTECTION.

The contractor shall prepare and carry out an effective fire protection and prevention plan. This plan shall be made available upon request.

a. Housekeeping. Good housekeeping, with provisions for prompt removal and disposal of accumulations of combustible scrap and debris, shall be maintained in all areas of the job site. Self-closing metal containers shall be used for disposal of waste saturated with flammable liquids.

b. Codes and Regulations. The contractor shall comply with the requirements published in the current revisions of the National Electrical Code

and the National Fire Protection Association standards.

c. Smoking. Smoking or other sources of ignition shall not be permitted within any building at the Technical Center and in areas where flammable or explosive materials are stored or are present. All such areas shall be conspicuously posted: NO OPEN FLAMES. There is a no smoking policy in effect within all Technical Center facilities.

d. Fires. Fires and open flame devices shall not be left unattended unless protected with automatic temperature control and cutoff devices.

e. Cleaning and Degreasing. Gasoline and liquids with a flash point below 100 degrees Fahrenheit shall not be used for cleaning and degreasing.

f. Building Exits. All buildings, shops, and plant facilities in which employees are required to work shall have at least two well-marked and lighted exits. The two exits shall be arranged to minimize the possibility of both exits being rendered inaccessible by fire or emergency condition.

g. Fire Extinguishers. Distinctly marked fire extinguishers rated 2-A:40B:C or greater shall be suitably placed. At least one within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas is being used.

16.9. NONCOMPLIANCE WITH SAFETY AND HEALTH REQUIREMENTS.

If during the course of the contract, Safety Office personnel note any situations of non-compliance with the contractor's safety and health plan or William J. Hughes Technical Center safety and health requirements, the personnel will bring them to the attention of the COTR/Resident Engineer and the Contracting Officer verbally and will immediately follow up in writing. Failure to correct the violation or continued violations shall be subject to all of the remedies available under the terms and conditions of the contract.

If either Safety Office personnel or the COTR/Resident Engineer find situations or conditions that pose imminent danger to health and/or safety, they will take appropriate action to remedy the situation or condition. Should this occur, Safety Office personnel will bring the matter to the immediate attention of the COTR/Resident Engineer and Contracting Officer in writing. Such violations shall be subject to all of the remedies available under the terms and conditions of the contract. Safety Office personnel will document with a memo to file all violations brought to the attention of the contractor, COTR/Resident Engineer, and the Contracting Officer.

16.10. SAFETY TRAINING.

The contractor must ensure that its employees have completed appropriate health and safety training when required by statute/regulation and provide documentation of such training as required by the contract.

16.11. MEDICAL CLEARANCE.

The contractor must ensure that its employees have appropriate medical clearance when required by governmental regulations. Copies of medical clearance for contractor personnel are to be presented as specified by the contract.

The Contracting Officer's Technical Representative/Resident Engineer and the Safety Office shall determine if additional medical requirements are required for contractor personnel prior to the start of work.

16.12. INCIDENT REPORTING.

The Safety Office will participate with contractors in the investigations of incidents resulting in injury/illness and/or damage or loss of government property and also near misses. In addition to forwarding the contractor's incident report, the contractor shall also complete the FAA Mishap report (FAA Form 3900-6).

16.13. SAFETY AND PERSONAL PROTECTIVE EQUIPMENT.

Unless otherwise specified, the contractor is responsible for providing all necessary safety and personal protective equipment needed by its employees. This equipment must meet appropriate OSHA and ANSI approval requirements and be in good working order.

The contractor shall ensure that its employees have received appropriate training on the use and maintenance of safety and personal protective equipment prior to its use.

16.14. DOCUMENTATION.

The contractor must provide documentation of all required training, medical exams, permits, MSDS, etc., for their employees or operations at the pre-construction meeting.

CHAPTER 17. GENERAL SHOP SAFETY

17.0. PURPOSE.

Section 19(a) of the Occupational Safety and Health Act (OSHA) requires that all Federal employees be provided with a safe and healthful place of employment. All recognized safety and health hazards should be eliminated or controlled as quickly as possible, subject to priorities based upon the degree of risk posed by the hazards. This chapter establishes procedures for the specific processes and operations that are conducted in the shops at the Technical Center.

17.1. EMPLOYEE TRAINING.

Employees shall be thoroughly trained in the use of protective equipment, guards, safeguards for chemicals, and safe operation of equipment, machines, and tools they use or operate. Only employees who have been trained and those undergoing supervised on-the-job training (OJT) shall be allowed to use shop equipment, machines, and tools.

17.2. PERSONAL PROTECTIVE EQUIPMENT (PPE).

a. Shop supervisors shall ensure that personnel use the designated protective clothing and equipment that will protect them from hazards associated with the work they perform. It is the responsibility of workers to keep their PPE in a sanitary operating condition and use it when required.

b. Workers shall keep their hands and face clean, change clothes when they are contaminated with solvents, lubricants, or fuels, and keep their hands and soiled objects out of their mouth. No food or drink shall be brought into or consumed in areas with exposures to toxic materials, chemicals, or shop contaminants. Workers shall wash their hands before eating or smoking after exposure to any contaminant.

c. Workers shall not wear rings, earrings, bracelets, wristwatches, or necklaces in the vicinity of operating machinery and power tools. Additionally, long full beards, unrestrained long hair, and loose clothing must be secured or they can become caught in tools or machinery and cause serious personal injury. Highly combustible garments or coveralls made of material such as nylon shall not be worn in or around high temperature equipment or operations such as boiler operations, welding, and any other work with open flame devices.

17.3. SHOP LAYOUT.

Proper layout, spacing, and arrangement of equipment, machinery, passageways, and aisles are essential to orderly operations and to avoid congestion. 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.

Equipment and machinery shall be arranged to permit an even flow of materials. Sufficient space should be provided to handle the material with the least possible interference from or to workers or other work being performed. Machines should be positioned so it is not necessary for an operator to stand in a passageway or aisle. Additionally, the positioning should allow for easy maintenance, cleaning, and removal of scrap. Clear zones shall be established and should be of sufficient dimensions to accommodate typical work. Machines designed for fixed locations shall be securely anchored. If pieces of stock to be worked exceed workplace/clear zone floor markings, rope/stanchions may be used to temporarily extend the workplace. Machines with shock mounting pads shall be securely anchored and installed according to manufacturer's instructions.

Passageways/aisles shall be provided and marked to permit the free movement of employees bringing and removing material from the shop. These passageways are independent of clear zones and storage spaces. They shall be clearly recognizable.

Where powered material handling equipment (forklift) is used, facility layout shall provide enough clearance in aisles, on loading docks, from overhead fixtures, and through doorways to permit safe access. Aisles shall be at least 3 feet wider than the widest vehicle used or most common material being transported.

17.4. ILLUMINATION.

Adequate illumination shall be provided to ensure safe working conditions. Portable lamps shall have Underwriter's Laboratory (UL) approved plugs, handles, sockets, guards, and cords for normal working conditions.

At least 50 footcandles of illumination shall be provided at all workstations. However, fine work may require 100 footcandles or more. This can be obtained with a combination of general lighting plus supplemental lighting.

For work in boilers, condensers, tanks, turbines, or other grounded locations that are wet or may cause excessive perspiration, a low-voltage lighting system should be used, either from a battery system or low-voltage lighting unit. In situations where these lighting systems are not available, a vapor-proof 110-volt lighting system shall be used. Flashlights for use near energized electrical equipment and circuitry shall have insulated cases.

17.5. EXITS AND EXIT MARKINGS.

Every exit shall have "EXIT" in plain legible letters not less than 6 inches high with the strokes of the letters not less than three-quarters of an inch wide. Exit signs shall be clearly visible from all directions of egress and shall not be obstructed at any time. If occupancy is permitted at night, or if normal lighting levels are reduced at times during working hours, exit signs shall be suitably illuminated by a reliable light source.

Areas around exit doors and passageways shall be free of obstructions. The exit route shall lead to a public way. No lock-fastening device shall be used to prevent escape from inside the building. Where occupants may be endangered by the blocking of any single exit due to fire or smoke, there shall be at least two means of exit remote from each other.

17.6. HOUSEKEEPING.

Good housekeeping shall be maintained in all shops, yards, buildings, and mobile equipment. Supervisors are responsible for good housekeeping in or around the work they are supervising. As a minimum, the following requirements shall be adhered to:

a. Material shall not be placed where anyone might stumble over it, where it might fall on someone, or on or against any support unless the support can withstand the additional weight.

b. Aisles and passageways shall be kept clear of tripping hazards.

c. Nails shall be removed from loose lumber or the points turned down.

d. Ice shall be removed from all walkways and work areas where it may create a hazard or interfere with work to be done. If ice cannot be removed readily, sand or other approved materials shall be applied.

e. Trash and other waste materials shall be kept in approved receptacles. Trash shall not be allowed to accumulate and shall be removed and disposed of as soon as practicable, at least once per shift.

f. Disconnect switches, distribution panels, or alarm supply boxes shall not be blocked by any obstruction which may prevent ready access.

g. Machinery and equipment shall be kept clean of excess grease and oil and (operating conditions permitting) free of excessive dust. Pressure gauges and visual displays shall be kept clean, visible, and serviceable at all times. Drip pans and wheeled or stationary containers shall be cleaned and emptied at the end of each shift.

17.7. FIRE PREVENTION.

Supervisors in charge of operations where fuels, solvents, or other flammable liquids are used shall be constantly alert for hazards and unsafe acts. Fuels such as gasoline shall never be used to clean floors or clothing, and open solvent or gasoline containers shall not be kept near electrical equipment. The use of low flashpoint petroleum solvents shall be avoided whenever possible. Open flames, open element heaters, equipment not properly grounded, and non-explosion-proof electrical equipment used in the presence of flammable or combustible liquids is prohibited.

Supervisors shall ensure that employees remove debris and rubbish from the job site upon completion of the job, or daily if extended beyond one day. Hazardous materials shall not be left at job sites unless properly stored. Work being performed on job sites shall not endanger building occupants (e.g., exits blocked, fire alarm devices disconnected, etc.).

Fire extinguishers of at least 20 BC or greater rating shall be installed in shop areas. The number of extinguishers depends upon the size and layout of the facility. Fire extinguishers shall meet the following OSHA requirements:

a. Be kept fully charged and in their designated area.

b. Be located along normal paths of travel.

c. Not be obstructed or obscured from view.

d. Be visually inspected at least monthly.

17.8. MATERIAL STORAGE.

The presence of unnecessary material in the shop could cause such incidents as tripping, falling, or slipping. This

could be especially hazardous around equipment that is in operation. The only material in the shop area shall be that which is being worked on. The only places that materials should accumulate in quantity are in storerooms and material holding areas.

The storage of materials shall not, of itself, create a hazard. Materials stored in tiers shall be stacked, strapped, blocked, or interlocked, and limited in height so they are stable and secure against sliding or collapse. Storage racks shall have sufficient capacity to bear the loads imposed on them.

Stored materials shall not obstruct fire extinguishers, alarm boxes, sprinkler system controls, electrical switch boxes, machine operations, emergency lighting, first aid or emergency equipment, or exits. Heavy materials and equipment should be stored low and close to the ground or floor to reduce the possibility of injury during handling.

17.9. USE OF TOOLS.

a. Hand Tools. Hand tool safety requires that the tools be of good quality and adequate for the job. All tools shall be kept in good repair and maintained by qualified personnel. Racks, shelves, or toolboxes shall be provided for storing tools which are not in use.

Supervisors shall frequently inspect all hand tools used in the operation under their supervision. Defective tools shall be immediately removed from service.

b. Portable Power Tools. Personnel who are required to use portable power tools in their work shall be thoroughly trained in safe operating practices. Safe operating procedure shall be set up for each type of tool consistent with the manufacturer's instructions.

17.10. USE OF COMPRESSED AIR SOURCES.

The improper or inadvertent connection of items not designed for shop air pressure, i.e., equipment, storage vessels, or containers to a shop air supply may cause serious personal injury and more than likely will damage the item being connected.

The maximum air pressure approved for general use in the shops and laboratories is 30 psi (pounds per square inch). This pressure is sufficient for most shop operations and is not significantly hazardous.

The following rules and practices are suggested to avoid personal injury:

a. Compressed air is not to be used to blow dirt, chips, or dust from clothing.

b. Do not use compressed air to clean machinery or parts unless absolutely necessary. If necessary, use a minimum pressure and provide barriers or clear the area of personnel. Wear goggles to protect eyes.

c. Never apply compressed air to any part of a person's body.

d. Do not use a compressed air line that does not have a pressure regulator for reducing the line pressure.

e. Inspect air supply and tool hoses before using. Discard and label unfit hoses. Repair hoses where applicable.

f. Never work on a pressurized line.

17.11 MACHINE GUARDING

Moving machine parts have the potential for causing severe workplace injuries, such as crushed fingers or hands, amputations, burns, or blindness. Safeguards are essential for protecting workers from these needless and preventable injuries. Any machine part, function, or process that may cause injury must be safeguarded. Removal of machine guards is prohibited. All machinery on the Center shall be complaint with the requirements of 29 CFR 1910 Subpart O - Machinery and Machine Guarding. Please see Chapter 21 Machinery and Equipment for guarding requirements.

17.12 LOCAL EXHAUST

In accordance with 29 CFR 1910.1450 exhaust hoods providing local exhaust shall meet the criteria of minimum face velocity of 60-100 FPS. Face velocity of hoods will be inspected by the Safety Office on a semi-annual basis and documented. Any exhaust equipment not meeting the standard requirements will be immediately taken out of service until necessary repairs can be made. Face velocity must be checked again and documented to be satisfactory before the hood can be placed back in service. In addition, all exhausts must have its filters, if applicable, cleaned and/or replaced per manufacturers recommended instructions.

CHAPTER 18. HAZARD COMMUNICATION

18.0. PURPOSE.

The Hazard Communication Standard (HAZCOM) program establishes the procedures to provide information to Technical Center employees, tenants, contractors, and visitors regarding hazardous chemicals and substances encountered in the workplace. All Technical Center organizations and contractors who utilize substances deemed hazardous under OSHA 29 CFR 1910.1200 shall comply with the elements of the HAZCOM program. The Contracting Officer's Technical Representative (COTR) is responsible for ensuring implementation of this order by all contractor personnel.

18.1. HAZCOM PROGRAM.

The Hazard Communication Standard requires the Technical Center to develop, implement, and maintain a HAZCOM program which includes a written program, a chemical inventory, container labeling, maintenance of a Material Safety Data Sheets (MSDS) file, and employee training. The written HAZCOM program is available from the Safety Office to all employees, tenants, and contractors upon request. The HAZCOM program elements are as follows:

a. Chemical Inventory. An inventory of all known hazardous substances (29 CFR 1910, Subpart Z), present in the workplace will be compiled and maintained by the Safety Office. The list shall be updated to reflect the addition or removal of any hazardous substance.

b. Material Safety Data Sheets (MSDS). MSDSs will be obtained for all substances and chemicals utilized at the Technical Center which are known to pose a health or physical hazard to employees. A complete listing of all MSDSs for hazardous substances found in each workplace will be maintained on a computer database which will be readily available.

1. Managers and supervisors shall ensure that an MSDS is obtained when purchasing any hazardous substance. A copy of the MSDS shall be filed with the Safety Office and in the workplace MSDS binder.

2. If a MSDS is missing, incomplete, or out of date, a new MSDS shall be obtained from the manufacturer or distributor, and filed with the Safety Office.

3. The MSDSs for "retired" chemicals shall be maintained indefinitely and should include a date of retirement of the chemical.

c. Container Labeling. Each container in the workplace shall be labeled, tagged, or marked with the identity of the chemicals contained therein, name and address of the manufacturer, and appropriate health and safety warnings.

1. Supervisors shall be responsible for ensuring that all containers are properly labeled. All containers which are not properly labeled, and where the chemicals in the container are unknown, will be reported to the Safety Office.

2. Labels on incoming chemicals will not be removed or defaced.

3. The Safety Office will serve as the focal point for the labeling system. Each organization and contractor at the Technical Center is responsible to check all incoming chemicals/materials and verify the completeness of the label. The Safety Office will issue, when necessary, replacement labels.

4. No container of a hazardous substance will be released for use until the following conditions are verified:

   (a) The container is clearly labeled.

   (b) Appropriate hazards warnings are noted.

   (c) The name and address of the manufacturer is listed.

5. Hazardous substances removed from the original container and transferred to a new container shall be affixed with a label with the hazardous substance information.

6. Transfer containers will be labeled with the product name and the appropriate hazard warning found on the original container.

d. Employee Training. All employees, tenants, and contractors at the Technical Center shall be provided with training regarding hazardous chemicals in their work area at the time of their

initial assignment and whenever a new hazard is introduced into their work area. All research and development personnel temporarily assigned to the Technical Center will also be provided the information as listed below. The training shall include at a minimum the following:

1. An overview of the requirements contained in 29 CFR 1910.1200, including employee rights and the requirements of the Hazard Communication Standard.

2. Information on any operations in their work area where hazardous chemicals are present and the hazards of those chemicals.

3. The location and the availability of the written HAZCOM program, including the required inventory list of the hazardous chemicals in the workplace, and associated MSDSs.

4. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the workplace.

5. Physical and health hazards of the hazardous substances in the work area.

6. Measures that employees can take to protect themselves from these hazardous substances through appropriate work practices, emergency procedures, and personal protective equipment (PPE).

7. How to read labels and review the MSDS to obtain relevant hazard information.

e. Non-Routine Tasks. Prior to performing a non-routine task involving the use of hazardous substances, employees will be given information about the specific hazard related to the substance, protective measures, equipment available to minimize any exposure, and emergency procedures. All non-routine tasks involving a confined space shall be conducted in accordance with the confined space procedures for the Technical Center, located in the Safety Office.

f. Temporary Duty Assignments. Employees on temporary duty assignments prior to beginning the task shall be informed of the hazards associated with the chemicals being used, the available protective control measures, and the emergency procedures.

g. Hazardous Substances in Unlabeled Pipes. Prior to working on unlabeled pipes, the following information shall be made available to employees and contractors:

1. The identity of the hazardous substances in the pipe.

2. Potential hazards associated with the chemical.

3. Safe work practices and procedures for lockout/tagout, double block and bleed, blanking, and proper tools and equipment.

4. Protective measures and equipment.

5. Emergency procedures.

18.2. MULTI-EMPLOYER WORKPLACES.

Many of the workplaces in the Technical Center are occupied by more than one employer, where the handling, processing, and storage of chemicals by one employer may cause an exposure for the employees of another employer to occur.

a. The Safety Office and the COTR shall ensure that the following information is provided by the contractor prior to introducing any hazardous substances into the Technical Center:

1. The contractor shall make their written HAZCOM program available for review by the Safety Office.

2. The labeling system that the contractor uses on the hazardous substances.

3. The MSDSs for all hazardous substances which the contractor will use in the workplace.

4. The method that the contractor will use to inform the Safety Office of any precautionary measures that will need to be taken to protect FAA employees.

b. The Safety Office and the COTR shall provide to the contractors the following information:

1. A list of hazardous substances to which they may be exposed while on the job site.

2. Precautions that their employees should take to lessen the exposure to hazardous substances.

3. The methods that the Technical Center will use to provide the other employer(s) with a copy of the MSDS, or to make it available at a central location in the workplace for each

hazardous chemical that the other employer's employees may be exposed to while working.

4. The procedures that the Safety Office will use to inform the other employer(s) of any precautionary measures and emergency procedures.

5. The procedures that the Safety Office will use to inform the other employer(s) of the labeling system used in the workplace.

18.3. TRADE SECRETS.

A chemical manufacturer may withhold the specific chemical identity from the MSDS. However, the chemical properties and effects from the hazardous chemicals must be discussed in the MSDS. In the event of a medical emergency, the chemical manufacturer must immediately disclose the identity of the chemical and its specific properties.

18.4. CHEMICAL PURCHASES.

Notifying the Safety Office prior to chemical procurement will assist in evaluating any associated hazards, recommending Personal Protective Equipment (PPE), employee training and to ensure that a Material Safety Data Sheet (MSDS) accompanies the chemical. This prior notification includes, but is not limited to chemicals (regardless of quantity ordered or size) such as adhesives, corrosive preventative compounds, electronic cleaners, fluxes, freeze sprays, lubricants, paints, pesticides, solvents and compressed gases.

18.5. EYEWASH AND EMERGENCY SHOWERS

Portable and plumbed eyewash/shower units are located throughout the Center in proximity to chemical use areas. Portable eyewash units are maintained semi-annually. Plumbed eyewash/shower units are flushed weekly by shop personnel and maintained quarterly by the COMS Contractor plumbing service.

18.6. OTHER DOCUMENTS

FAA Technical Center, Environmental and Safety Sub-Team, Safety Office, Hazard Communication Program.

CHAPTER 19. LOCKOUT/TAGOUT PROGRAM

19.0. PURPOSE.

It is the policy of the Technical Center that lockout/tagout procedures shall be performed in accordance with the requirements of OSHA 29 CFR 1910.147, The Control of Hazardous Energy, referred to as the lockout/tagout standard, and the provisions of this chapter.

This chapter provides the minimum requirements for the lock out of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energizing or start-up of the machine or equipment or release of stored energy could cause injury.

19.1. GENERAL REQUIREMENTS.

a. Application.

1. All FAA and contractor employees who perform repairs or maintenance on equipment or machinery shall be trained and strictly adhere to all documented energy control procedures.

2. Only "Affected" employees that are trained are allowed to work in areas where servicing or maintenance activities are taking place.

3. All "Authorized" employees are required to follow the proper lockout/tagout procedures.

4. The Energy Control Program defines the proper procedures to isolate hazardous energy and establishes the requirements of the training program for all "Affected "and "Authorized" employees.

5. All energy control procedures will be reviewed at least annually and updated or modified as necessary. Annual training will be provided to all Affected and Authorized personnel.

b. Lockout/Tagout.

1. The mandatory method of controlling hazardous energy during applicable servicing and/or maintenance operations is the lockout of all energy sources, unless one of the following two conditions exist:

   (a) The equipment or machinery is not capable of being locked out.

   (b) The warning tag is attached at the same location a locking device would be and the conditions required to ensure full employee protection are demonstrated.

2. Tagout devices may be used to control hazardous energy only when all of the following are met:

   (a) The utilized tagout procedures provide a level of employee protection and safety equivalent to that obtained using lockout procedures.

   (b) Compliance with all tagout provisions of the lockout/tagout standard is confirmed.

   (c) Additional safety precautions are implemented including:

      (1) Removal of isolating circuit elements.

      (2) Blocking a control switch.

      (3) Opening additional disconnecting devices.

      (4) Removing a valve handle.

3. Lockout and tagout devices may include such items as locks, tags, chains, wedges, key blocks, and additional types of hardware. All such devices must meet the following requirements:

   (a) All devices shall be uniquely identifiable, be dedicated solely for the control of hazardous energy, and be the only devices used to control hazardous energy.

   (b) Devices and print must be sufficiently durable to withstand all environmental conditions. They must be standardized in at least size, shape, or color.

   (c) Locks must be substantial to prevent

removal except by applying excessive force.

(d) Tags must be attached to prevent inadvertent or accidental removal. They must also be non-reusable, attachable by hand, be self-locking, and non-releasable.

(e) Locks and tags must clearly identify the employee who applied the device, the time and date it was applied, and duration of the work.

(f) Tags must warn employees of the hazards and should include a legend such as:

DANGER - DO NOT OPERATE

THIS TAG TO BE REMOVED ONLY BY PERSON SHOWN ON BACK

(g) Push buttons, selector switches, interlocks, and other control circuit type devices are not energy isolating devices.

c. Procedures for Isolating Hazardous Energy. The lockout/tagout procedures are to be followed in the sequential order listed below:

1. Notify all affected employees of the lockout/tagout operation.

2. Shutdown equipment in an orderly manner to minimize hazards.

3. Identify the energy isolating device for the equipment and attached the device in the "safe" or "off" position.

4. Attach a lockout or tagout device to each energy isolating device and test the device to ensure it has been securely attached to hold the energy isolating device in the "safe" or "off" position.

5. Attach a tag with who applied the lockout device, the date and time, and duration of the work.

6. Tagout devices shall be fastened at the same point that the lock is attached.

7. Relieve, disconnect, restrain, or otherwise render all stored hazardous energy safe.

8. Test the equipment or machine to verify that it has been de-energized. If energy accumulation is possible, continued verification must be conducted.

9. The servicing can begin.

d. Release From Lockout/Tagout.

1. This section provides procedures for the removal of lockout/tagout devices:

(a) Clear debris and tools that could create a hazard during energizing procedures.

(b) Inspect the equipment to ensure that it has been completely reassembled.

(c) Remove affected employees from the work area or ensure they maintain a safe distance from the equipment during the start-up operation. Notify all affected employees that the lockout or tagout devices are to be removed and that the equipment is being restarted.

(d) Only the authorized employee who initially placed the device may remove the lockout or tagout device.

(e) Energize and restart the equipment. Ensure the equipment is operating normally.

2. If the employee who initially applied the lockout/tagout device is unavailable, it may be removed under the direction of the supervisor. This removal procedure will include the following:

(a) Verify that the employee who applied the device is not at the facility, cannot be contacted, and additional tasks are not being performed in the work area.

(b) Notify affected employees that the lockout/tagout device has been removed before restarting the equipment or machine.

(c) Notify the authorized employee that initially attached the lockout/tagout device that the device was removed before they resume work.

19.2. TRAINING.

a. Affected employees and other employees who work in areas where Lockout/Tagout procedures

may be implemented shall be trained to ensure they understand the program and procedures, and are aware of all prohibitions to restart or re-energized locked-out or tagged-out equipment or machinery.

b. Authorized employees shall be trained to ensure they are knowledgeable in lockout/tagout procedures. Training shall include the following information and skills:

1. The ability to recognize hazardous energy sources, and determine the type and magnitude of that hazardous energy.

2. How to choose and implement various methods, types of hardware, and communication devices chosen to isolate and control hazardous energy.

3. The specific lockout and/or tagout energy control procedures developed for maintaining or servicing particular equipment and machines.

4. The limitations of energy control utilizing tagout devices and tags, including the following:

   (a) Tags are a warning system only and do not physically prevent re-energizing.

   (b) Attached tags should only be removed by the authorized employee. Tags should never be bypassed, ignored, or defeated.

   (c) Tags must be legible and understandable by all authorized, affected, and other employees in order to be effective.

   (d) Tags and their means of attachment must be able to withstand all environmental conditions where they are used.

   (e) Tags must be attached in a manner such that they cannot inadvertently or accidentally be removed.

   (f) The meaning and importance of the tags must be emphasized.

c. Retraining shall ensure employee proficiency and introduce new or revised energy control methods and procedures. Retraining is required for authorized and affected employees when any of the following conditions occur:

1. A modification in the employee's job assignment changes the hazardous energy to which they may be exposed.

2. Changes in equipment, machines, or processes that present a new hazard.

3. A change in the energy control procedures.

4. A periodic inspection reveals a deficiency in the employee's knowledge or use of the energy control procedures, or whenever there is reason to believe the knowledge or use of the procedures is not sufficient.

d. The Safety Office will certify employee training and maintain a record including each employee's name and dates of training. Documentation will include the type of training received, course agenda, and the trainer.

19.3. INSPECTION.

A periodic inspection of the energy control procedures will be conducted at least annually by the Safety Office. The inspection is designed to correct any deviations or inadequacies identified. The requirements of the inspection include the following:

a. For control procedures that utilize lockout isolation, a review of each employee's responsibilities under the energy control procedures.

b. For control procedures that utilize tagout control, a review of each employee's responsibilities under the energy control procedure being inspected, and the specific limitations of tagout control procedures.

c. The Safety Office will certify that the periodic inspections have been performed and will identify the equipment being locked-out or tagged-out during the inspection, the date of the inspection, the employees included in the inspection, and the inspector.

19.4. EQUIPMENT TESTING.

When having to temporarily energize the equipment to test or position it during a lock out, the following procedures must be followed:

a. Clear all tools and materials away from the equipment or machine.

b. Remove employees from the area or locate them in a safe area.

c. Notify affected employees of a temporary start-up.

d. Remove the lockout/tagout device following the procedures.

e. Energize the equipment and proceed with the testing.

f. When done, de-energize the equipment and replace the lockout/tagout device.

19.5. GROUP AND SHIFT-CHANGE LOCKOUT/TAGOUT PROCEDURES.

It may be necessary for more than one employee to conduct service operations on equipment, or contractors and FAA personnel may participate in an operation that requires the application of energy control procedures. Group lockout/tagout procedures are applied to provide a safe environment to all employees exposed to hazardous energy. To ensure the continuity of lockout or tagout protection during shift or personnel changes, the supervisor is responsible for the orderly transfer of lockout/tagout devices between off-going and on-coming employees. In addition to all previously described energy control procedures, the following additional requirements must be followed:

a. The primary responsibility for safe application of the energy control procedures shall be assigned to a single authorized employee who will be responsible for coordinating all activities being performed on the equipment.

b. When more than one authorized employee is assigned control, all authorized employees with responsibility for a group must then coordinate their activities with the designated primary authorized employee.

c. Provisions must be made for the designated primary authorized person to determine the exposure status of individual group employees.

d. Each authorized employee shall attach a personal lockout or tagout device to the group lockout/tagout device, group lock box, or comparable mechanism at the beginning of the work. Each authorized employee will then remove their lock or tag when the respective tasks are completed.

19.6. CONTRACTORS.

Whenever contractors are to be engaged in lockout/tagout activities, the Safety Office and the contractor shall inform each other of their respective lock-out/tagout procedures. The Safety Office will ensure that FAA employees understand and comply with the restrictions and prohibitions of the contractor's energy control program.

CHAPTER 20. CONFINED SPACE ENTRY PROGRAM

20.0. PURPOSE.

It is the policy of the William J. Hughes Technical Center that operations involving entry into confined spaces shall be performed in accordance with the requirements of 29 CFR 1910.146, Permit-Required Confined Spaces and the provisions of this chapter.

20.1. DEFINITIONS

a. Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

b. Attendant means an individual stationed outside one or more (not typical) permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

c. Authorized entrant means an employee who is authorized by the employer to enter a permit space.

d. Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

e. Entry permit (permit) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in this section.

f. Entry supervisor means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

g. Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, 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 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 permissible exposure limit;

5. Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 29 CFR 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

h. Immediately Dangerous to Life or Health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

j. Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

k. Oxygen enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

l. Permit-required confined space program means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

m. Permit system means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

n. Rescue service means the personnel designated to rescue employees from permit spaces.

o. Retrieval system means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

p. Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

20.2. GENERAL REQUIREMENTS.

a. Confined Space Inventory. All Technical Center facilities will be evaluated to identify all confined spaces and will designate them as permit-required confined spaces (permit spaces). An inventory of the confined spaces will be developed and maintained by the Safety Office.

1. Confined Space. A confined space is defined as an enclosed space which is large enough and so configured that an employee can bodily enter and perform assigned work; has limited means for entry and/or exit; and is not intended for continuous employee occupancy.

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

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

   (b) Contains a material with the potential for engulfment of an entrant.

   (c) Has a configuration such that an entrant could be trapped or asphyxiated due to inwardly converging walls or a floor which slopes downward and tapers to a smaller cross section.

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

3. PRCS Categories. The following are PRCS categories on site: storage tanks, underground vaults including spill prevention vaults, lift stations, including wet and dry wells, sewers, septic tanks, boilers, manways, channels, utility vaults (electric and communications), and the dust collection system in the Technical Support Facility (TSF). All confined spaces located at the Technical Center will be designated as permit required confined spaces unless exempted by the Safety Office.

b. Labeling and Posting. Permit spaces will be posted with signs stating their existence, entry permit requirements, and prohibition of unauthorized entry. Warning signs shall be posted at all entrances to permit spaces and shall include the following information:

DANGER
PERMIT REQUIRED CONFINED SPACE
ENTER BY
FAA PERMIT ONLY

When a specific work practice is to be performed or specific safety equipment is necessary, an additional statement, in large letters, shall be added to the warning sign.

c. Permits. Entry into a permit space shall be by Confined Space Entry Permit only. The Safety Office or Contractor (if approved by the Safety Office) shall secure and complete a permit. A

contractor will only be approved if they meet the following criteria:

1. Is capable by education and/or specialized training, of anticipating, recognizing, and evaluating employees' exposure to hazardous atmosphere in a permit space. This person will be capable of specifying the necessary controls and personal protective equipment to insure worker safety.

2. The permit (see Figure 20-1) will be submitted to the Safety Office for review and authorization. Entry is permitted only after the entry supervisor and the Safety Office have signed the permit. The permit shall include:

   (a) A list of all authorized entrants and attendants.

   (b) Location of the PRCS to be entered.

   (c) Brief description of entry purpose and the work to be conducted.

   (d) An expiration time not to exceed one shift.

   (e) Acceptable entry conditions.

   (f) Nature of the hazards in the PRCS and the measures to isolate the PRCS and eliminate/control the hazards.

   (g) Communications procedures.

   (h) Means to summon rescue and emergency services.

   (i) Any other pertinent information.

3. The Permit shall be.

   (a) Posted in a conspicuous place close to the entrance to the permit space.

   (b) Returned to the entry supervisor at termination for close-out.

   (c) Kept on file in the Safety Office for at least a year for review purposes.

4. PRCS Problems. Any problems regarding the PRCS entry will be noted by the entry supervisor on the permit and reported immediately to the Safety Office.

5. Entry Permit. An entry permit may be canceled at any time by the entry supervisor or by a person authorized and qualified to do so.

6. Permit Cancellation. Entry will be terminated and the permit canceled if a prohibited condition occurs in or near the PRCS. An emergency evacuation of a PRCS will be grounds for cancellation of a permit.

7. Permit Review. Review of the entry permit will also be conducted whenever there is any unauthorized entry into a PRCS; detection of a hazardous condition not covered by the entry permit; an injury or near miss during entry; a change in the use or configuration of a PRCS; or employee complaints.

20.3. TRAINING.

a. Permit Space Entry Training. Employees designated as confined space team members will receive as a minimum the following training on permit space entry:

1. Introduction to 29 CFR 1910.146, Permit Required Confined Spaces.

2. Hazards that may be encountered in permit spaces and methods of controlling them.

3. The Confined Space Entry Permit system.

4. Safety equipment to be used (mechanical retrieval/fall protection systems, atmospheric monitors, and personal protective equipment). Proper procedures for calibration and use of air monitoring equipment.

5. Roles and responsibilities of the permit space team members.

6. Procedures and proper use of communication equipment.

7. Emergency exit procedures and rescue procedures (Responsibility of the SJTA and NJANG Fire Departments).

b. Pre-entry Briefing. Members of the permit space entry team will receive a briefing conducted by the entry supervisor on the requirements and hazards specific to the permit space.

c. Awareness Training. Training will be provided for personnel who work on a site containing permit spaces. This training will include but is not limited

to:

1. Overview of OSHA's 29 CFR 1910.146, Permit-Required Confined Space Standard.

2. The Technical Center's Confined Space Entry Program and Permit System.

3. Identification, location, and labeling of confined spaces.

20.4. PERSONNEL REQUIREMENTS.

a. Entry Supervisor. The entry supervisor is responsible to:

1. Know the hazards that may be encountered in the permit space, including the routes and effects of exposure.

2. Verify that the permit has been correctly completed, including all initial monitoring, and sign the permit to authorize the entry.

3. Cancel the permit once the entry operations have been completed, or prohibited conditions develop, such as lightning.

4. Verify that rescue services and communications are established.

5. Prevent any unauthorized personnel from entering the permit space.

6. Determine that entry operations remain consistent and within the terms of the permit, whenever personnel responsibilities are transferred at the permit space.

b. Attendant. The attendant is responsible to:

1. Verify that the permit has been signed to authorize entry and posted at the entrance to the permit space.

2. Know the hazards that may be encountered in the permit space, including the routes and effects of exposure.

3. Recognize behavioral effects from hazard exposures.

4. Verify that the entrants listed on the permit are the personnel who have entered the permit space.

5. Remain outside the permit space entrance until relieved by another attendant.

6. Continually monitor activities and conditions inside and outside the permit space to determine if it is safe for entrants to remain in the permit space. Order an evacuation of the permit space, if hazardous conditions develop, entrant's behavioral changes are recognized, dangerous conditions develop outside the permit space that can endanger the entrants, or the attendant cannot perform his or her duties.

7. Prevent unauthorized entry into the permit space and inform the entrants and entry supervisor if an unauthorized entry had occurred.

8. Summon the rescue service in the event of an emergency. Perform non-entry rescue in the event of an emergency, when rescue services are not provided.

9. Perform no work that will interfere with the assigned responsibilities.

c. Authorized Entrant. The authorized entrant is responsible to:

1. Verify that the permit has been signed and posted at the entrance to the permit space and begin entry only when the attendant is present.

2. Know the hazards that may be encountered in the permit space, including the routes and effects of exposure and proper use of the safety and personal protective equipment.

3. Communicate with the attendant to enable them to properly monitor the entrant's condition and inform them when signs of exposure are recognized or a hazardous condition is detected.

4. Exit the permit space when ordered to by the attendant or entry supervisor, upon recognition of a hazardous condition or signs of exposure, or when a warning alarm is activated.

20.5. TESTING AND MONITORING.

All monitoring will be performed by a qualified person. Entry into a permit space is prohibited until initial testing of the atmosphere has been completed and acceptable entry conditions are confirmed. Permit space air monitoring shall be performed using pre-calibrated direct reading instruments capable of simultaneously measuring the percent oxygen, the percent Lower Explosive Limit

(LEL), carbon monoxide and hydrogen sulfide as specified under 29 CFR 1910.146. During the entry operation, the permit space will be continuously ventilated (if necessary) and monitored.

a. The confined space atmosphere will be monitored in the following order:

1. Prior to removal, the area around and in the manhole cover, using remote sampling methods.

2. Prior to ventilating (must be less than 10 percent Lower Flammable Level{LFL}).

3. After ventilating the confined space for a sufficient time to provide 10 air changes in the PRCS, and prior to entry.

4. During the entry of the PRCS.

5. Continuously while the confined space is occupied.

6. Initial readings must be taken for a minimum of 5 minutes.

b. Whenever there is an alarm condition, all entrants will immediately exit the PRCS. The Safety Office shall be notified and appropriate steps taken for re-entry. Re-entry will not occur until the alarm conditions have been evaluated, a new permit has been issued, and the alarm conditions have been controlled or eliminated.

c. Ventilation of the confined space will be conducted to keep airborne contaminants below the OSHA Permissible Exposure Limits (PEL).

20.6. ACCEPTABLE ENTRY CONDITIONS.

a. Acceptable oxygen requirements for entry into permit spaces is between 19.5 percent and 23.5 percent. If the oxygen content in the air is not acceptable, the area must be ventilated to maintain the oxygen concentration within the acceptable range. If oxygen content cannot be maintained, a self-contained breathing apparatus or supplied-air respirator must be worn.

b. Entry into a permit space shall be prohibited when tests indicate the concentration of flammable gases in the atmosphere is greater than 10 percent of the LEL.

c. Entry is prohibited in a permit space when the atmospheric concentration for carbon monoxide (CO) exceeds 35 parts per million (ppm) or the atmospheric concentration for hydrogen sulfide (H_2S) exceeds 10 ppm. When the concentration of other contaminants in the atmosphere cannot be kept within permissible exposure levels (PEL) established in 29 CFR 1910, Subpart G and Subpart Z, the employee must wear approved respiratory protection, as determined by the Safety Office, based on conditions and test results and on the type of work to be performed.

d. The area outside the confined space must be surveyed by entry personnel to detect any hazards. The survey will include the potential for discharge of fumes/vapors or exhaust near the entrance, fire potential in the area, potential for a sudden flow of water or liquid into or through the confined space, traffic and pedestrian right-of-way interference, or any other physical hazard which could adversely affect the safety of the persons entering the confined space.

e. When the confined space is located in a pedestrian right of way, barricades will be set up at a minimum of 10 feet in all directions around the entrance.

20.7. SAFETY EQUIPMENT AND CLOTHING.

a. The entry permit shall include a list of necessary protective equipment to be used in the permit space as determined by the Safety Office, and in accordance with the National Institute of Occupational Safety and Health (NIOSH) criteria for working in confined spaces.

b. Employees must wear a full-body harness, with an attached retrieval line connected to a mechanical lifting device located outside the confined space. (This is not applicable for spaces that are less than 5 feet below the entrance and contain no potential hazards.)

c. All components of the mechanical retrieval system will be inspected prior to use. All fall protection and retrieval systems will be tested annually and certified by the manufacturer to meet the applicable American National Standards Institute (ANSI) standard.

20.8. WORK PRACTICES.

Before entering a permit space, employees shall review the specific guidelines appropriate for safe entry and emergency exit. These guidelines shall include:

a. Purging: the process by which gases, vapors, and/or particulates are removed from a permit space by ventilating the space.

b. Inerting: Displacement of an atmosphere with a non-reactive gas such as nitrogen, argon, etc., so that the resulting atmosphere is non-combustible.

c. Isolation (e.g., lockout/tagout): The separation of a confined space by protecting against the release of energy and materials that could pose a threat to occupants of the confined space. Isolation may be accomplished by such means as blanking or blinding, blocking or disconnection of all mechanical linkages, misaligning or removing lines, pipes, or ducts, double block and bleed system, or lockout and tagout of all sources of energy.

20.9. RESCUE AND EMERGENCY SERVICES.

Emergency rescue will be established using either non-entry rescue equipment or by the personnel of the South Jersey Transportation Authority's (SJTA) Fire Department and /or the New Jersey Air National Guard (NJANG) Fire Department. The SJTA and NJANG Fire Departments will be notified as soon as possible, preferably before entry operations are conducted. Mechanical retrieval systems will be used in non-entry assisted rescues, unless the retrieval equipment would increase the overall risk of entry and would not contribute to the rescue of the entrant. In the event of an emergency the FAA Security Console Operator shall be notified.

20.10. CONTRACTORS.

Contractors and subcontractors will present their own confined space entry program to the Safety Office and receive written approval of the program prior to initiation of confined space entry projects and abide with Technical Center's confined space entry permit procedures.

The Safety Office and the organization contracting the work will inform the contractor that the site contains PRCSs. Entry to PRCSs will be permitted only through compliance with the Confined Space Entry Permit Program.

a. The Safety Office and the applicable organization will:

1. Describe the hazards of the PRCS and the precautions and procedures used to protect employees working in or near the PRCSs.

2. Coordinate operations with the contractor when both the contractor and FAA employees will be working together in or near PRCSs.

3. Debrief the contractor at the end of the PRCS entry operation.

b. The contractor shall:

1. Obtain available information regarding hazards and PRCS entry operations from the Safety Office and applicable organization.

2. Coordinate operations with the Safety Office when both the contractor and FAA employees will be working together in or near PRCSs.

3. Debrief the Safety Office at the end of the PRCS entry operation.

20.11. OTHER DOCUMENTS.

FAA Technical Center, Comprehensive Permit Required Confined Space Entry Program and Training for Supervisors, Entrants and Attendants.

Figure 20-1 FAA Technical Center – Confined Space Entry Permit

Permit **must** be posted at entrance of confined space Permit No. _____

Space to be Entered:	Purpose of Entry:
Location/Building:	Duration of Permit: From: ___/___/____ Time:_____ To: ___/__/____ Time:_____

Permit Space Hazards:

___Oxygen deficiency ___ Flammable Gases/Vapors

___ Airborne Dust ___ Toxic Gases/Vapors

___ Mechanical Hazards ___ Electrical Hazards

___ Engulfment ___ Other (explain):

Personal Protective Equipment: _____tyvek _____safety glasses/goggles _____gloves (type) _____other (explain):

Respiratory Protection: _____air purifying (explain type) _____air supplied (explain type):

Rescue Equipment: _____tripod w/ full body harness _____other (explain):

Permittee's Monitoring Equipment (Make and Model):

Communication: _____verbal _____radio _____handsignal _____other (explain):

Other:

Operations must cease if the potential for lightning exists within a 20 mile radius. Monitor ch. 6 (162.40) and/or call the local weather information service at 485-6475 for a report.

Departments Notified: SJTA FD_____ NJANG FD_____ Lock out / Tag out: _____ electrical Y N pipes Y N Machinery Y N

Atmospheric Monitor: Manufacturer/Model:_____ Calibration Date: ____/____/____

Other Permits (i.e., Hot Work): _____

Ventilation - Capacity of blower (CFM):_____ Time Ventilated (min.): _____

Confined Space Entry Notification - Contact SJTA Fire Department at: 609-641-8164 and New Jersey Air National Guard Fire Department at 609-645-6237

Emergency Notification - Contact FAA Security Console Operator (Technical Building) at 609-485-5246

****Entry Supervisor shall contact Fire Department or Security Console to cancel permit when finished with entry activities.***

Date:____/____/____	Time	Oxygen (%)	Toxic (PPM) CO	Toxic (PPM) H2S	LEL (%)	Organic Vapors (PPM)
Tested By:_____	0000-2400 hrs	19.5 to 23.5 %	<35	<10	Below 10%	OV cartridge limit = 1000 ppm or substance specific levels from MSDS
first test						
after ventilating						
after entry						
after entry						

Authorized Entrants	**Company:_____ Phone No._____** Verify training received and request copy of certificate for file.

Authorized Attendants	

Entry Supervisor **Company:_____ Phone No._____**

I certify that all precautions have been taken and the necessary equipment has been provided for safe entry and work in this confined space. I therefore authorize entry.

Signature:_____ Printed Name:_____ Date:___/___/___ Time: _____

Technical Center Safety Office Representative Authorization:

Signature:_____ Printed Name:_____ Date:___/___/___ Time: _____

Permit Cancelled

FAA Technical Center Safety Representative / Entry Supervisor

Signature:_____ Printed Name:_____ Date: ___/___/___ Time:_____

The entry supervisor and FAA safety office representative must sign the permit prior to worker entry.

CHAPTER 21. MACHINERY AND EQUIPMENT

21.0. PURPOSE.

Several methods of protection can be utilized to safeguard employees from potentially harmful effects of machinery motions and actions. These methods include using guards, devices, distance, automated feeding and ejection methods, and miscellaneous aids.

Guards are the preferred means of machine safeguarding. Guards on machines and equipment are intended to prevent people and their clothing from coming in contact with hazardous moving components. Guards may also prevent flying particles and broken machine parts from coming into contact with or striking personnel. Guards may serve other functions such as enclosing noise or dust or forming part of an exhaust ventilation system.

a. Types of Guards. Machine guards consist of safeguarding point-of-operation, power transmission, and other moving parts.

1. The following list identifies some of the types of machines that require point-of-operation guarding:

   (a) Abrasive wheels.

   (b) Shears.

   (c) Drill presses.

   (d) Power saws.

   (e) Milling machines.

   (f) Portable power tools.

2. Point-of-operation guards shall be augmented with special hand tools specifically designed to place and remove material at the point-of-operation.

3. The following types of machines may have power transmission that need guarding:

   (a) Powered drills and saws.

   (b) Abrasive wheels.

   (c) Engine generator starters.

   (d) Compressor motors.

   (e) Heating, ventilating, and air conditioning systems.

b. Design and Construction Requirements for Guards. Guards should be designed and constructed to prevent contact with the danger zone during operation, be secure and durable enough to withstand expected use and wear, and should not create additional hazards. Machine guards should not interfere with completing the task and allow for routine inspection, adjusting, and lubricating.

1. Guards should totally enclose the dangerous machine components.

2. Use special hand tools designed for placing and removing materials in the machine to eliminate the operator from placing a hand in the danger zone. Securely anchor machines designed for a fixed location to prevent the machine from walking or moving.

3. Guard fan blades where the periphery of the blades are less than 7 feet above the floor or working level. The guards shall have openings no larger than one-half inch.

c. Guarding Requirements.

1. Inspect all machine guards to ensure they are operating properly and securely fastened.

2. Prior to operating the machine, ensure that the guards have been properly reattached following any maintenance or servicing.

3. Never remove or bypass a machine guard in an attempt to provide easier or quicker machine operation.

4. Report machines that have missing or malfunctioning guards to the supervisor immediately. Remove the machine from service, and tag it as OUT OF SERVICE or DANGER - DO NOT USE, until the guard has been replaced or repaired.

d. Training.

1. All employees involved in industrial machine operations must receive specific job safety training for the particular machinery they will operate prior to using the machine. Topics to be covered include:

   (a) A description and identification of the hazards associated with each machine.

(b) Machine guards and how they provide protection.

(c) When machine guards can be removed and by whom.

(d) Actions to take when a machine guard is damaged or missing.

2. Training shall be documented and include the employee's name, the machine and the type of guard, instructor's name, and date of training. These records will be maintained by the Safety Office.

21.1. HAND-HELD AND PORTABLE POWERED TOOLS.

Hand-held powered circular saws, electrical, hydraulic or pneumatic chain saws, percussion tools, powered drills, tapers, sanders, and grinding wheels should be equipped with OSHA required guards including lockout devices, interlocking devices, and dead man switches.

a. Safe Work Practices.

1. Use the correct tool for the job and use each tool correctly.

2. Know the hazards and limitations associated with each tool.

3. Persons operating portable power tools or hand tools shall wear the required personal protective equipment.

4. Inspect tools regularly to be sure than they are in good condition. Broken, worn, or damaged tools are to be discarded or fixed.

5. Power cords and plugs on portable power tools that have shorted or exposed electrical wiring shall be replaced, repaired, or discarded.

6. Electrically powered tools must be grounded and meet the requirements of 29 CFR 1910 Subpart S.

7. Do not operate tools that have missing or malfunctioning guards. Removing or bypassing guards on tools is prohibited.

8. When work must be performed in a room containing flammable or combustible liquids or gases, use only non-sparking, intrinsically safe tools.

9. Compressed air used for cleaning tools must not exceed 30 pound per square inch of pressure (psi).

10. Store tools properly.

b. Portable Power Tools.

1. Powered tools shall be equipped with a constant pressure switch or control that will shut off power when released, and may have a lock-out control provided that turnoff can be accomplish by a single motion.

2. All hand-held, gasoline-powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the chain saw when the pressure is released.

3. Belt sanding machines shall be provided with guards at each pinch point where the sanding belt runs onto a pulley to effectively prevent the hands, fingers, and clothing of the operator from coming in contact with the pinch points.

4. Grinding machines shall be provided with a guard, work rest and tongue. Work rests and tongue shall be kept adjusted closely to the wheel, with a maximum opening of one-eighth inch for the work rest and one-fourth inch for the tongue. Immediately before mounting a grinding wheel, (a) the wheel shall be closely inspected an sounded by the user (ring test) to make sure it has not been damaged in transit, storage, or otherwise and (b) the spindle speed of the machine shall be checked to be certain that it does not exceed the maximum operating speed marked on the wheel. In the ring test, a small metal rod is tapped on a freely suspended grinding wheel; clear sound indicates that the wheel has no cracks; the wheel with dead sound shall not be mounted.

5. All circular hand-fed ripsaws shall be guarded by a hood which completely encloses that portion of the saw above the table, and that portion of the saw above the material being cut. Each hand-fed circular saw shall be furnished with a spreader to prevent material from squeezing the saw or being thrown back on the operator. Each hand-fed circular ripsaw shall be provided with anti-kickback fingers or dogs so located as to oppose the thrust or tendency of the saw to pick up the material or to throw it back toward the operator. Push sticks or push blocks shall be provided and used at the work place in the several sizes to push the stock into the saw to prevent the

fingers coming in contact with the saw.

c. Lifting Jacks.

1. Use jacks that have a sufficient rating for the load to be lifted and sustained.

2. Each jack used on a regular basis must be inspected to verify the rating once every 6 months by a qualified inspection company. Jacks that are damaged or have expired ratings must be removed from service and tagged. Do not use the jack until the rating has been tested or until repairs are made.

3. Place and secure the load on the jack in a manner that equally balances the load so that it will not shift when lifted.

21.2. EXPLOSIVE ACTUATED FASTENING TOOLS.

Explosive actuated fastening tools shall meet the design requirements in American National Safety Institutes Requirements for Explosive Actuated Fastening Tools, ANSI A10.3-1970.

a. Operators shall be trained and licensed in accordance with state and local requirements and use required personal protective equipment.

b. The tool shall be equipped with a special shield or guard, so that it cannot be fired without it. It should not be able to be fired unless it is being held against the work surface with a force at least 5 pounds greater than the weight of the tool. Firing of the tool shall be dependent upon two distinct and separate operations of the operator.

c. Portable power tool users shall be trained to use them safely and properly. Training will include correct operation, potential hazards, safe work practices, safety features of the tool, maintenance, proper PPE, and the tools action and power supply.

21.3. AIR COMPRESSOR AND RECEIVER.

Compressed air is used to provide a variety of functions including pneumatic pressure to power tools, control electronics, or start engine generators. Requirements for air compressors and receivers include:

a. An identification plate should be affixed to the receiver with the maximum allowable rated pressure. The pressure in the receiver shall not exceed the rated pressure.

b. The compressor and receiver should be located in an area that is easily accessible. All drains, hand-holes, and manholes must be accessible. Do not store materials close to the compressor and receiver that would interfere with accessibility or create an additional hazard. The receiver should never be located underground.

c. All receivers installed after 1974 must be manufactured per the 1968 American Society of Mechanical Engineers (A.S.M.E.) Boiler and Pressure Vessel Code Section VIII.

d. All safety valves used shall be constructed, installed, and maintained per the A.S.M.E. Boiler and Pressure Vessel Code Section VIII.

e. The drain valve must be located at the lowest point of every air receiver and be opened on a weekly basis to drain out any accumulation of water and oil. If the drain valve is an automatic valve, this valve must be tested each month to ensure it functions properly.

f. Receivers must have a pressure gauge and a relief valve attached to regulate pressure buildup. The gauge must be positioned so that it is readily readable. The relief valve should be tested monthly to ensure it is properly releasing the pressure buildup and the pressure does not exceed the maximum allowable working pressure by more than 10 percent.

g. No valve of any type shall be placed between the air receiver and its safety valve or valves.

h. The compressor and receiver should not be used to provide breathing air to air-line respirators unless it is designed for this function and is equipped with filters to remove contaminants, traps to collect water and oil, and a carbon monoxide monitor.

i. Compressed air that will be used for cleaning purposes must be kept below 30 pounds of pressure per square inch (psi).

j. Pneumatic tools that need to have tools attached with retainers must have the retainers in place before operating the tool.

k. Pressure hoses and connections must be rated for the maximum pressure.

21.4. FORK LIFTS - GENERAL REQUIREMENTS.

a. Equipment Standards.

1. Powered Industrial Lift Trucks must meet the design and construction criteria in the American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969.

2. Forklifts shall be equipped with a cage over the driver's compartment to protect from shifting and falling loads, and a vertical load backrest extension when the load presents a hazard to the operator.

3. When used inside buildings, forklifts shall be equipped with backup alarms, a warning horn, and strobe lights.

4. Modifications to forklifts shall not affect capacity or safe operation. All nameplates and markings should remain in place and maintained in a legible condition. All modifications must be approved by the manufacturer or OSHA, otherwise the forklift will be in non-compliance.

b. Operating Standards.

1. Forklifts shall be operated in accordance with all manufacturers' instructions.

2. Operators shall exercise care when approaching doorways, aisle crossings, and other intersections. They shall observe posted speed limits, and keep arms, legs, and other parts of the body within the dimensions of the operator's compartment.

3. Passengers are prohibited on forklifts unless there is an adequate passenger seat and it has been authorized by the Safety Office/manufacturer.

4. Powered forklifts shall not be used in potentially flammable or explosive atmospheres, unless the unit is designated by the manufacturer for such atmospheres.

5. All loads are to be properly stacked and secured, and should the view be obstructed by the load, the operators shall travel with the load trailing and carried as near the floor as possible.

6. Only approved work platforms are to be used to lift workers. Employees are not to be transported while on work platforms.

7. Forklifts shall be parked only in approved places and drip pans used when parking for long periods of time.

8. When leaving a forklift unattended, the operator shall:

   (a) Fully lower the forks.

   (b) Position the control level in neutral.

   (c) Shut the power off.

   (d) Set the parking brakes.

   (e) Block/chock the wheels if the vehicle is parked on an incline.

9. Empty pallets must not be stacked higher than eye level and properly secured.

10. Battery charging shall only be conducted in areas designed for that purpose, and must be designated as a no-smoking area. Facilities shall be provided for flushing and neutralizing spilled battery acid, for protection of charging apparatus from damage by trucks, for adequate ventilation of gasses from charging batteries, and for fire protection.

    (a) Personal protective equipment shall be worn by employees when handling battery acid.

    (b) An emergency eyewash station and/or shower will be located in the immediate area. Eyewash station must be capable of providing continuous flushing for at least 15 minutes.

c. Inspections and Training.

1. Forklifts shall be inspected before each shift for any conditions that may adversely affect their safe operation (see Figure 21-1). Should the forklift be found in need of repair, defective, or in any way unsafe, the supervisor is to be notified and the forklift removed from service immediately.

2. Only authorized personnel who have been trained in the proper operation and maintenance of lift or hand trucks, and are familiar with 29 CFR 1910.178 - Powered Industrial Trucks, shall operate forklifts.

3. In the event of an accident/near miss or a modification to the existing equipment, employee re-training shall be conducted.

Figure 21-1 Forklift Safety Checklist

WILLIAM. J. HUGHES TECHNICAL CENTER

OPERATOR'S DAILY FORKLIFT SAFETY and OPERATIONAL CHECKLIST

Check Before Start of Each Shift

Check one: _____ Gas, LPG or diesel _____ Electric

Date: _____

Truck number	Operator	Supervisors O.K	
Hour meter reading	**Start of day**	**End of day**	**Hours for day**

If a fuel odor is present, DO NOT start the truck!

VISUAL CHECK

pass fail

___ ___ 1. Tires/Wheels: pressure, wear, damage, lugs tight

___ ___ 2. Head/Tail light: damage, function

___ ___ 3. Turn signals: function

___ ___ 4. Operator restraint: damage, function, dirty

___ ___ 5. Warning decals/operators manual: missing, not readable

___ ___ 6. Overhead guard: bent, cracked, loose

___ ___ 7. Load backrest: bent, cracked, loose

OPERATIONAL CHECK

pass fail

___ ___ 1. Engine: rough, noise, leaks

___ ___ 2. Steering: loose, tight

___ ___ 3. Service brakes: leaks, loose grab, low fluid

___ ___ 4. Parking brakes: loose, adjustment

___ ___ 5. Seat belt: loose, adjustment

___ ___ 6. Horn: function

___ ___ 7. Audible alarm: function

___ ___ 8. Engine oil: level, dirty, leaks

___ ___ 9. Hydraulic oil: level, dirty, leaks

___ ___ 10. Radiator: fluid level, dirty, leaks

___ ___ 11. Fuel: level, leaks

___ ___ 12. Battery: connections loose, charge, low fluid

___ ___ 13. Engine belts and hoses: cracked, worn

___ ___ 14. Fuel and air filters (if applicable): dirty, worn

___ ___ 15. Forks: damaged

___ ___ 16. Gauges/instruments: function

___ ___ 17. Mast chains and lines: cracked, bent

___ ___ 8. Lift/lower: loose, sticks, leaks

___ ___ 9. Tilt: lose, sticks, leaks

___ ___ 10. Attachments: function, leaks

___ ___ 11. Transmission (forward/reverse)

___ ___ 12. Cab, if equipped: heater, wipers, defroster

___ ___ 13. Accelerator linkage: smooth, rough

___ ___ 14. Battery test: electric trucks only

- indicator in green with key on

- indicator in green while holding full back tilt

Remarks (explain all items needing attention or repair):

_____

_____

_____

_____

NOTE: This daily checklist conforms with OSHA standard 29 CFR 1910.178, inspection and testing requirements for powered industrial trucks.

CHAPTER 22. CUTTING AND WELDING

22.0. PURPOSE.

Health hazards associated with cutting and welding operations include exposures to metal fumes, toxic vapors and ultraviolet radiation (UV). Safety hazards include burns, eye damage, electrical shock, cuts, and crushed fingers and toes. Many of these hazards can be controlled with proper ventilation and personal protective equipment. The following procedures are to be followed to minimize the risks and exposures to employees.

22.1. OPERATING PROCEDURES.

The following provides minimum guidance on operating precautions and procedures:

a. Provide adequate ventilation in shops or rooms where work is to be performed, but avoid strong drafts directed at the welding work. For highly toxic metals, fluxes or coatings, a local exhaust ventilation (LEV) system should be used as close to the work as possible. Where LEV is not feasible, use of supplied air respirators or air purifying respirators would require prior approval, evaluation and equipment selection by the industrial hygienist.

b. Work must be done in a fire-safe location. Use metal sheets or fire resistant curtains as fire barriers. Floors should be concrete or another fire resistant material. Cracks in the floor should be filled to prevent sparks and molten from entering. Remove combustible materials from the hot work area.

c. Fire extinguishing material shall be readily available, including dry chemical ABC type extinguishers and buckets of sand.

d. Do not place work to be welded or heated directly on a concrete floor. Heat from the arc can cause steam to build up in the concrete which could cause an explosion.

e. Provide adequate guarding for welders and helpers when working on elevated surfaces. Welding areas shall be kept neat, clean, and free from tripping hazards.

f. Personal protective equipment shall be used to protect the operator from heat, sparks and UV radiation.

g. Provide approved personal protective equipment for welders who must enter confined spaces, manholes, or other space restricted areas. Also, provide a means to ensure their quick removal in case of an emergency.

h. Do not perform cutting and welding operations in buildings when the sprinkler system is inoperable, in explosive atmospheres or where explosive atmospheres may develop, or within 35 feet of storage of large quantities of exposed, readily ignitable materials.

i. Insulating mats must be used under the operator if welding must be done on steel or other conductive material.

j. The welder must be properly installed and grounded.

k. Before lighting the torch for the first time each day, allow enough of each gas to flow through its respective hose to purge any flammable gas mixture. Purge hoses in open spaces and away from ignition sources. Light the torch with a friction lighter or stationary pilot flame, keeping a safe distance between the torch and the welder's hands. Point the torch away from persons or combustible materials when lighting. Do not attempt to light a torch from hot metal.

l. Torches shall be equipped with flashback protection.

m. When working in a confined space, the fuel gas and oxygen supply shall be located outside the confined space. The torch and hose should be removed from confined spaces when not in use.

n. Fuel gas and oxygen torch valves shall be closed and the fuel gas and oxygen supply to the torch shall be shut off during lunch or break periods, when not in use for extended periods, and when unattended.

o. Welding torch hoses must be protected from damage by contact with hot metal, open flames, corrosive agents, or sharp edges. Pressure on hoses will be released at the end of each workday. Hoses

must be visually inspected for damage at the beginning of each shift. Hoses showing leaks, cuts, burns, worn spots, or other evidence of deterioration must be repaired or replaced prior to use. Replacement hoses or fittings must be approved for use with acetylene equipment.

p. Shielding shall be provided to protect personnel from heat, sparks, slag, light, and radiation.

22.2. PERSONAL PROTECTIVE EQUIPMENT.

Personnel engaged in or exposed to welding or cutting activities will be provided and use personal protective equipment to include eye and face protection, head protection, foot protection, and body, arm, and hand protection. Such items include fire retardant long sleeve shirts or coveralls without cuffs, leather gauntlet gloves, leather safety boots, goggles, welding helmet or hand shield with filter plate and cover plate for eye protection from UV.

a. Eye Protection. Goggles or spectacles with side shields and suitable filter lenses shall be used at all times during cutting and welding operations.

b. Protective Clothing. All welders shall wear flame-resistant gauntlet gloves and shirts with sleeves of sufficient length and construction to protect the arms from heat, UV radiation, and sparks, fire-resistant aprons, coveralls, and leggings.

c. Respiratory Protection. The Safety Office shall be consulted to determine appropriate levels of respiratory protection to be worn by personnel performing welding operations.

22.3. FIRE PREVENTION AND PROTECTION.

a. Hot work permits are required for all welding, cutting, soldering pipes, melting lead, heating tar kettles in a non-approved area (see chapter 15 Fire Safety). This order also applies to all contractors who during the course of their work may need to perform any cutting, burning, or welding. Approved areas at the Technical Center are as follows:

1. Building 205 Metal Shop Area.
2. Building 300 Metal Shop Area.
3. Building 301 Mod Shop Welding Area.
4. Building 306 East end Shop Area.
5. Building 275 Metal Shop Area.

NOTE: The Vehicle Repair Shop is NOT an Approved Area.

b. Permits are issued by the Fire Inspector. A work order is required before the permit is issued. An inspection of the work area will be conducted to determine that the conditions of the permit have been met. The Fire Inspector shall designate any additional precautions as are deemed necessary and shall sign the permit to authorize work.

1. Hot Work operations shall be stopped if the conditions of the permit change.
2. Before any cutting or welding operation is started, the following conditions must be satisfied for a permit to be issued:

(a) The area within 35 feet of the work must be cleared of any combustible or flammable materials, or protected with guards, covers, or shields.

(b) Combustible floors or equipment in or below the work areas shall be wet down or covered with metal shields or fire retardant blankets or tarps.

(c) Combustible dust or flammable vapor producing machinery or operations in the area shall not be permitted to be operating during the hot work.

(d) Fire protection or detection systems shall be in operation during the work.

(e) Floor and wall openings within 35 feet of the work shall be covered or closed, and all open spouts in the work area shall be sealed or plugged.

(f) The duration of the permit system shall not exceed one shift.

(g) Cutting or welding shall not be permitted on equipment that is operating.

(h) A Fire Watch shall be maintained during the work and for at least 30 minutes after the work is completed.

(i) Fire Watchers shall be familiar with facilities and procedures for sounding an alarm in the event of a fire.

22.4. WELDING AND CUTTING TANKS, CYLINDERS, OR CONTAINERS.

Before any tank, cylinder, or other container is cut, welded, or other hot work is performed, the item shall be purged or made inert. New containers shall also be made inert as they may contain a flammable preservative which could form explosive vapors when heated. Welders shall also ensure that there are no substances such as grease, tars, or acids which, when subjected to heat, might produce explosive or toxic vapors. Any pipelines or connections to the drums, cylinders, tanks, or other containers shall be disconnected or blanked.

22.5. ARC WELDING.

Arc welding equipment shall conform to the design and installation criteria of OSHA 29 CFR 1910.252, Welding, Cutting, and Brazing. The frame or case of the welding machine (except engine-driven machines) shall be grounded as close to the part being welded under the conditions and according to the methods prescribed in OSHA Standard 1910, Subpart S, Electrical, and 1910.252.

22.6. PORTABLE GAS UNITS.

Portable gas welding and cutting equipment must be of a type approved for the use intended. (For additional information on compressed gas cylinders see Chapter 12, section 8).

a. Cylinders of compressed gas must have pressure-reducing regulators installed.

b. Cylinders in use or in a transport must be stored in an upright position and secured to prevent them from falling.

c. Pressure hoses shall be secured to prevent whipping.

d. Oxygen cylinders and fittings shall be kept free of grease and oil at all times.

e. Cylinders shall be kept away from external sources of heat at all times.

f. Cylinders shall not be dropped or handled roughly. Cylinders or welding sets in excess of 40 pounds total weight shall be transported to and from work sites by pushcart or motorized vehicle.

CHAPTER 23. PAINTING OPERATIONS

23.0. PURPOSE.

a. Pressure Equipment. On all air-type spraying equipment a pressure regulator valve shall be installed in the air line between the compressor and painting equipment. A pressure relief valve and a pressure gauge shall be installed between the pressure regulator and pressurized paint containers and/or spray guns. Pressure relief valves shall be set to open at pressures not more than 10 pounds above the required working pressure.

b. Other Equipment. Painter's ladders, scaffolds, and other equipment shall be inspected prior to use to be certain they are in safe condition.

c. Exposures. Personnel engaged in painting operations shall review Material Safety Data Sheets (MSDSs) in order to acquaint themselves with the properties and hazards of the solvents that are used.

d. Protective Equipment. Personnel engaged in painting and paint removal shall wear protective clothing, respiratory devices, if required, and appropriate face, eye, and hand protection. Eye or face protection is required during scraping or paint preparation (abrasive techniques). Clothing shall be changed, as needed, to minimize body contamination.

e. Respiratory Protection. The Safety Office shall be consulted for specific advice on respiratory protection required for specific painting activities.

f. Personal Hygiene. The hands and face shall be kept clean, clothes shall be changed when contaminated, and hands and soiled objects shall be kept out of the mouth. No food or drink shall be brought into, or consumed, in paint shops. Personnel shall wash their hands prior to smoking or consuming food.

23.1. FIRE PREVENTION AND PROTECTION.

Painting operations of particular concern are those utilizing certain paints, lacquers, varnishes, shellacs, solvents, and thinners which are flammable. Solvent materials selected to do the residual clean up, after the initial removal, shall have a flash point of 140F or above.

a. Paint Mixing. Paint mixing shall be done in designated, adequately ventilated rooms constructed of fire-resistant materials. All sources of ignition shall be prohibited in mixing areas. All electrical fixtures or equipment in or within 20 feet of designated paint preparation areas shall meet the requirements of the National Electrical Code (NFPA 70) for Class I Group 2 locations.

b. Housekeeping. Paint rooms, booths, etc., shall be kept clean with equipment stored in a proper and orderly manner. All solvent or paint-soiled rags shall be placed in approved self-closing metal containers plainly marked to indicate the contents. As needed, these containers shall be emptied or removed to an approved location for pick up and disposal.

c. Sprinklers. Fire suppression sprinklers installed in spray finishing areas shall conform to NFPA 13, provisions for extra hazardous occupancy. Dry chemical, carbon dioxide, or halogenated extinguisher systems may be installed where automatic sprinkler protection is not available.

d. Extinguishers. Portable fire extinguishers shall be installed near all paint spraying areas. The Safety Office shall determine the type of extinguisher that is appropriate.

e. Spills. All spills of flammable or combustible liquids shall be cleaned up promptly. With major spills, remove ignition sources, evacuate, and ventilate the area. These liquids shall not be allowed to enter a confined space because of the possibility of an explosion. In the event the spill requires emergency assistance evacuate the area and dial 1111 or 485-5246 from an outside line.

23.2. VENTILATION.

Ventilation and exhaust systems shall be in accordance with the standard for Blower and Exhaust Systems for Vapor Removal, NFPA 91. Mechanical ventilation shall be in operation while spraying operations are being conducted and for a sufficient time thereafter to assure vapors are completely exhausted.

a. Fan Unit. The fan-rotating element and its casing shall be non-sparking. Fan blades shall be mounted on a shaft rigid enough to maintain alignment when the fan is operating under full load.

b. Exhaust Ducts. Exhaust ducts shall be protected against mechanical damage, properly supported, and will normally have a separation of at least 18 inches from combustible materials. Ducts shall be periodically inspected for accumulation of paint deposits and shall be cleaned as needed.

c. Exhaust. Air exhaust from spray operations shall be directed so that it will not contaminate make-up air of other ventilation intakes. Unless the spray booth exhaust duct terminal is from a water-wash spray booth, the terminal discharge point shall be at least 6 feet from any combustible exterior wall or roof.

d. Motors. Electric motors driving exhaust fans shall not be placed inside booths or ducts. Drive belts shall not enter the duct or booth unless the belt and pulley within the duct or booth are enclosed or guarded.

23.3. STORAGE AND HANDLING

a. The quantity of flammable and combustible liquids kept near spraying operations shall be the minimum required for operations but shall not exceed one day's supply.

b. Bulk storage of these liquids shall be in a detached building, or in rooms designed and constructed to meet flammable storage room requirements.

c. No storage of open containers of solvents is permitted. Open containers may only be used for cleaning of painting materials after which the solvent shall be transferred back to a closed container for retention or disposal.

d. Supplies of flammable and combustible liquids shall be stored in approved fire-resistant safety containers equipped with flash screens and self-closing lids.

e. Water base latex paints are exempt from the above requirements.

f. Original closed containers, approved portable tanks, and approved safety cans shall be used for bringing flammable or combustible liquids into spray finishing rooms. Open or glass containers shall not be used.

g. The withdrawal of liquids from containers and the filling of containers, including portable mixing tanks, shall be done only in a mixing room or in a spraying area when the ventilating system is in operation. Precautions shall be taken to protect against liquid spillage.

h. Whenever flammable or combustible liquids are transferred from one container to another, both containers shall be effectively bonded and grounded.

23.4. ELECTRICAL.

a. Electrical Wiring. Electrical wiring and equipment shall conform to the provisions of the National Electrical Code (NEC). Electrical wiring located in spray areas must be rigid metal conduit, Type MI cable, or in metal boxes or fittings containing no taps, splices, or terminal connections. There are alternative electrical wiring options when the location is adjacent to rather than inside a spray area.

b. Electrical Equipment. Electrical equipment outside of, but within 20 feet horizontally and 10 feet vertically, of any spraying area, and not separated from it by partitions extending at least to the boundary of the Group 2 location, shall be of non-spark producing design. This equipment shall also conform to the provisions of NFPA 70, for Class I or Class I, Group 2 locations as applicable. If spraying operations are confined to an enclosed spray booth or room, the space adjacent to the booth or room shall be considered non-hazardous except for the space within 3 feet in all directions from any opening in the booth or room.

c. Grounding. All metal parts of spray booths and exhaust ducts conveying flammable or combustible liquids or aerated combustible solids shall be electrically grounded.

23.5. LOCATION OF PAINT SHOPS AND SPRAY FINISHING OPERATIONS.

a. Paint Shops. Paint shops may be located in specially constructed rooms if they are separated from other operations by fire resistant walls. Paint shops shall be provided with automatic sprinkler protection.

b. Spray Booths. When possible, paint spray booths shall be located in the paint shop. All spray booths shall be installed to conform to NFPA 33.

c. Prohibited Locations. Spray finishing operations shall not be conducted in a building classified as administrative or public assembly unless a room is specifically designed for that purpose, is protected with an automatic sprinkler system, and is separated vertically and horizontally from such

occupancies by not less than 2-hour fire-rated construction.

23.6. AIRLESS PAINT SPRAYING.

a. Never point an airless spray gun at any part of the body. Paint can be injected into the body by the high operating pressures.

b. Do not disconnect the gun from the fluid hose or the hose from the pump until the pressure has been released from the hose.

c. When handling the gun, but not actually spraying, hold the gun by the grip and remove the fingers from the trigger. This will prevent the gun from being activated if the operator should inadvertently tighten his/her hold. Guns should be equipped with trigger guards and a safety lock. The lock should be in the non-operating position except when the gun is actually in use.

d. Check all hose connections and fittings to make sure they are tight and not leaking. The fluid hose must be designed to withstand the high pressure to which it is subjected. The hose, gun, and pressure vessel should be equipped with special fittings that are not interchangeable with low-pressure fittings.

e. Check the fluid hose to be sure that there are no weak or worn spots. Make certain the hose does not contact moving parts of machinery, lie over or around sharp edges and corners, or come near objects that would damage it. Check for deterioration caused by exposure to chemicals or ordinary wear and tear.

f. The object being sprayed, as well as the spray gun, should be grounded to prevent static electricity from being created. Periodic continuity checks should be performed to ensure the hose ground wire is intact.

g. The operator shall wear eye protection and gloves to guard against accidental contact with the spray. Respiratory protective equipment shall be worn if exhaust ventilation is not available. The Safety Office shall be contacted to determine appropriate protective equipment needed for the operation.

23.7. PAINT SPRAY BOOTHS.

a. Extinguishers. Provide portable fire extinguishers adequate to handle the most flammable of the materials being used.

b. Covering. The floor and walls of the paint spray booths shall be covered with a non-combustible material which can be removed and disposed.

c. Hoses and Couplings. Pressure hoses and couplings shall be regularly inspected for condition and shall be replaced as needed. When positive displacement pumps are used, a relief valve shall be installed in the discharge line to prevent overpressure.

23.8. PORTABLE PAINT SPRAY EQUIPMENT.

Such equipment consists of an air compressor, paint spray gun, and hose. The paint reservoir on most portable spray guns holds 1 quart of fluid or less. When a considerable amount of paint is to be applied, a 2 1/2 or 5 gallon pressure tank is usually employed.

a. Compressor. The air compressor shall be equipped with an American Society of Mechanical Engineers (A.S.M.E.) rated air tank, a visible pressure gauge on the tank, a pressure reducer with its own gauge, a guard fully enclosing the drive belt and pulleys, and a pressure limiting switch to shut down the compressor when the system's working pressure has been reached. The equipment should be securely mounted on a wheeled carriage for portability. For interior painting only, electric motor-driven equipment shall be used.

b. Overpressure Protection. When separate paint pressure tanks are used, they shall be equipped with a gauge and a relief valve to prevent overpressure. Hoses shall be rated for the maximum working pressure of the system.

c. Maintenance.

1. A preventive maintenance program shall be implemented to cover periodic inspection and testing of all components.

2. Storage of compressors, hoses, paint pressure tanks, and spray guns shall be in areas designated and approved by the supervisor in conjunction with the Safety Office.

23.9. AEROSOL SPRAY PAINT CANS.

The same general safety and health precautions apply to spray painting from pressurized cans as to spray painting by other means. The following specific items are noted:

a. Storage. Pressurized spray paint cans are to be considered flammable materials and must be stored in appropriate flammable storage cabinets.

b. Disposal. Disposal of malfunctioning paint spray cans still containing paint under pressure shall be in accordance with the hazardous waste disposal procedures.

1. Office waste cans shall not be used for the disposal of spray paint cans.

2. Disposal of wiping rags and other waste materials shall be in self-closing metal containers labeled to indicate the contents.

c. Usage. Spray paint cans must be used in approved areas only. Use in unapproved areas is prohibited.

CHAPTER 24. LEAD-BASED PAINT REMOVAL

24.0. PURPOSE.

Due to the potential exposure of personnel to lead released during abatement of lead-based paint, proposed Environmental Protection Agency (EPA) regulatory authority over lead abatement activities in Federal buildings, and existing regulatory mandates governing the disposal of hazardous wastes, the following procedures shall be adopted in order to reduce the possibility of human exposure and contamination of the environment. Construction activities such as cutting, welding and brazing could also disturb lead based paint.

24.1. IDENTIFICATION OF LEAD-BASED PAINTS (LBP).

The Technical Center owned or operated facilities (not leased spaces) shall be surveyed prior to construction, renovation or modification, to identify the location and condition of lead-based paint materials. Once identified, the LBP shall be assessed for its potential to release dust and for consequent degree of hazard to occupants. Protocols for sampling and assessment shall receive prior approval of the Environmental and Safety Sub-Team. Results of these assessments shall be used to establish abatement action priorities. Facilities considered for acquisition by the WJHTC shall be surveyed for LBP prior to acquisition or sale. The presence of lead on existing painted surfaces shall be determined by sequential use of the following:

a. Knowledge by painters, maintenance personnel, or contractors of a specific paint that has been applied where the manufacturer's Material Safety Data Sheet (MSDS) indicates that there is greater than one percent lead in the paint.

b. All "red or rust-colored," and gray primer coats are assumed to contain lead.

c. Presence of lead as determined by "lead swabs" or any other direct reading procedure or instrument (HUD guideline of 1.0 mg/cm^2 action level for XRF).

d. Analysis by a contracted analytical laboratory certified by the American Industrial Hygienist Association (AIHA) Environmental Lead Laboratory Accreditation Program (HUD guideline of 0.5 percent by weight action level for laboratory analysis).

24.2. LBP ABATEMENT/REMOVAL.

The establishment of abatement action for LBP areas shall be based on results of lead assessment surveys. Lead evaluation and abatement contractors and their employees must be certified by the New Jersey Department of Health and Senior Services as per N.J.A.C. 8:62 Standards for Lead Certification. All abatement and evaluation activities must be done in accordance with N.J.A.C. 5:17 Lead Hazard Evaluation and Abatement Code.

24.3. WORK PRACTICES.

a. Interior building surfaces.

1. All work areas where paint removal or scraping is to be conducted must be sealed off from other work areas. This step includes placing barrier tape across all access areas to the work site and taping 6-mil plastic over all vents, doorways, windows, and other openings into the work site. The level of containment will be contingent upon the magnitude of the abatement project.

2. Personnel shall be instructed not to grind or sand paint areas known to contain lead. Hand scraping is permitted.

3. The work area shall be cleaned periodically during the day by using a combination of a HEPA-filtered vacuum and wiping down the area using damp cloths.

4. Each work area where employee exposure to lead exceeds the PEL shall be posted with warning signs.

b. Exterior Building Surfaces. When removing lead-containing paint from the exterior of FAA buildings, the following occupational health/environmental guidelines shall be followed:

1. Special precautions shall be taken when working near air intakes, doors, and windows. Air intakes shall be protected by construction of a wood frame and plastic sheeting barrier and shall be of such a size to ensure that air is pulled from uncontaminated areas. Door and windows shall remain closed and shall be sealed with duct tape and/or plastic sheeting.

2. Physical barriers shall be set up around the work area to prevent pedestrian traffic through the work site.

3. Loose and flaking paint should be removed by manually scraping the surfaces of the building. Sanding or grinding will not be permitted.

4. A drop cloth shall be placed directly and completely under the work area. Paint chips shall be collected periodically throughout the day and at the end of the work day and shall be placed in a container with a tight fitting lid or sealed in a plastic bag (6 mil).

c. Abrasive blasting units.

1. Removal of paints containing lead or other heavy metals must be conducted in a sealed abrasive blasting unit equipped with a high efficiency particulate air (HEPA) filter.

2. Non-silica containing abrasive media is preferred (steel or iron shot/grit) as free silica represents a respiratory health hazard.

3. The abrasive blasting media should be used to its fullest extent prior to disposal.

4. Institute the protective measures listed below when cleaning out an abrasive blasting unit.

d. Alternative Means

1. LBP can be made inaccessible by encapsulating with material that bonds to the paint surface. (epoxy or acrylic coatings)

2. LBP can also be made inaccessible by fully enclosing it with materials such as sheetrock or aluminum or vinyl siding.

3. Wet blasting and the use of heat guns are also acceptable abatement practices, as per N.J.A.C. 5:17.

24.4. GENERAL PRACTICES.

a. Personnel shall remove contaminated clothing prior to leaving the work site for breaks, lunch, and at the end of the work day.

b. All surfaces shall be maintained as free as practicable of accumulation of lead-based paint debris.

c. All waste materials, including used disposable clothing, respirator cartridges, plastic, etc; shall be placed in a plastic bag or other container as appropriate and sealed.

d. All tools and equipment used on the project shall be wet-wiped prior to removal from the work site.

e. After the waste containers are sealed, the outside of the container shall be decontaminated and labeled prior to being taken off-site for disposal.

f. All lead contaminated equipment and clothing sent out for cleaning shall be labeled as regulated.

24.5. PROTECTIVE MEASURES.

a. All personnel shall wear respiratory protection (half-mask, dual cartridge with HEPA filters, at a minimum) and full-body disposable clothing. Personnel shall have a current medical clearance to wear a respirator and have been fit-tested with their respirator.

b. For abrasive blasting where containment is required, negative pressure must be maintained in the work space. The work space must be equipped with dust collection and air cleaning devices.

c. Personnel shall also be provided and instructed to wear a face shield or vented goggles, gloves, head coverings, and disposable shoe coverlets.

d. Personnel are not permitted to eat, drink, or smoke in or near the work area.

e. Personnel shall be instructed to wash their face and hands before eating, drinking, or smoking and before leaving the work area for breaks or lunch.

f. All personnel involved in lead-based paint removal shall shower at the end of the shift before going home to prevent contamination of their vehicle and exposure of family members and others to lead-containing dust.

g. Personal exposure monitoring will be conducted for all personnel participating in lead abatement activities in order to determine their potential exposures to lead dust. The results of this monitoring will also be used to determine if personnel need to be enrolled in a medical surveillance program for lead.

h. The OSHA Lead Standards for General Industry (29 CFR 1910.1025) and Construction (29 CFR 1926.62) require employers to provide biological monitoring for workers exposed to airborne lead

above the action level (50 ug/m^3 for an 8 hour workday). Monitoring must be provided for lead and zinc protoporphyrin (or free erythrocyte protoporphyrin) in blood. The employer is required to have these analyses performed by a laboratory that meets accuracy requirements specified by OSHA.

24.6. CUTTING/BRAZING/WELDING

The Safety Office must be contacted prior to any cutting/brazing/welding activities involving LBP or suspected LBP. The Safety Office will confirm the presence of lead and prescribe the necessary safety precautions. These precautions may include additional local exhaust or the use of an appropriate respirator. See Chapter 22 Cutting and Welding for other safety measures.

24.7. WASTE DISPOSAL

a. Removal. Lead contaminated material shall be prepared for removal by saturating it with a water/surfactant mixture applied in a fine mist. Containerization will require double-bagging with either 6-mil thick (minimum) leak-tight plastic bags or plastic-lined drums. Bags and/or drums shall be sealed and tagged on the outside with the appropriate warning label.

b. Disposal. Waste material shall be shipped to an EPA-approved solid waste landfill by a disposal firm approved by the EPA for transport and disposal of lead containing waste.

c. Manifests. Copies of all transport and disposal manifests for lead waste shall be submitted to the hazardous waste coordinator for the facility from which the lead was removed. As a minimum, the manifest must include: name and address of generator, name and address of pick-up site, estimated quantity of waste, types of containers used, and disposal site. Copies of the manifest shall be maintained by the hazardous waste coordinator for a minimum of 5 years.

24.8. OTHER WASTES.

Materials known to have been painted with a lead-based paint such as scrap metal (old filing cabinets, HVAC ducts, etc.) should be turned in for recycling. Contact the Safety Office if there are any questions on disposal of other materials.

CHAPTER 25. WORKING AT ELEVATIONS

25.0. POLICY.

These procedures are designed to prevent the injury of Technical Center personnel due to falls or slips any time personnel are working on portable stairs, ladders, or scaffolding, or at elevations of more than 6 feet above grade.

25.1 RESPONSIBILITIES.

a. Safety Manager/Environmental Protection Specialist/Safety Specialist shall:

1. Identify activities on elevated work platforms, ladders, and scaffolding that require climbing and fall protection.

2. Provide climbing and fall protection equipment to employees who are required to wear the equipment while working on elevated work platforms, ladders, and scaffolding.

3. Identify employees that need climbing and fall protection training.

4. Provide training for employees who work on elevated work platforms, ladders, and scaffolding. Ensure that the employees acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned as defined in 29 CFR 1910 Subpart D and F and 29 CFR 1926 Subpart M.

5. Provide for, and document a complete annual inspection of climbing and fall protection equipment per the manufacturer's requirements.

6. Utilize the Competent Person as needed.

b. 1st Line Supervisors shall:

1. Assist in identifying activities on elevated work platforms, ladders, and scaffolding that require climbing and fall protection.

2. Ensure that climbing and fall protection equipment is properly used, inspected and maintained including a complete annual inspection per manufacturers' requirements.

3. Ensure that the Fall Protection checklists are filled out as appropriate by the Authorized Climber.

4. Utilize the Competent Person as needed.

c. Personnel shall:

1. Notify their supervisor when working on an elevated work platform, ladder, or scaffolding.

2. Properly use, inspect, and maintain climbing and fall protective equipment.

3. Notify their supervisor whenever climbing and fall protective equipment becomes defective and must be repaired or replaced.

4. Never attempt any activity on an elevated work platform, fixed ladder, or scaffolding, which may be considered a fall hazard without wearing fall protection equipment.

5. Fall protection is required on portable ladders when three points of contact cannot be maintained.

6. Utilize the Competent Person as needed.

25.2. LADDERS.

Hazards are minimized if workers adhere to proper ladder safety practices and if supervisors ensure equipment is used, inspected, and maintained in good condition. Tasks which require frequent use of ladders and involve significant climbing effort must be accomplished by workers capable of the physical exertion required under these conditions.

a. Requirements.

1. Portable ladders procured for the Technical Center shall meet the design and construction specification of OSHA 29 CFR 1910.25 for wood ladders and 29 CFR 1910.26 for metal ladders. Portable ladders constructed of reinforced plastic shall meet the specifications of ANSI A14.5-1974.

2. The maximum allowable lengths of portable ladders are:

(a) Stepladders - 20 feet.

(b) Straight ladders - 30 feet.

(c) Extension ladders - 60 feet – with minimum section overlap of 3 feet.

3. Wooden parts used in construction of ladders should be straight-grained, thoroughly seasoned, smoothly dressed, and free of sharp edges, splinters, checks, decay, and other defects. Rungs must be parallel, level and uniformly spaced. The spacing shall not be more than 12 inches.

   Wooden ladders will be provided with a suitable protective coating such as boiled linseed oil, clear varnish, or clear lacquer. Wood ladders shall not be painted with an opaque coating, since possible defects may be covered up.

4. Portable ladders shall be equipped with non-slip bases such as safety feet or spikes, depending upon the type of usage.

5. Personnel shall not use portable metal ladders when performing work on or near electrical equipment. Wood or reinforced plastic ladders shall be used for work on or near electrical equipment. They will be kept clean. Remove all surface buildup of dirt, grease, or oils to avoid creating a ready path for electrical current.

6. Care of Ladders.

   (a) Handle ladders with care. Do not drop, jar, or misuse them.

   (b) Ladders shall be stored in a manner that will provide easy access for inspection and will permit safe withdrawal for use. They shall not be stored in a manner that presents a tripping hazard and not where they can fall on someone. They shall be stored in a manner that will prevent sagging.

   (c) Lubricate metal bearings of locks, wheels, pulleys, as required.

   (d) Replace frayed or badly worn rope.

   (e) Keep safety feet and other parts in good condition to ensure they work.

   (f) Maintain ladders in good condition. Inspect ladders prior to and after use.

   (g) Ladders with defects which cannot be immediately repaired, shall be tagged, removed from service for repair, or discarded. Do not attempt to straighten or use a bent ladder made of reinforced plastic.

   (h) Rungs or steps on metal ladders that are not corrugated, knurled, or dimpled will have skid-resistant materials applied.

b. Proper Use of Ladders.

The correct procedures for using ladders are as follows:

1. The foot of a ladder shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one quarter of the working length of the ladder. The ladder shall be placed to prevent slipping, be lashed, or manually held in position.

2. Ladders shall not be used by more than one person at a time. Ladders specially designed to support greater loads shall be used in combination with ladder jacks and scaffold planks when an operation requires more than one person.

3. Place portable ladders so that the side rails have a secure footing. The top rest for portable rung and cleat ladders will be reasonably rigid and will have adequate strength to support the applied load.

4. Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked open, locked, or guarded.

5. Do not place ladders on boxes, barrels, or other unstable bases to obtain additional height.

6. To support the top of the ladder at a window opening, attach a board across the back of the ladder, extending across the window to provide firm support against the building walls or window frames.

7. When ascending or descending, users shall face the ladder and use both hands.

8. Ladders with broken or missing steps, rungs,

or cleats, broken side rails, or other defects shall not be used and taken out of service immediately.

9. Do not splice short ladders together to provide long sections.

10. Do not use ladders made by fastening cleats across a single rail.

11. Do not use ladders as guys, braces, skids, horizontal platforms, or scaffolds, or for other than their intended purposes.

12. Do not use a ladder to aid access to a roof unless the top of the ladder extends at least 3 feet above the point of support, at the eaves, gutter, or roof line. Always raise extension ladders so that the upper section overlaps and rests on the bottom section. The upper section will always overlap on the climbing side of the extension ladder.

13. Non-slip bases are not intended as a substitute for care in safely placing, lashing, or holding a ladder that is being used upon oily, metal, concrete, or slippery surfaces.

14. The bracing on the back legs of step ladders is designed solely for increasing stability and not for climbing.

15. Hooks may be attached at or near the top of portable ladders to provide added stability.

16. When the ladder can be knocked over by others who are working in the area, the ladder will be securely fastened. As an alternative, someone will be assigned to steady the bottom, or the area around the ladder will be roped off.

17. Workers shall not stand higher that the third rung/step from the ladder top and shall not attempt to reach beyond a normal arm's length.

25.3. SCAFFOLDING AND ELEVATED PLATFORMS.

a. Only tube and coupler or tubular welded frame scaffolding shall be used by personnel. It shall be erected according to OSHA 29 CFR 1910.28.

b. All platforms or scaffolds shall be inspected by the supervisor before use.

c. All elevated platforms shall be surrounded by a standard guardrail, securely fastened to a stationary object, and have a floor capable of withstanding a working load of 75 pounds per square foot.

d. Scaffolds with wheels constructed on the base (bottom) section shall not be used unless all wheels are intact and at least one wheel on each side is locked to prevent movement.

e. The following are general scaffolding rules:

1. Know scaffolding safety rules to be followed for set up, during operations, and for dismantling of scaffolding. Ensure manufacturer's instructions and safety warnings are legible and remain on scaffolding.

2. Inspect the equipment before use for damage or deterioration.

3. Keep equipment in good repair.

4. Inspect erected scaffolds regularly to ensure they are maintained in a safe condition.

5. Provide adequate sills and posts and use base plates.

6. Anchor wall scaffolds securely between structure and scaffold.

7. Use caution when working near power lines. Never be any closer than 10 feet to electrical power lines.

8. Use adjusting screws instead of blocking to adjust for uneven grades. Use outriggers where so equipped.

9. Equip all planked areas with proper guardrails and toe-boards.

10. Do not leave materials and equipment on the platform when moving scaffolding.

11. Do not try to move rolling scaffolding without help.

12. Do not extend adjusting screws over 12 inches.

13. Do not ride rolling scaffolding.

14. Do not let working platform height exceed four times the smallest base dimension unless guyed or otherwise stabilized.

15. Do not overload scaffold.

16. Do not use ladders or makeshift devices on top of scaffolds to increase height.

17. Ensure the footing and anchorage for scaffolds are sound, rigid, and capable of carrying the maximum intended load. Do not use unstable objects such as barrels, boxes, loose bricks, or concrete blocks, etc., to support scaffolds or planks.

25.4. ROOFTOP WORK

If the rooftop to be worked on is not provided with an adequate guardrail, the following procedures shall apply:

a. No employee shall come within 10 feet of the roof's edge without using a fall restraint system. This can be a lifebelt or harness securely attached to an anchored rope or line, with the entire system being capable of supporting a minimum dead weight of 5,400 pounds.

b. No employee shall work on the rooftop if the wind speed exceeds 20 miles per hour.

25.5. PERSONAL FALL ARREST SYSTEMS.

Personal fall arrest systems shall be used by employees when working at unguarded elevations of 6 feet or higher. This equipment is designed to be passive and therefore does not provide an employee with support until a fall occurs. Fall arrest equipment prevents a worker from coming in contact with the ground or lower levels of a structure and shall be designed so that an employee shall not free-fall more than 6 feet. Personal fall arrest equipment shall be inspected daily, before each use, and when in doubt of their ability to function properly.

a. The selection and use of personal fall arrest systems shall be determined by a qualified person. The selection of personal fall arrest systems is based on the work task, environmental conditions, employee size, fall hazard, lanyard length, and the type and position of the anchorage point.

1. The components of a personal fall arrest systems shall be marked in accordance with American National Standards Institute, Inc. (ANSI) described in ANSI A10.14-1991, American National Standard for Construction and Demolition Operations- Requirements for Safety Belts, Harnesses, Lanyards, and Lifelines for Construction and Demolition Use and include the manufacturer's name, model number, date of manufacture, and type of body belt, harness, positioning device, lifeline, or lanyard.

2. The markings shall be indelibly printed or stamped onto the equipment or securely tagged to the equipment.

3. Personal fall arrest systems shall not be used for any other purpose except its intended application.

4. Employees shall only use system components that are compatible.

b. Fall protection systems consist of three main components: personal protective devices, connecting devices, and the anchorage point or "tie-off point."

1. Personal protective devices include full body harnesses which are designed for vertical restraint and/or fall arrest protection and must meet the testing requirements described in ANSI A10.14-1991.

2. Connecting devices-lifelines.

(a) Lifelines may be attached directly to the body harness or body belt or a lanyard.

(b) Lifelines shall consist of one continuous line.

(c) Vertical lifelines shall be used by only one person at a time. Horizontal lifelines can provide fall protection for a maximum of two workers at a time as long as it meets the 5,000 pounds per person in load factors.

(d) Lifelines shall be used in conjunction with a rope grab or other free-fall locking device.

(e) FAA employees shall not use natural fiber ropes as lifelines. Wire ropes shall not be used where electrical hazards are present.

3. Connecting devices--lanyards.

(a) Lanyards are flexible lines used to attach a body belt or body harness to a lifeline or directly to an attachment or anchor point.

(b) Lanyards shall limit a worker's fall to a maximum of 6 feet or less without the possibility of contacting a lower level.

(c) Snap-hooks with openings larger than 5/8 inch shall have a warning label attached that specifies the minimum diameter ring the hook can be attached to without the occurrence of an accidental release.

(d) Snap-hooks may become unattached if: two snap-hooks are connected together, two snap-hooks are attached to the same D-ring, a snap-hook is connected to a belt webbing loop, or the snap-hook is connected back on its integral lanyard.

(e) Lanyards shall have a built-in shock absorbing device to reduce a workers fall arresting force by 65 percent to 80 percent.

4. Anchorage points are used to attach lifelines, lanyards, or deceleration devices to a stationary point capable of supporting a worker in the event of a fall. Anchorage points shall be able to sustain a minimum of 5,000 pounds per anchorage point per person.

(a) Anchorage points are a critical part of a fall protection system and it is very important that employees tie-off completely as trained.

(b) A tie-off point shall be selected that is capable of meeting weight support requirements and provide the worker the necessary clearance in the event of a fall.

5. Inspect all components of personal fall arrest systems prior to each use.

c. General Inspection Requirements.

1. Employees shall visually inspect the personal fall arrest systems components prior to putting the equipment on and attaching the equipment.

2. Inspect the equipment for any signs of cracks, cuts, tears, wear, deterioration, stretching, or defects of any kind.

3. Any time a fall occurs, the supervisor shall be notified and an investigation conducted to determine the cause of the fall.

(a) Body Harnesses.

(1) Inspect the straps of a body harness by grasping the strap material approximately 6 inches apart and bend the material in an inverted "U" shape. Visually check for damaged or cut fibers in the material. As of January 1, 1998, body belts are not to be used for fall restraint but ONLY for work positioning,

(2) Examine the D-rings for cracks, breaks, distortion, or sharp edges. The D-rings must be securely fastened to the belt or harness by stitching and/or rivets.

(3) The buckle and attaching devices shall then be inspected for deformities and any deficiencies revealed during the inspection shall be documented by the employee.

(4) A fall protection system determined to be unsafe shall be immediately taken out of service and appropriately tagged. Personnel shall notify the supervisor that the equipment is unsafe. Each inspection shall be documented in writing and records shall be maintained with the Safety Office.

(5) Fall protection equipment, subjected to the stresses of a fall, shall be immediately pulled from service. It shall be sent back to its manufacturer for repair and/or re-certification. When it is sent back, a brief description of the fall shall be included with the equipment.

(6) Thoroughly inspect on a daily basis for frayed threads, cuts, burns, tears, or loose connections. Inspection of the stitched areas must be looked at closely. If there are more than 2 torn/broken stitches in any given stitch block, the harness must be removed from service until such time it can be repaired. In the event it can not be repaired it should be destroyed to prevent further use.

(b) Lifelines.

(1) The employee shall inspect the entire length of the rope for cuts, fraying, or broken strands.

(2) Inspect the rope by twisting the rope

in the opposite direction it was woven to reveal the internal strands. Wire ropes shall be inspected by using the same twisting procedure.

(3) Deficiencies revealed during the inspection shall be documented by the employee. Ropes that are determined to be unsafe shall be immediately removed from service and appropriately tagged.

(4) Ropes used as lifelines shall not be used for another purpose other than fall protection.

(c) Lanyards.

(1) Inspect the snap-hooks for distortion, cracks, corrosion, or pitted surfaces. The minimum breaking strength for synthetic rope lanyards according to ANSI standards is 8,500 pounds. Retire the lanyard under the following conditions:

(A) After any fall;

(B) When the integral energy absorber has been expended even slightly (if used);

(C) If the lanyard has been used for any purpose other than fall protection;

(D) If there are any defects in the lanyard.

(2) All mechanical components of the snap-hook shall be in good working order. The thimble shall be seated properly in the eye of the splice and shall be free from cracks, distortion, and sharp edges.

(3) Rope and steel lanyard lines shall be inspected by the same twisting process described for lifeline inspections.

(4) Web lanyards shall be inspected by bending the webbing over a round surface and checking for cuts, cracks, and other signs of obvious damage.

(5) Shock absorbing lanyards shall also be inspected for any damage to the shock absorbing mechanism.

(6) Deficiencies revealed during the inspection shall be documented by the employee. Lanyards determined to be unsafe shall be immediately removed from service and appropriately tagged. The snap hooks shall be cut off to prevent any further use.

(d) Snap hooks**.** All snap hooks must be self-closing and self-locking due to the hazards associated with roll out (accidental disengagement of connectors). Manual locking snap hooks do not carry ANSI approval. All snap hooks, carabineers, D-rings, and O-rings shall with stand a force of 5,000 pounds (ANSI Z 3591.1992). All snap hooks, D-rings, and O-rings shall be subjected to a proof load testing of 3,600 pounds (OSHA). As of January 1, 1998, the use of non-locking snap hooks as part of personal fall arrest systems and positioning devices is prohibited.

d. The manufacturer's recommendations for storage and maintenance shall be strictly followed by FAA employees in order to protect the integrity of the fall protection equipment.

Equipment shall be stored in a cool, dry environment, not exposed to direct sunlight, and free of chemical contaminants.

e. Warning line systems may be used in combination with other fall protection systems for employees working on low slope roofs. The warning line system shall:

1. Be erected, not less than 6 feet from the roof's edge, around all sides of the roof.

2. Consist of ropes, wires, or chains, and supporting stanchions.

3. If low slope roof work occurs within 6 feet of the roof's edge, another means of fall protection shall be used.

f. Controlled Access Zones may be used in combination with other fall protection systems for employees working on low slope roofs. The Controlled Access Zones shall:

1. Use a control line or other means to restrict access to the roof work.

2. Be erected not less than 6 feet from the roofs edge and extend the entire length and parallel the edge.

3. Be connected to a guardrail or wall.

g. Safety monitoring systems may be used for fall prevention when FAA employees are working on low slope roofs. The FAA shall designate a competent person to monitor the safety of other employees. The safety monitor shall comply with the following:

1. The safety monitor shall be competent to recognize fall hazards.

2. The safety monitor shall warn the employee of the fall hazard and let the employee know if they are acting in an unsafe manner.

3. The safety monitor shall be in continual visual sighting distance of the employees being monitored.

4. The safety monitor shall be close enough to communicate orally with the employees.

5. The safety monitor shall not have other responsibilities that could take the monitor's attention away from the monitoring function.

25.6. TRAINING PROGRAM.

The FAA shall provide training for employees, subject to potential fall hazards. The employee shall be trained to recognize fall hazards and follow the safest procedures in order to minimize these hazards. The training shall be taught by a qualified person and shall include the following topics:

a. The nature of fall hazards in the work area.

b. Correct procedures for erecting, maintaining, dissembling, and inspecting the fall protection systems.

c. Use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, and controlled access zones.

d. Correct procedure for the handling, storage and inspection of fall protection equipment.

e. Contents of 29 CFR 1926 subpart M.

f. FAA shall provide a written certification record of fall protection training for each trained employee.

g. Retraining is required when:

1. There is reason to believe that an employee does not have the understanding and skill required by the original training.

2. There are changes in the workplace or type of job.

3. There are changes in the types of fall protection or equipment to be used.

Figure 25-1

Anchorage Plates

Inspection Checklist/Log

Anchorage Plate Model: _____ Manufacture Date: _____ Purchase Date: _____

Serial Number: _____ Lot Number: _____

Comments:

_____

_____

General Factors	Accepted/ Rejected	Supportive Details/Comments
Physical Damage: Inspect for cracks, sharp edges, burrs, and deformities.	⬭ Accepted Rejected ⬭	
Excessive Corrosion: Inspect for corrosion that effects the operation and/or strength.	⬭ Accepted Rejected ⬭	
Fasteners: Inspect for corrosion, tightness, damage, and distortion. If welded, inspect weld for corrosion, cracks, and damage.	⬭ Accepted Rejected ⬭	
Markings: Inspect, make certain marking(s) are legible.	⬭ Accepted Rejected ⬭	

Overall Disposition: ⬭ Accepted Inspected By: _____

Rejected ⬭ Date Inspected: _____

Figure 25-2

Full Body Harness

Inspection Checklist/Log

Harness Model: _____ Manufacture Date: _____ Purchase Date: _____

Serial Number: _____ Lot Number: _____

Comments:

_____

_____

General Factors	Accepted/ Rejected	Supportive Details/Comments
Hardware: (includes D-rings, buckles, keepers, and back pads) Inspect for damage, distortion, sharp edges, burrs, cracks, and corrosion.	⬭ Accepted Rejected ⬭	
Webbing: Inspect for cuts, burns, tears, abrasion, frays, excessive soiling, and discoloration.	⬭ Accepted Rejected ⬭	
Stitching: Inspect for pulled or cut stitches.	⬭ Accepted Rejected ⬭	
Labels: Inspect, make certain all labels are securely held in place and legible.	⬭ Accepted Rejected ⬭	
	⬭ Accepted Rejected ⬭	

Overall Disposition: ⬭ Accepted Inspected By: _____

Rejected ⬭ Date Inspected: _____

CHAPTER 26. EXCAVATION AND TRENCHING

26.0. PURPOSE.

The walls and faces of excavations and trenches over 5 feet, where workers may be exposed to danger, shall be guarded by a shoring system, sloping of the ground, or some other equivalent means. Trenches less than 5 feet deep with hazardous soil conditions shall also be effectively protected.

The following guidelines are provided:

a. Appropriate trench boxes and/or shields may be used in lieu of shoring or sloping.

b. Tools, equipment, and excavated material shall be kept 2 feet or more from the lip of the trench. Where employees are required to be in or work in trenches 4 feet deep or more, an adequate means of exit such as ladders or steps shall be provided within 25 feet of travel and used.

c. Daily inspections shall be made of trenches and excavations by the supervisor in charge to ensure adequate slopes, shoring and bracing, and that there is no evidence of possible slides or cave-ins. More frequent inspections may be necessary as work progresses or after inclement weather conditions, such as rain, or where loose compacted or unstable materials are present.

d. Workers shall take extra care when hand excavating in close proximity to utilities to preclude interruption of services and personnel injury and/or equipment damage which can result from breaking electrical, gas, and steam lines.

e. Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

f. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

26.1. EXCAVATION AND TRENCHING.

Prior to any excavation or trenching activities, a site evaluation shall be performed to identify, reduce, and/or eliminate potential hazards associated with excavation or trenching activities.

a. Remove all surface hazards from the excavation site.

b. Identification of underground utilities requires two agency verifications. The first is done through the Center by placing a Trouble Desk request by phoning 5-4122 at least 2 weeks in advance of the proposed work. In addition, the New Jersey One Call number must be contacted at 1-800-272-1000 at least three (3) full working days, but not more than ten (10) days, prior to the planned start date of the digging operations.

c. While the excavation is open, the site shall be barricaded and posted to protect FAA employees, other employees, and visitors from all exposed hazards.

26.2. EXCAVATION AND TRENCHING PROTECTIVE SYSTEMS.

a. General Requirements For Protection Systems.

1. A protection system must be utilized in all excavations that have a depth in excess of 5 feet. Protective systems are not required if the excavation is in entirely stable rock or the excavation is less than 5 feet deep with no indication of cave-ins as determined by a competent person.

2. Design plans for protection systems shall specify the sizes, types, and the material configuration.

3. A copy of the design shall be on site at the excavation site during construction activities.

4 All protection systems must be inspected daily for defects and hazardous conditions.

5. Materials and equipment must be maintained free from defects or damage.

6. If equipment is found to be defective, it shall be immediately removed from service until it

can be inspected by a registered professional engineer.

7. Excavation of material below a support shall be no greater than 2 feet past the bottom of a protective system to prevent cave-ins.

b. Sloping and Benching Systems.

1. Sloping and benching systems are a control means to prevent cave-ins at excavation sites. Sloping is a method of preventing cave-in hazards by removing soil to form sides that are inclined away from the excavation. The angle of incline required to prevent cave-ins varies with factors such as soil type, external vibration, load factors, and other conditions.

2. Benching is a means of preventing cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps with vertical or near-vertical sides between levels.

3. Sloping and benching protective systems must be designed in accordance with the requirements and specifications found in Appendix B of 29 CFR 1926.653. Sloping and benching systems not conforming to the above requirements must be approved in writing by a registered professional engineer.

c. Shield and Shoring Systems.

1. A shield system or "trench box" is a structure that is placed in an excavation to prevent cave-ins. Shields can be permanent structures or portable and can move across a project location or area as work progresses. Trench boxes are very common in utility trenching because they can be moved easily and utility excavations are generally uniform in size. Shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652 (c)(3). Shield systems must not be used in trenches that could exceed their structural support rating. Personnel are not permitted in excavations utilizing shield systems while the shields are being moved or placed into position.

2. A shoring system is a structure that utilizes metal or timber supports with hydraulic or mechanical bracing to support the sides of an excavation against cave-ins. Shoring systems are usually constructed in an excavation and are installed and removed in an orderly process to prevent cave-ins. Removal must begin at the bottom of the excavation and progress slowly up to allow for the authorized person to check for signs of stress in the excavation. Designs of shoring systems shall comply with the standards and specifications outlined in 29 CFR 1926.652 Appendices A, C, and D.

3. Shield and shoring systems not complying with the standards outlined in 29 CFR 1926.652 must be approved in writing by a registered professional engineer.

26.3. ACCESS AND EGRESS.

a. Personnel who enter excavations will be provided with a safe means of access and egress from excavations. Access and egress should be provided by ramps, ladders, stairways, or other means.

b. Structural ramps used, as a means of access or egress by employees or equipment must be designed by a competent person qualified in structural design.

c. A stairway, ladder, ramp, or other means of egress is required in all trenches and excavations that are 4 feet or more deep. The means of egress must be placed so that it requires no more than 25 feet of lateral travel by an employee to reach it.

26.4. EXPOSURE TO VEHICULAR TRAFFIC.

Excavations located near moving traffic or sources of vibrations, such as airport runways, present cave-in hazards to employees. Protect employees from traffic hazards by one of the following methods:

a. Warn or reroute traffic away from excavations

b. Post signs, barricades, or flag persons to prevent vehicles or personnel from getting too close to excavation boundaries.

c. Wear reflective or highly visible warning vests to make employees more visible to traffic. Reflective or other high-visibility warning vests must be provided and worn when working in areas exposed to public vehicular traffic.

d. Install a protective system capable of withstanding the increased loads that may be placed on the excavation as a result of local traffic or other sources of soil vibration.

CHAPTER 27. MOTOR VEHICLE SAFETY

27.0. PURPOSE.

It is the policy of the William J. Hughes Technical Center that the Motor Vehicle Safety Program be implemented for the safety of all individuals who participate in this program.

27.1. GENERAL REQUIREMENTS.

a. Motor Vehicle. Procedures prior to operating a government motor vehicle:

1. The driver of the vehicle should take the time to become familiar with the location and operation of the gauges, turn signals, head lights, windshield wipers, climate controls, and radio.

2. Ensure that the seat is comfortably adjusted and securely fasten the seat belt.

3. All passengers are required to wear seat belts while the vehicle is in operation.

4. Adjust the side mirrors and the rearview mirror so that the driver is able to see other traffic around them while driving.

5. All individuals operating a vehicle shall adhere to all applicable state laws of public roadways.

6. The driver should not attempt to operate a vehicle if tired, fatigued, or if mentally restrained due to medications.

7. Contractors can only drive on official business in government-owned vehicles if liability insurance is in their contract agreement.

8. Prior to driving a government vehicle offsite on official business, an employee must obtain a driving authorization from the Dispatch Clerk if driving outside Atlantic County.

9. Use of cellular phones by the driver shall not be permitted while the vehicle is moving.

10. When driving in Airport Operations Areas (AOA), all rules must be followed and driver must have gone through proper AOA training.

b. Maintenance, Repair, and Inspection.

1. Tires.

   (a) Ensure that all tires have the correct air pressure specified for the tire.

   (b) Ensure there is an adequate amount of tire tread on each tire. Replace worn tires as soon as possible.

2. Seat Belts. Inspect the seat belt buckle to ensure it locks securely in place, check the webbing for defects and wear, and report any defective seat belts to the supervisor immediately.

3. Engine. Inspect/ensure that all engine fluids are at a safe level: oil, transmission, battery terminals, etc.

4. Lights.

   (a) Turn signal lights shall be in proper working order, in the front and rear of the vehicle.

   (b) Ensure that the low beam and high beam lights are working.

   (c) Instrument lights on the dash board of the vehicle shall be working properly so that dashboard gauges are readable during night driving.

   (d) Ensure that brake lights on the vehicle are working.

   (e) Ensure that the emergency flashers in the front and rear of the vehicle are in proper working order.

5. Windshield.

   (a) Notify the supervisor and motor fleet manager if the windshield is cracked or has excessive pitting or chips.

   (b) Ensure that windshield wipers and blades are in proper working condition.

   (c) Ensure there is plenty of windshield wiper fluid in the reservoir.

6. Brakes.

   (a) Brake shoes should be routinely checked for wear and damage.

   (b) The brake fluid reservoir should be checked at the same time the brake shoes are inspected to ensure that there is a sufficient quantity of brake fluid.

c. Emergency Equipment. The following is a list of equipment that should be present in vehicles used for FAA business:

1. Fire extinguishers.

2. Warning flares.

3. First aid kit.

d. Training. All employees that will be operating a government motor vehicle will be required to undergo defensive driving training.

27.2. MOTOR VEHICLE ACCIDENT REPORTING.

a. Stay at the scene of the accident and take precautions to prevent any further accidents.

b. Evaluate the physical condition of other people involved to identify any injuries.

c. Notify the police and supervisor immediately. The Safety Office shall be notified within 24 hours.

d. Obtain the names, addresses, and license numbers, and names and addresses of the insurance companies for all drivers involved in the accident.

e. Obtain the names and addresses of any witnesses.

f. Make notes regarding the events of the accident and include the time of day, weather conditions, location, and the extent of damage to all vehicles.

g. Employees (both Federal and Contractor) involved in any auto mishap involving a government vehicle or personal vehicle shall agree to register for defensive driving training when the next class is scheduled.

CHAPTER 28. WELLNESS PROGRAM ACTIVITIES

28.0. PURPOSE.

The Technical Center encourages its employees and contractor employees to participate in activities that perpetuate a healthy lifestyle. While it encourages such activities, the FAA also wants to ensure that all such activities are conducted in a safe and common sense manner. The following are some guidelines to consider when participating in exercise activities:

a. Running.

1. Receive a medical clearance from your physician for participation is such a strenuous activity.

2. Run with a partner or in a group.

3. Use only designated routes/pathways. Stay out of restricted areas.

4. Drink fluids before running and on warm days carry a water bottle to replenish fluids while on the run.

5. In summer months, use a sun block, and wear a hat, sun glasses or visor to provide protection from the sun glare and ultraviolet rays. Restrict your activities on days where the heat index is elevated to the point where a health advisory is issued.

b. Biking.

1. Before biking make sure that you have the following recommended equipment:

   (a) Wear an ANSI approved helmet.

   (b) Wear safety glasses to protect your eyes.

   (c) Ensure that your bike has reflective lights and illuminating lights when riding after sunset or before sunrise.

   (d) Have a tool kit to make any necessary repairs.

   (e) Carry a spare tire tube in case of a flat.

2. Inspect your bike before riding to ensure that it is in good operating condition. Give attention to the following:

   (a) Brakes in working order.

   (b) Tires properly inflated.

   (c) Chain properly lubricated.

3. Follow all traffic regulations and use only approved roads and pathways.

4. Yield to pedestrians at all times.

d. Walking.

1. Walk with a partner.

2. Follow designated routes/pathways.

3. In the summer months, wear sun block and a hat to protect against sun glare and ultraviolet rays.

28.1. FITNESS CENTER.

The use of the Fitness Center is open only to Technical Center employees and tenants who are Federal employees. No contractors or visitors are permitted to utilize the exercise equipment.

a. When exercising, employees are required to do so with a partner. Make arrangements in advance to exercise with a fellow worker or when there are other employees present in the Fitness Center.

b. Before beginning any exercise program, consult your physician to certify that you are able to participate in a fitness program, establish any necessary restrictions, and develop a long-term fitness program. Exercise within your limits and capabilities, overextending yourself may result in a severe injury.

c. Use only those exercise machines with which you are familiar.

d. Drink fluids before, during and after exercise.

e. If you feel dizzy, light headed or nauseous, stop

exercising immediately, and seek medical assistance. **Dial extension 1111.**

f. Report any exercise machine malfunctions immediately to the Safety Office.

g. It is the responsibility of the person using each piece of equipment to keep the equipment clean/sanitary. After using each piece of equipment, make sure it is in the same condition it was prior to it being used.

28.2. SPORTS LEAGUES.

a. Established sports leagues which conduct their activity on Technical Center grounds and athletic fields shall ensure that all equipment used in those activities is in good condition, a properly stocked first aid kit is available at the event, a means of summoning emergency medical assistance is in place, and a person trained in standard first aid and adult CPR is on site.

b. Should weather conditions either render the fields unfit for play, give rise to the issuance of a health advisory, or in certain situations, i.e. lightning, are deemed unsafe, all scheduled activity will be canceled.

c. Alcoholic beverages are not permitted on the grounds of the Technical Center. Should they be found at any sporting event, the player and/or team will be disqualified from participating in all future events.

d. Team captains will be held responsible for the behavior of their team members.

e. League officials are responsible for the behavior of the participants and spectators at their respective sports events. Anyone, either a participant or a spectator, found behaving in an unsportsmanlike manner, i.e., fighting, attempting to injure another person, abusive language, or threatening behavior, will be escorted off the Technical Center grounds and face possible criminal charges.

f. Should employees not connected with an established league wish to use the athletic fields for a sporting event, they must first get permission, have a first aid kit available, a trained first aid/CPR person on site, ensure the equipment is in good condition, and control the behavior of all participants and spectators.

28.3. WEATHER CONDITIONS.

In the event that the U.S. Weather Service issues a heat and/or health advisory, all exercise (e.g., running, walking, biking) normally conducted outdoors on the Technical Center grounds will be restricted. Exercise during extreme weather can cause severe heat related medical conditions.

CHAPTER 29. SAFETY AWARDS PROGRAM

29.0. BACKGROUND.

The Technical Center Safety Awards Program is established to promote safety awareness among all employees and to recognize those who have made a significant contribution to the Safety Program.

29.1. RECOGNITION.

Employees who have demonstrated an interest in maintaining a safe and healthy work environment will be honored with a Safety Award. Awards will be presented in a timely manner to recognize specific events. The following are examples of qualifying activities:

a. Identifying a serious health/safety hazard and bringing it to the attention of the Supervisor or Safety Office. This does not include reporting violations of established safety practices or recognized standards.

b. Taking action to prevent or abate an unsafe working condition.

c. Providing recommendations or solutions to effectively eliminate or abate an existing safety problem or preclude a problem from developing.

d. Volunteering to assist in resolving safety issues. This may involve participating in events sponsored by the Safety Office.

29.2. PROCEDURES.

The Safety Office shall be contacted via telephone or email by the nominator or Safety Awards Program Manager. Anyone can submit a nomination for a safety award. The nominator must describe the contribution that the nominee made toward improving or maintaining a safe and healthy work environment. The nominator shall forward the nomination to the Safety Office and a CT Form 3450-13 (see Figure 29-1) will be generated.

29.3. ELIGIBILITY.

Nominations can be made for an individual or a group. Nominations must be made to the Safety Office within one year of the contribution made by the nominee(s).

29.4. AWARDS.

All employees nominated will receive a safety award to recognize their contribution to the Safety Program if selected. All safety award recipients will be eligible to receive the Safety Office Award as selected by the Safety Office. The Safety Office Award will recognize the exceptional contribution made by the nominee to the Safety Program. The Award Process will consist of:

a. Safety Awards. All nominees will receive a safety certificate and award items to recognize their contribution to the Safety Program.

b. Safety Office Award. All nominees will be eligible to receive the Safety Office Award. The criteria by which a selection is made will be based on the following factors:

1. The impact the safety issue that was addressed had on the Technical Center's working environment.

2. The specific actions taken by the nominee to abate or reduce a safety hazard.

3. The time and resources that were committed by the nominee to the safety issue.

Figure 29- 1 Safety Recognition Nomination Form

SAFETY RECOGNITION

NOMINATION FORM

NAME OF NOMINEE: _____
ORGANIZATION: _____ DATE: _____
PHONE NUMBER: _____

NOMINATED BY: _____
ORGANIZATION: _____
PHONE NUMBER: _____

Safety Office Use
Control Number

INSTRUCTIONS: PLEASE PRINT AND SUBMIT NOMINATION TO THE SAFETY OFFICE

All employees are eligible to submit a nomination. The basis for the nomination shall describe the contribution that the nominee made toward improving or maintaining a safe and healthful work environment. The nominator shall forward the nomination to the FAA Technical Center Safety Office.

BASIS FOR NOMINATION: (If additional space is needed attach remarks on plain bond paper)

CT FORM 3450-13 (10-97)

CHAPTER 30. MISHAP REPORTING and REPORTING UNSAFE OR UNHEALTHFUL CONDITIONS

30.0. PURPOSE.

This chapter establishes procedures for the organizations at the Technical Center to report occupational accidents and/or near-misses. This process allows for the timely reporting of salient factors related to the accidents which could prevent similar occurrences. Once data is inputted as part of the occupational accident database it can be extracted in a timely manner to provide the necessary information to control the loss of Technical Center resources.

This chapter also ensures meeting the requirements of 29 CFR 1960, Subpart I, Recordkeeping and Reporting Requirements, as well as, the maintenance of a record of all recordable occupational injuries and illnesses.

30.1. PROCEDURES.

The Safety Office should be promptly notified (within 24 hours) of any mishap which includes injuries, illnesses, property damage, vehicle accidents, as well as near misses. When a mishap occurs, the supervisor and employee(s) shall arrange to meet with the Safety Office in order that the mishap be properly investigated. A FAA Mishap Report (FAA Form 3900-6) must be completed at that time (see Figure 30-1) along with a copy of the form CA-1 for illnesses/injuries. The original Form CA-1 or CA-2 goes to Human Resources. The cause of the mishap and the corrective action taken to prevent such a mishap in the future must be reported. If lost time or restricted time is involved the supervisor must forward that information to the Safety Office when it is known. Light duty programs should be established in each Group to ensure that employees are allowed to return to work as soon as possible. Copies of the FAA Form 3900-6 and "CA-1" forms may also be downloaded from the Facility Services and Engineering Groups website.

30.2. REPORTING SCHEDULE.

a. Recordable Mishap. The term "mishap" is introduced to end the confusion and ambiguity which sometimes arises as to which term among accident, injury or occupational illness will be most suitable. Mishap for the purposes of this chapter shall be a general term covering occupational accidents, near-misses, including motor vehicle, property damage, fire, etc., injuries and illnesses. The term mishap may be used in lieu of the others, but one of the more specific terms will usually be more applicable. All such occurrences are recordable.

b. Major Accident. A major accident is a mishap which results in a death, hospitalization of three or more employees, or destruction of $100,000 or more of FAA property.

1. All major accidents shall be reported immediately by telephone to the Technical Center Safety Office. Within 8 hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident an oral report must be made to the nearest OSHA Area Office by the Safety Office. This applies to each such fatality or hospitalization of three or more employees which occurs within 30 days of an accident.

2. Mishap reports of major accidents shall be made within 24 hours of the occurrence and shall contain names of the fatalities and/or those hospitalized; and a brief description of the mishap including those events of property loss; date, time, and location. Subsequent deaths and updates of loss estimates shall be reported within 24 hours of their occurrence.

30.3. CONTRACTOR AND CONTRACTING OFFICER REPORTS.

Contractors on all FAA construction contracts and on all FAA contracts performed on FAA owned or leased property shall be required to report to the contracting officers, COTR's/Resident Engineers:

a. Fatal or loss workday accidents or fires affecting contractor or subcontractor employees.

b. Damage of $1,000 or more to Federal property.

c. Any accident on a construction site or on FAA owned or leased property involving contractor or subcontractor owned or leased motor vehicles or mobile equipment.

d. Damage because of which a contract time will be requested.

e. Major accidents involving contractor operations must be reported immediately by telephone to the Technical Center Safety Office, call Extension 5-4821.

f. Contractors shall observe all guidelines described in Section 16.3 of Chapter 16 (Contractor Safety)

30.4. OTHER REPORTING PROCEDURES

a. To report a hazard which presents an immediate threat to life and/or property, a hazardous material spill, a medical emergency, or a fire, call Extension 5-1111 or 5-5246 if calling from an FAA phone. If calling from a cell phone, call 609-485-5246. DO NOT CALL 911.

b. To initiate a work order to correct a situation that requires some level of repair or maintenance and does not present an immediate hazard, call the Trouble Desk, Extension 5-4122 or send an e-mail message to 9/ACT/TROUBLEDESK/ACT/FAA.

c. Indoor air quality issues, odors, noise irritants, or other potential health issues should also be reported to the Trouble Desk, Extension 5-4122. The Trouble Desk will then promptly notify the Safety Office for Industrial Hygiene evaluation and monitoring.

d. Reports of unsafe conditions that do not require maintenance, repair, or Trouble Desk response should be referred directly to the Safety Office, Extension 5-4821. The Safety Office will investigate and evaluate the condition and pursue appropriate abatement action.

Figure 30-1 FAA Mishap Report Form (see next page)

FAA Mishap Report

FAA Form 3900-6 (10/2003)

I. Incident Description

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 *(of incident)* 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

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)*

CHAPTER 31. SAFETY AND HEALTH PLANS FOR TESTING OPERATIONS

31.0. PURPOSE.

This chapter establishes procedures for the review and approval for potentially dangerous or hazardous testing operations on Technical Center property or other test locations. These procedures do not apply to flight testing which is covered by other FAA Orders; nor does it apply to computer software/hardware testing unless it involves physical, chemical, or biological hazards. Test plans are required which evidence adherence to and implementation of all Occupational Safety and Health Administration (OSHA) regulations, in addition to other local regulations and policies regarding personnel safety and health, as well as protection of Government resources.

31.1. POLICY.

a. Testing operations must be performed in such a manner that will insure the safety and health of all personnel involved and protect Government resources. All testing activities shall be conducted in accordance with 29 CFR 1910, General Industry Standards, and 29 CFR 1926, Construction Standards, OSHA, as well as any other regulations incorporated by reference, agency and local policies regarding occupational safety and health, property protection, and the environment.

b. A written Safety and Health Plan shall be prepared and included in the test plan for all applicable testing operations. It must state what precautions shall be taken before, during, and after test operations to assure the safety and health of all personnel involved. This chapter shall be used to facilitate the preparation of plans and standardize the procedures for writing, reviewing, and approving them.

31.2. RESPONSIBILITIES.

a. Group Managers are responsible for designating the appropriate authority-in-charge for the test operation to prepare a Safety and Health Test Plan.

b. The Authority-In-Charge shall prepare a Safety and Health Plan in accordance with the procedures set forth in this chapter. This individual shall ensure that a Safety and Health Test Plan is prepared for all dissimilar tests or that specific differences are addressed in an attachment to an overall generic/boilerplate plan. Assistance from reviewing officials shall be made available.

c. Reviewing and Approval Officials. Each Safety and Health Test Plan shall be reviewed by the Facilities Services and Engineering Group, including, Fire Inspectors, Industrial Hygienist, Safety Specialists and other members of the Safety Office. Each plan shall be reviewed to ensure compliance with fire, security, health, and safety standards. Final approval shall be granted when all reviewing parties are satisfied.

d. Supervisors of employees involved in testing are responsible for providing them with the Safety and Health Test Plan prior to commencing the testing operations. Supervisors shall make every effort to ensure that all items of the Test Plan are understood, which includes meeting with all involved personnel to discuss and explain the Test Plan.

e. Employees involved in testing operations shall read and understand the Safety and Health Test Plan prior to performing the testing operations. Employees are responsible for adhering to all precautions required and wearing the proper personal protective equipment (PPE).

31.3. REVIEW AND APPROVAL OF TEST PLANS.

a. Upon completion of the Test Plan which shall include the , schematics, and Material Safety Data Sheets, the authority-in-charge shall submit the Test Plan to the Fire Inspectors, and to the Safety Office.

The Test Plan needs to be submitted before any work or installation of test equipment takes place. A complete process review by all parties will identify concerns and allow for correction prior to the commencement of any work. This should negate the need for any last minute re-designing, major changes, or costly delays.

b. The Test Plan shall be reviewed and evaluated to ensure that all fire safety standards, evacuation, emergency procedures, notification/security procedures, hazardous materials, and health and safety regulations associated with the testing operation have been identified, evaluated, and abated. Prior to issuing approval, the Safety Office and the Fire Inspectors shall meet with the authority-in-charge to ensure that all items of concern have been addressed. When the test plan is

satisfactory to all parties, it will be signed, dated, and approved. The meeting with all parties shall be scheduled within 10 working days of receipt of the test plans, but not more than 14 working days.

31.4. TEST PLAN FORMAT.

The outline and format shall be written and forwarded to the approving officials, in accordance with this chapter.

31.5. STRUCTURE FOR SAFETY AND HEALTH TEST PLAN.

General safety and health test plans can be utilized if all potentially hazardous situations have been addressed for each test, or if specific differences in each test are addressed in an attachment to the general plan. The plan should be brief and clear to ensure all personnel are able to understand the required procedures.

Prior to writing the plan, evaluate the test to determine potential hazards. Identify all potential fire, environmental, ergonomic, health, and safety hazards. The Safety Office will provide assistance, if necessary.

a. Brief Description of Testing Operation. List potentially hazardous operations, including the potentially hazardous procedures which occur during the set-up/preparation phase, as well as the post/clean-up phase of the test.

b. Description of Safety and Health Precautions and Hazard Abatement Actions Taken. Describe precautions taken to ensure the safety and health of personnel involved in the test, as well as personnel that could be indirectly affected. List the actions taken to eliminate or abate potential hazards, including all engineering controls and PPE. Should respirators be required, specific information must be provided regarding the potential hazardous condition in order for the industrial hygienist to determine the proper type of respirator and cartridges. Employees required to use respirators, if not already certified for respiratory protection, must undergo a medical evaluation, training, and be fit-tested prior to the test.

c. Contingency Emergency Response Procedures. State what emergency procedures will be implemented in the event of a mishap including medical, fire, and employee evacuation.

31.6. OUTLINE OF TESTING OPERATION PLAN.

a. Brief Description of Testing Operation to include:

1. Name/type of project.
2. When/where test will take place.
3. Type of test cell being used.
4. What will take place during the test?
5. Amount and type of materials to be used.
6. Nature of the chemicals involved.
7. Number of tests to be performed.
8. Sequence of tests.
9. Fire protection systems incorporated in test.
10. Control of any noise factor.
11. Nature of potential hazard to employees directly involved or others in the area.

b. Safety and Health Precautions And Hazard Abatement Actions. Provide a brief description of the following:

1. Methods to caution or warn employees of potential hazards.
2. Barriers that will be utilized to prevent unwanted entrance to the test area.
3. Methods used to minimize exposure from chemicals (engineering, administrative, PPE).
4. Method and time frame for disposal of test materials.
5. Material Safety Data Sheets (MSDSs) for chemicals used in the test.
6. Methods to abate any noise exposure.
7. Type of eye protection to be available.
8. Specific fire hazards and fire plan for the test.

c. Emergency Contingency Plan. Provide a description of the following:

1. Contingency plan for possible hazardous conditions from unexpected situations resulting from the test, i.e. fire, spills, explosions, etc.
2. List of points of contact, and emergency phone numbers.

d. SJTA Fire Department Notification. Describe means established to notify the SJTA Fire Department prior to commencement of test and in the event of an emergency situation

.

CHAPTER 32. ASBESTOS PROGRAM

32.0. PURPOSE.

The objective of the Asbestos Program is to provide guidance for controlling or eliminating the exposure of Technical Center employees, contractors, and visitors to asbestos during the use, removal, and disposal of asbestos-containing materials (ACM). The Technical Center has established a prioritized ACM removal and Hazard Abatement Program, as well as, engineering and work practice controls for operations and maintenance work that have the potential for releasing airborne asbestos fibers.

32.1. APPLICABLE STANDARDS.

In implementing the Asbestos Program, the Technical Center shall comply with all applicable Federal regulations, State regulations (New Jersey Department of Environmental Protection), and local regulations (New Jersey Department of Community Affairs). The following Federal regulations are concerned directly with asbestos:

a. 29 CFR 1910.1001, OSHA General Industry Asbestos Standard.

b. 29 CFR 1910.134, OSHA Respiratory Protection Standard.

c. 29 CFR 1926.1101, OSHA Construction Asbestos Standard.

d. 40 CFR 763 Subpart E, AHERA (Asbestos Hazard Emergency Response Act).

e. 40 CFR 763 Subpart E, Appendix C Asbestos Model Accreditation Plan, as amended for ASHARA (Asbestos School Hazard Abatement Reauthorization Act).

f. 40 CFR 61 Subpart M, NESHAP (National Emissions Standards for Hazardous Air Pollutants).

32.2. DEFINITIONS.

a. Abatement. Procedures to control fiber release from asbestos-contaminated material or from ACM includes; removal, encasement, encapsulation, enclosure, and repair.

b. Air monitoring. The process of measuring the airborne fiber content of a specific volume of air in a stated period. Air monitoring procedures are specified in 40 CFR 763.90(I).

c. Area 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. For the purposes of this document, “asbestos” includes “presumed asbestos containing material (PACM)" as defined in 29 CFR 1926.1101.

e. Asbestos containing material (ACM). Any material containing more than 1.0 percent asbestos of any type or mixture.

f. Asbestos work.

1. **Class I** asbestos work: Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and PACM.

2. **Class II** asbestos work: Activities involving the removal of ACM which 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 PACM, may be disturbed.

4. **Class IV** asbestos work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and PACM and clean-up activities that take place in an area after a Class I, II, or III job has been completed. Class IV asbestos work does not include picking up and bagging asbestos dust, waste, and debris during Class I, II, and III work.

g. Breathing zone. A hemisphere forward of the shoulder with a radius of 6 to 9 inches from the worker’s nose.

h. Building/facility owner. The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which activities covered by this chapter take place.

i. Competent person. Means a person who meets the intent of the definition in 29 CFR 1926.32(f) by being 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, who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor, or its equivalent and for Class III and Class IV work, 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).

j. Containment. Isolation of the work area from the rest of the building to prevent escape of asbestos fibers.

k. Contingency plan. An FAA document that details oversight procedures to be followed by facility management, employees, and an independent third-party industrial hygienist or "competent person," (as defined above) during a Class I or II asbestos abatement project performed by a contractor.

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

m. Disturbance. Activities that disrupt the matrix of ACM or PACM, which crumble or pulverize ACM or PACM, or that generate visible debris from ACM or PACM. Disturbance also includes cutting away small amounts of ACM or PACM, no greater than the amount which 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.

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

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

p. Friable. Capable of being crumbled, pulverized, or reduced to powder by hand pressure.

q. Glovebag. A-not-more-than 60 x 60-inch 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.

r. HEPA filter. A high-efficiency particulate air filter capable of trapping and retaining 99.97 percent of all mono-dispersed particles and asbestos fibers greater than 0.3 microns in diameter.

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

t. Intact. ACM that has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

u. Medical surveillance. A periodic comprehensive review of a worker's health status.

v. Permissible Exposure Limit (PEL).

1. An 8-hour time-weighted average (TWA) airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air, or

2. An airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air as averaged over a sampling period of 30 minutes.

w. Personal air sample. Obtained by having the test subject wear a sampling pump in train with a sampling line and a cassette. The cassette is positioned in the breathing zone of the wearer.

x. 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 a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the PEL.

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

z. 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.

1. Thermal System Insulation (TSI) applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain

or water condensation.

2. 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).

32.3. ASBESTOS INVENTORY AND HAZARD ASSESSMENT.

FAA owned or operated facilities (built prior to 1980, but not leased spaces) shall be surveyed by an accredited asbestos inspector prior to construction, renovation, or modification, to identify the location and condition of ACM/PACM. Once identified, the ACM/PACM shall be assessed for its potential to release dust and for the consequential degree of hazard to occupants. Protocols for sampling and assessment shall receive prior approval by the Safety Office. The results of these surveys shall be used to establish abatement action priorities.

a. Acquisitions. Facilities considered for acquisition by the FAA shall be surveyed for ACM/PACM prior to acquisition and according to approved specifications.

b. Documentation. Upon request from the Facilities/Plant Engineering personnel, or the tenant organization, written documentation from lessors shall be obtained as to the location, current condition, and abatement or management plans of all ACM/PACM in property spaces leased by the FAA.

c. Report Updates. ACM/PACM locations in the FAA-contracted survey reports will be regularly updated by the Safety Office as abatement projects, to include minor asbestos removal actions, are completed.

32.4. ABATEMENT/REMOVAL.

a. Abatement Action Plan. The establishment of abatement action for ACM/PACM areas shall be initially based on results of Asbestos Assessment Studies and thereafter on semiannual Asbestos Assessments. All inspections are to be performed by the Asbestos Program Manager (APM) or the FAA Industrial Hygienist.

b. Abatement Procedures. Proper abatement procedures shall be followed to secure any ACM/PACM that presents an immediate "high risk" situation. The APM will assess each abatement situation and determine whether or not the project is within the Technical Center's resource and staff capabilities. Asbestos abatement work requiring contracted services shall be performed by a licensed or state certified asbestos abatement contractor in accordance with approved abatement specifications. William J. Hughes Federal Aviation Administration Technical Center - Asbestos Abatement shall be used as the standard for all contracted asbestos abatement activities. In the case of smaller abatement projects, an abbreviated Statement of Work (SOW) may be substituted in place of the William J. Hughes Federal Aviation Administration Technical Center - Asbestos Abatement document. The use of an abbreviated SOW is subject to approval by the APM.

c. Removal. Under no circumstance is ACM/PACM removal to be performed by anyone other than a licensed asbestos abatement contractor or by FAA employees who are trained and certified as asbestos abatement workers. The APM shall provide a list of licensed asbestos abatement contractors (aka suggested sources) to the organization (hiring authority) responsible for procuring the asbestos abatement contractor's services. The hiring authority shall be required to utilize one of the suggested sources unless authorized by the APM.

d. Notification. All building occupants shall be notified prior to the commencement of construction involving ACM. Employees working near a planned major ACM/PACM removal job are to receive information regarding the nature of the project and associated work controls. This information is intended to reduce unnecessary concerns through education and communication and to provide employees with the opportunity to ask questions about their work environment.

e. Asbestos Abatement Workers. Employees who are engaged in ACM/PACM removal operations, and their supervisors, must have received prior training at an EPA-approved asbestos training course and must be certified as asbestos abatement workers or supervisors per specific regulations of the State of New Jersey.

32.5. IN-PLACE MANAGEMENT/OPERATIONS AND MAINTENANCE.

Operations and Maintenance (O&M) Program elements shall include the following: notification of the presence of asbestos; periodic cleaning and repair, and other asbestos O&M work; work practice controls; emergency release response actions; periodic inspection of ACM/PACM condition and periodic airborne asbestos monitoring; personal protective equipment; employee notification, training, and medical surveillance.

a. Notification Requirements. All building occupants, including employees, tenants, and contract service personnel shall be informed as to the following:

1. Presence, location and condition of known or

assumed ACM in the facility.

2. Nature of the asbestos hazard.

3. How to avoid disturbing ACM.

4. Name and telephone number of the Technical Center APM and/or primary asbestos contact for the facility.

5. Reporting procedures in the event of an ACM/PACM spill.

Notification is to be accomplished by means of written notification, signage, labeling, information sessions and training.

b. Periodic Cleaning and Repair. Based on results of the O&M inspection, and as soon as possible after the inspection, all identified ACM/PACM areas in damaged and deteriorated condition shall be abated and/or repaired. Fallen ACM/PACM shall be cleaned up.

Cleaning is to be done by facility employees who have received asbestos awareness training (as required by 29 CFR 1926.1101), respiratory protection training, and hands-on training in the use of HEPA vacuum cleaners. Full-body protective clothing and approved respirators must be worn during cleaning. Cleaning is to be conducted using wet methods and/or HEPA-filtration. Dry removal methods for asbestos abatement shall not be allowed unless water will damage fixed mechanical equipment is permitted by State and local regulations.

c. Safely Working On or Around Asbestos. Supervisors and workers are to suspend work activities when ACM/PACM is encountered and likely to be disturbed without proper controls and personal protective equipment in place. All asbestos-containing debris, vacuum cleaner bags and filters, cloths, mop heads, protective clothing, and respirator filters must be disposed of as asbestos contaminated waste.

d. Outside Service Contractors. It shall be the responsibility of the Contractor to visit and investigate the site; review the drawings and specifications; to assess the amount of ACM/PACMs; and become thoroughly familiar with conditions, and the relative difficulty thereof, which are present and will affect a complete abatement, temporary debris storage, applicable tests, treatment, transportation, and disposal operation.

The contractor shall be notified of existing areas where ACM/PACMs have been identified and then be required to follow applicable OSHA safety and health provisions in addition to FAA policy and procedures on working on or around ACM/PACM.

Contractor work procedures shall in no way cause an exposure hazard for FAA employees nor shall they leave asbestos debris behind. Cleaning of surfaces which contractors have contaminated shall be completed by that contractor using wet methods and/or HEPA vacuuming.

An Asbestos Abatement Plan must be submitted to and approved by the Safety Office prior to start of work or term contract.

e. Emergency Release Response Actions. In the event of major breach of a containment barrier, detection of unexpected airborne or bulk asbestos contamination in an abatement site area or on the adjoining grounds, spilling of asbestos debris bags or containers being hauled to storage and/or disposal etc., or detection of any other miscellaneous ACM/PACM spills the incident is to be reported immediately to the Safety Office, who shall proceed with established facility chain-of-command notification procedures. A determination will be made as soon as possible as to whether to close or restrict entry to the area and temporarily relocate area occupants.

f. Periodic Inspection of ACM/PACM. A visual re-inspection of all known or assumed ACM in the facility containing friable ACM/PACM shall be conducted at periodic intervals to detect damage to, or deterioration of, the material, and to facilitate any corrective actions needed. Personnel conducting this surveillance should note, assess and document all changes in condition of known or assumed ACM in the facility.

The condition of the material surveyed should be compared to the condition recorded in previous AHERA-type inspection reports or previous surveillance records. Personnel conducting this surveillance should be AHERA Certified Inspectors. Surveillance shall take place at intervals not to exceed six months for all occupied and/or maintained facilities.

The interval of re-inspection for unmanned facilities is to be determined by frequency of use of the facility, and by the accessibility, type and condition of ACM in the facility.

For manned facilities containing friable ACM/PACM, airborne asbestos fiber sampling shall be conducted at the same time as the asbestos re-inspection is conducted. Samples shall be analyzed by phase contrast microscopy. Samples exceeding 0.01 fibers per cubic centimeter in air shall be analyzed by Transmission Electron Microscope (TEM) for asbestos structures. Only a visual inspection, identified above, is required for facilities not containing friable asbestos. The inspector conducting

this surveillance should be familiar with the facility and the contents of the Asbestos Inspection and Inventory Report.

g. Personal Protective Equipment.

1. Respiratory Protective Devices:

   (a) All respirators used to protect FAA employees from asbestos must conform to OSHA requirements specified in 29 CFR 1910.134, 1910.1001, and 1926.1101.

   (b) All employees whose work involves contact with asbestos shall be medically cleared to wear a respirator, and fit-tested and properly trained in their use and maintenance.

   (c) The use of hooded powered air purifying respirators for asbestos work is prohibited by FAA Order 1050.20A, Asbestos Control Program.

2. Protective Clothing - When exposure to asbestos fibers or debris is possible in the course of work authorized under this Program, whole-body coveralls, head covering, gloves, and foot coverings may be needed.

h. Employee Training.

1. O&M Inspectors - FAA employees assigned to O&M inspection duties must be currently trained as a building "Inspector" through an EPA-approved training course, and must be currently respirator trained and fit-tested.

2. Those facility employees who might be required to work on or around asbestos-containing materials and asbestos-contaminated objects shall be provided asbestos awareness and safe work practices training. These employees shall also be currently respirator trained and fit-tested if asbestos exposure levels are expected to exceed the OSHA PEL.

32.6. EXPOSURE LIMITS.

a. Employees Working with Asbestos. Employee exposures shall not exceed the OSHA PEL of 0.1 fibers per cubic centimeter (f/cc) in air as averaged over an 8-hour time-weighted average (TWA) or 1 f/cc as averaged over 30 minutes, for FAA employees who might come in contact with asbestos in the normal course of their work. Personal air monitoring will be conducted as required to determine employee exposure levels.

b. Employees Exposed to Asbestos. FAA employees or visitors, who would not contact asbestos in the normal course of work, but who might work in or enter areas where asbestos is controlled by an O&M program, shall not be exposed to airborne asbestos concentrations exceeding 0.01 f/cc (8-hour TWA).

c. Other Worker's Exposure.

1. During renovation or construction work where ACM/PACMs are removed or disturbed, the maximum allowable air level of asbestos outside the work enclosure shall not exceed 0.01 f/cc as an 8-hour TWA.

2. Air monitoring schedules and exposure limits required for asbestos abatement projects conducted by outside contractors shall follow the William J. Hughes Federal Aviation Administration Technical Center - Asbestos Abatement or substituted SOW when used.

32.7. MEDICAL SURVEILLANCE.

Provisions of the FAA Asbestos Medical Surveillance Program shall include 29 CFR 1910.1001(l) and/or 29 CFR 1926.1101(m), and be consistent with appropriate Federal and local guidelines and regulations.

In case of an accidental release in which an employee may have been exposed to airborne asbestos fibers concentrations above the PEL, the employee will be given a medical examination.

32.8. WASTE DISPOSAL.

a. Removal. Asbestos-contaminated material shall be prepared for removal by saturating it with a water/surfactant mixture applied in a fine mist. Containerization will require double-bagging with either 6-mil thick (minimum) leak-tight plastic bags or plastic-lined drums. Bags and/or drums shall be sealed and tagged on the outside with the appropriate warning label.

b. Shipment. Waste material shall be shipped to an EPA-approved solid waste landfill by a disposal firm approved by the EPA for transport and disposal of asbestos-containing waste.

c. Manifests. Copies of all transport and disposal manifests for asbestos waste shall be submitted to the hazardous waste coordinator for the facility from which the asbestos was removed. As a minimum, the manifest must include: name/address of generator, name/address of pickup site, estimated quantity of waste, types of containers used, and disposal site. Copies of the asbestos waste manifests shall be

maintained by the hazardous waste coordinator for a period of no less than 75 years.

32.9. RECORDKEEPING.

a. Medical Records. The Safety Office shall maintain records of personal and environmental monitoring for the duration of the worker's employment plus 30 years.

b. Training Records. Facilities shall maintain all employee training records for one year beyond the last date of employment of that employee.

c. Asbestos Records. The Safety Office shall maintain all records of asbestos assessments for 75 years past the assessment date. Facility Hazardous Waste Coordinators shall maintain their respective asbestos waste manifests for an indefinite period of no less than 75 years.

CHAPTER 33. SAFETY INSPECTIONS

33.0 PURPOSE.

It is the purpose of the Technical Center to ensure that a safe and secure work environment is in place for all tenant organizations, general contractors, and visitors.

This is accomplished through thorough scheduled and unscheduled facility inspections on an annual basis. Those facilities where hazardous operations are conducted may be subject to more frequent inspections due to the nature of the work. Examples of such facilities would include the carpenter's shop or metal shop among others.

33.1 RESPONSIBILITIES.

Group and Group Managers, assigned floor captains and employees have the sole responsibility for good safety and fire prevention practices in their respective areas. They shall be responsible for ensuring that all exits, aisle ways, fire fighting equipment and suppression devices/systems are free and clear at all times. Fire prevention plans and evacuation maps/plans must be conspicuously posted throughout the area. Any/all safety or fire prevention issues shall be corrected immediately.

33.2 COMMUNICATIONS AND NOTIFICATIONS.

Prior to the facility inspection, a notice shall be sent out to the current point of contact listed. The notice will indicate that an inspection is due and it will request a date and time that is convenient to perform the inspection. A phone call may be used to confirm the appointment.

33.3 INSPECTION PROCESS.

Once at the facility, the inspecting person shall identify himself/herself. Prior to the inspection, contacts will be briefed on all aspects of the inspection. It will be up to the point of contact whether or not to accompany the inspector. He/she may elect to send someone in his/her place or not go at all. If the latter is the choice, then all discrepancies noted will be annotated and shown to the point of contact prior to leaving the facility. Upon completion of the inspection, the inspector will conduct a post brief consisting of reviewing all discrepancies noted during the inspection. The post brief also indicates the end of the inspection.

33.4 REPORTS AND PROCEDURES.

Once the inspection is complete, the inspector shall return back to the Safety Office and prepare the finished report. When completed, this report shall be sent back to the point of contact, their manager/supervisor, the section/branch safety representative, the Safety Office, and the union representative as required.

The report consists of an Excel spreadsheet, which lists all discrepancies found along with references for those discrepancies. It lists recommended solutions to correct the discrepancies. The assigned Risk Assessment Codes for each discrepancy are also placed on the report. The Safety Office will handle any and all discrepancies that are safety related and can be corrected by the submission of a work order request. All work order request numbers will be annotated on the Excel spreadsheet in the COMMENTS Section.

The report will be sent out with a cover letter, and the report is due back to the Safety Office within 30 days of receipt. All discrepancies are to be corrected within the 30 days and the dates annotated on the Excel spreadsheet. If for some reason they cannot be completed, estimated completion dates are to be annotated in the section for Pending Items. Once they are completed, the spreadsheet is to be sent back to the Safety Office for record keeping purposes.

Any report that is not returned within the 30 days shall be considered to be delinquent. A friendly reminder shall be sent out initially reminding the point of contact that the report is due. After a week, a delinquent report notice shall go out to the point of contact, his/her manager/supervisor, and the Safety Office. If in turn the report has not been received shortly there after, another delinquent notice shall go out to the point of contact, his/her Group/Branch Manager, Technical Center Safety Office, and the Environmental and Safety Sub-Team Manager.

This information is also entered into the FAA Workplace Inspection Tool (WIT). It is designed to determine the condition of work areas, the safety of work practices, the degree of compliance with safety and health regulations, and measures compliance with ATO's EOSH Service's Groups progress. This is an internet based program and it is currently based in Washington, D.C.

33.5 INSPECTION REFERENCES.

The primary evaluation references used in the performance of the inspections/audits are as follows:

a. National Fire Protection Association National Fire Codes (i.e. NFC 1, National Fire Prevention Code; NFC 70, National Electric Code; and NFC 101, National Life Safety Code.)

b. Occupational Safety and Health Administration (OSHA) Regulations (i.e. 29 CFR 1910, Occupational Safety and Health Standards; and 29

CFR 1926, Safety and Health Regulations for Construction).

CHAPTER 34. SEAT BELT SAFETY

34.0. PURPOSE.

It is the policy of the Technical Center to establish the current executive order on seat belts and federal installations. The basic purpose of this order is to promote seat belt usage by all personnel when they travel in government vehicles or in their own personal vehicles while on federal property. By properly using seatbelts, the number of fatal accidents and the added financial costs related to those accidents can be reduced.

34.1. RESPONSIBILITIES.

a. Federal Employees. Any Federal employee occupying any seating position of a motor vehicle on official business, whose seat is equipped with a seat belt, shall have the seat belt properly fastened at all times when the vehicle is in motion.

b. National Parks and Defense Installations. Each operator and passenger occupying any seating position of a motor vehicle in a national park or on a Defense Installation, whose seat is equipped with a seat belt, or child restraint system, shall have the seat belt or child restraint system properly fastened as required by law, at all times when the vehicle is in motion.

c. Children. All children traveling in a motor vehicle equipped with a seat belt shall have the seat belt properly fastened while the vehicle is in motion. Never let a passenger hold a child on their lap while the vehicle is in motion. The passenger cannot protect the child from injury in a collision. Rear facing seats should never be placed in the front seat. Rear facing seats must always be secured in the rear seat and facing the right direction.

Seat belts and seats can become hot in a vehicle that has been closed up in sunny weather. They could burn a small child. Check the seat covers and buckles before you place a child anywhere near them.

If a small child rides in your vehicle (this generally includes children up to 8 years old and who weigh less than 80 pounds), you must put them in a safety seat that is specifically made for children. Always follow the manufacturer's instructions when installing a child safety seat.

d. Contractors. Any time a contractor is on Federal property, and in a motor vehicle equipped with seat belts, they shall have the seat belts properly fastened while the vehicle is in motion. Passengers are not allowed to ride in the vehicle's cargo area. Passengers not riding in a seat with a fastened seat belt are much more likely to suffer serious injury in a collision. Cargo shall be secured to prevent it from shifting at all times.

34.2 EXECUTIVE ORDER 13043. (Please see next page)

Presidential Documents
Executive Order 13043 of April 16, 1997
Increasing Seat Belt Use in the United States

By the authority vested in me as President by the Constitution and the laws of the United States of America, including the Highway Safety Act of 1966, 23 U.S.C. 402 arid 403, as amended, section 7902(c) of title 5. United States Code, and section 19 of the Occupational Safety and Health Act of 1970, 29 U.S.C. 668, as amended, and in order to require that Federal employees use seat belts while on official business; to require that motor vehicle occupants use seat belts in national park areas and on Department of Defense ("Defense") installations; to encourage Tribal Governments to adopt and enforce seat belt policies and programs for occupants of motor vehicles traveling on highways in Indian Country; and to encourage Federal contractors, subcontractors, and grantees to adopt and enforce on-the-job seat belt use policies and programs, it is hereby ordered as follows:

Section 1. *Policies. (a) Seat Belt Use by Federal Employees.* Each Federal employee occupying any seating position of a motor vehicle on official business, whose seat is equipped with a seat belt, shall have the seat belt properly fastened at all times when the vehicle is in motion.

(b) Seat Belt Use in National Parks and on Defense Installations. Each operator and passenger occupying any seating position of a motor vehicle in a national park area or on a Defense installation, whose seat is equipped with a seat belt or child restraint system, shall have the seat belt or child restraint system properly fastened, as required by law, at all times when the vehicle is in motion.

(c) Seat Belt Use by Government Contractors, Subcontractors and Grantees. Each Federal agency, in contracts, subcontracts, and grants entered into after the date of this order, shall seek to encourage contractors, subcontractors, and grantees to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles.

(d) Tribal Governments. Tribal Governments are encouraged to adopt and enforce seat belt policies and programs for occupants of motor vehicles traveling on highways in Indian Country that are subject to their jurisdiction.

Section 2. *Scope of Order.* All agencies of the Executive Branch are directed to promulgate rules and take other appropriate measures within their existing programs to further the policies of this order. This includes, but is not limited to, conducting education, awareness, and other appropriate programs for Federal employees about the importance of wearing seat belts and the consequences of not wearing them. It also includes encouraging Federal contractors, subcontractors, and grantees to conduct such programs. In addition, the National Park Service and the Department of Defense are directed to initiate rulemaking to consider regulatory changes with respect to enhanced seat belt use requirements and standard (primary) enforcement of such requirements in national park areas and on Defense installations, consistent with the policies outlined in this order, and to widely publicize and actively enforce such regulations. The term "agency" as used in this order means an Executive department, as defined in 5 U.S.C. 101, or any employing unit or authority of the Federal Government, other than those of the legislative and judicial branches.

Section 3. *Coordination.* The Secretary of Transportation shall provide leadership and guidance to the heads of Executive Branch agencies to assist them with the employee seat belt programs established pursuant to this order. The Secretary of Transportation shall also cooperate and consult with the legislative and judicial branches of the Government to encourage and help them to adopt seat belt use programs.

Section 4. *Reporting Requirements.* The Secretary of Transportation, in cooperation with the heads of Executive Branch agencies, and after consultation with the judicial and legislative branches of Government, shall submit an annual report to the President. The report shall include seat belt use rates and statistics of crashes, injuries, and related costs involving Federal employees on official business and occupants of motor vehicles driven in national park areas, on Defense installations, and on highways in Indian Country. The report also shall identify specific agency programs that have made significant progress towards achieving the goals of this order or are notable and deserving of recognition. All agencies of

the Executive Branch shall provide information to, and otherwise cooperate with, the Secretary of Transportation to assist with the preparation of the annual report.

Section 5. *Other Powers and Duties.* Nothing in this order shall be construed to impair or alter the powers and duties of the heads of the various Federal agencies pursuant to the Highway Safety Act of 1966, 23 U.S.C. 402 and 403, as amended, section 19 of the Occupational Safety and Health Act of 1970, 29 U.S.C. 668, as amended, or sections 7901, 7902, and 7903 of title 5, United States Code, nor shall it be construed to affect any right, duty, or procedure under the National Labor Relations Act, 29 U.S.C. 151 *et seq.*

Section 6. *General Provisions.* (a) Executive Order 12566 of September 26, 1986, is revoked. To the extent that this order is inconsistent with any provisions of any prior Executive order, this order shall control.

(b) If any provision of this order or application of any such provision is held to be invalid, the remainder of this order and other applications of such provision shall not be affected.

(c) Nothing in this order shall be construed to create a new cause of action against the United States, or to alter in any way the United States liability under the Federal Tort Claims Act, 28 U.S.C. 2671-2680.

(d) The Secretary of Defense shall implement the provisions of this order insofar as practicable for vehicles of the Department of Defense.

(e) The Secretary of the Treasury and the Attorney General, consistent with their protective and law enforcement responsibilities, shall determine the extent to which the requirements of this order apply to the protective and law enforcement activities of their respective agencies.

THE WHITE HOUSE,

(FR Doc. 97-10331 *April 16, 1997.*

Filed 4-17-97; 11:04 am

Billing code 3195-01-

CHAPTER 35. OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL COMPLIANCE COMMITTEE (OSHECCOM)

This Section is Reserved