

**SAFETY
AND
LOSS PREVENTION MANUAL**

Topic No. 500-000-015



**State Safety Office
Tallahassee, Florida
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SAFETY AND LOSS PREVENTION MANUAL

500-000-015

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INTRODUCTION

SAFETY AND LOSS PREVENTION MANUAL

PURPOSE:

The purpose of the Safety and Loss Prevention Manual is to establish a uniform loss prevention program to minimize the number and severity of work-related injuries to employees and damage to materials and property; establish uniform operational safety plans; and define responsibilities for maintaining a safe working environment for all employees of the Department.

AUTHORITY:

Section 20.23 (3) (a) and Section 334.048 (3), Florida Statutes (F.S.)

REFERENCES:

Chapter 284.50, F.S.

The ***Governor's Executive Order, No. 2000-292***, directed all State agencies in Florida to voluntarily comply with Subparts C through T and Subpart Z of the ***Occupational Safety and Health (OSHA) standards, 29 CFR Part 1910***, as revised July 1, 1993. The Department also requires employees to comply with the most current OSHA standards found in ***29 CFR Parts 1926***, and ***1928.51***.

SCOPE:

This ***Safety and Loss Prevention Manual (Manual)*** applies to all employees and operations of the Department.

GENERAL:

- (1) The Department's loss prevention program will be implemented through safety manuals and guidelines promulgated by the State Industrial Safety Office based upon the requirements set forth by the state and federal agencies having such authority and jurisdiction.
- (2) The Department's facilities will be planned with the intent of providing each employee a place of employment that is free from recognized hazards. This

- commitment requires that safety be considered in all phases of operations.
- (3) The State Industrial Safety Office shall provide the leadership and technical assistance to develop implementation strategies and policies to promote safety awareness, hazard recognition and correction, and reporting within the Department.
 - (4) Supervisors shall be held accountable for maintaining a safe work environment and for ensuring that employees perform their work in a safe manner.
 - (5) Employees are responsible for performing their work in a safe manner and for following established procedures and safe work practices.
 - (6) Employees shall be provided initial indoctrination and the necessary training to enable them to perform their assigned tasks in a safe manner.
 - (7) Employees shall be accountable for reporting work related injuries, accidents, incidents, and hazardous conditions, and shall not be subject to retaliation or penalty for reporting such incidents and events.

DISTRIBUTION:

The **Manual** is available at the following addresses:

On the Internet at:

<http://www.dot.state.fl.us/safety/IndustrialSafety/SLPM.pdf>

The Department State Safety Office website at:

<http://www.dot.state.fl.us/safety/IndustrialSafety/SLPM.pdf>

QUESTIONS, SUGGESTIONS, or COMMENTS:

Any questions, suggestions, or comments concerning the **Manual** should be addressed to the State Safety Office at (850) 414-4176, or by e-mail to mark.eacker@dot.state.fl.us

REVISIONS AND ADDITIONS:

All revisions to the Manual will be coordinated with the Department Policy and Process Management Unit in accordance with the Department's **Standard Operating System Procedure, No.025-020-002**.

Chapter 1

RESPONSIBILITIES

1.1 DEPARTMENT

The Department shall furnish a work environment that is safe for its employees and shall adopt measures reasonable and necessary to protect the life, health, and safety of its employees.

1.2 DISTRICT SECRETARIES AND THE CENTRAL OFFICE

Each District Secretary, or designee, and a representative from the Central Office shall maintain the Department's safety and loss prevention program that includes, at a minimum, the program elements specified in this chapter. These individuals shall ensure that program and processes identified in this manual are implemented and a process is in place to assure each employee is in compliance.

1.3 UNIT MANAGERS/OFFICE HEADS

1.3.1 A Unit Manager/Office Head is an individual who exercises direction and control over one or more cost centers.

1.3.2 Each Unit Manager/Office Head is responsible for enforcing all safety rules and regulations and for implementing loss prevention programs. They are also responsible for ensuring their employees are provided with required safety training in accordance with **Chapter 12** of this Manual.

1.3.3 Unit Managers/Office Heads responsible for promulgating procedures shall ensure that such procedures address safety-related issues and responsibilities in compliance with applicable federal, state, and other regulations and industry standards.

1.3.4 The Unit Manager/Office Head may designate and assign specific safety responsibilities to an employee in implementing the requirements of this manual.

1.4 IMMEDIATE SUPERVISORS

1.4.1 The immediate supervisor is an individual who exercises direction and control over the work activity of one or more employees.

1.4.2 The immediate supervisor in charge of any work activity is responsible for ensuring that a safe work environment is maintained, safe work practices are followed, and employees are trained. No employee will be required to do a job using unsafe equipment or that violates safe work practices.

1.4.3 The immediate supervisor is responsible for notifying employees to be responsible for their own safety and the safety of their peers. They are also responsible for assessing and reducing work related risks.

1.5 SAFETY AND HEALTH MANAGERS AND SPECIALISTS, OR DESIGNATED SAFETY REPRESENTATIVE

1.5.1 Safety and Health Managers or Other Designated Representative

The Safety and Health Managers or designees are the focal point for coordination of his/her District safety and health programs. Their responsibilities include: implementation of loss prevention programs, identifying appropriate training programs for employees, and providing technical assistance and guidelines for District operations of Safe Work Practices.

1.5.2 Safety and Health Specialists or Designated Safety Representative

Safety and Health Specialists or designated safety representatives function as technical support staff for District Safety and Health Managers or designee and Unit Managers in implementing and monitoring compliance with safety and health programs in their assigned units or areas of responsibility. They may be assigned to field offices or for individual District departments or divisions. Their main functions are to coordinate safety meetings and conduct self-inspections of their areas of responsibility (this may not apply to each District.)

1.5.3 Central Office

Central Office does not have a Safety and Health Manager or Specialist like the District Offices. Unit Managers/Office Heads or their designated Safety Representatives are responsible for safety and health matters in their work units, including reporting of injuries/illnesses or crashes/incidents. The State Industrial Safety Office provides oversight of the Department's Safety and Loss Prevention Program as it relates to technical, procedural assistance, training guidelines, statistical data, awareness materials, policies, and other resources as identified in **Section 1.7** of this Manual.

1.6 EMPLOYEES

- 1.6.1 It is the responsibility of each employee to comply with established policies, procedures, and safe work practices.
- 1.6.2 Employees shall immediately report to their immediate supervisors any unsafe work practices or unsafe conditions, either verbal or in writing, such as:
- (A) Unsafe condition(s) of motor vehicles, equipment, facilities, shops, or property owned, leased, or operated by the Department where conditions may jeopardize the safety of the employee, other employees, or the public;
 - (B) Any practice or operation being carried on by Department employees that may jeopardize the safety of the employee, other employees, or the public;
 - (C) Any practice or operation being carried on by non-Department employees that may jeopardize the safety of Department employees while performing their assigned work.
- 1.6.3 Employees shall immediately report any work-related incident resulting in personal injury or illness, including any crash or incident involving a Department vehicle, to their supervisor or other employees designated by the Unit Manager/Office Head.
- 1.6.4 Employees who report unsafe acts or conditions to their immediate supervisor shall not be harassed for fulfilling their reporting responsibilities.

1.7 STATE INDUSTRIAL SAFETY OFFICE

- 1.7.1 The State Industrial Safety Office shall establish procedures, standards, and training requirements concerning the Department's safety and loss prevention program, in accordance with **Section 284.50, F.S.**
- 1.7.2 The State Industrial Safety Office shall review procedures promulgated by other Department offices to ensure that safety-related issues and responsibilities have been addressed in a manner that is in compliance with applicable regulations and industry standards, and to ensure compatibility with the provisions of this manual.
- 1.7.3 The State Industrial Safety Office shall be responsible for the development of safe work practices that must be observed by all employees in performing

their duties. The State Industrial Safety Office will update the manual as needed. The State Industrial Safety Office will provide guidelines for training on safe work practices when appropriate.

1.7.4 The State Industrial Safety Office may conduct periodic quality assurance reviews to assess the progress of loss prevention programs and to monitor the achievements to reach desired goals and/or objectives. Results of the review shall be furnished to the respective Unit Manager/Office Head.

1.7.5 The State Industrial Safety Office shall provide technical assistance and guidelines for training to the Districts and Central Office in developing and implementing their programs.

1.8 HAZARD REPORTING SYSTEM “HOTLINE”

1.8.1 Hazard recognition and reporting are integral parts of an effective loss prevention program and are the responsibility of all Department employees.

1.8.2 All Department employees are encouraged and expected to report any suspected hazard to supervisors or appropriate unit personnel, or by utilizing the Hazard Reporting System Hotline. The “Hotline” is available to all Department employees who believe that an immediate hazard exists, and/or who may wish to report such hazards while remaining anonymous.

1.8.3 Hazards can be reported by calling the “Hotline” at (850) 414-5255. Any hazard reported utilizing the “Hotline” shall receive immediate action, and will remain confidential.

Chapter 2

TRAINING AND EDUCATION

2.1 TRAINING AND EDUCATION GOALS

Safety education and training programs have been established to motivate and train employees in recognition, avoidance, and prevention of unsafe acts and unsafe conditions while performing assigned tasks.

2.2 SAFETY ORIENTATION

Safety orientation includes general information about safety. All newly hired employees shall be given an orientation to make them aware of the importance of safety and their responsibility for maintaining a safe work environment. Appropriate safety personnel or designated person shall conduct safety orientations within thirty (30) working days of employment. Safety orientation presents general information about safety policies, safety procedures, rules and regulations, and safety awareness. Document **Safety Orientation** in Learning Curve using **Course Number ST-09-0197**.

2.3 SAFETY INDOCTRINATION

2.3.1 Safety indoctrination is conducted for job specific safety training. All newly hired, reassigned, or promoted employees shall be given a safety indoctrination to ensure complete understanding of their job functions and the Department's safety policies and procedures including job-specific safety instructions. The employee's immediate supervisor shall conduct indoctrination within five (5) working days of employment, reassignment, or promotion.

2.3.2 Indoctrination will not be required when an employee is reassigned and/or promoted to a position where he or she has undergone indoctrination while in the previous position.

2.3.3.1 Upon completion of the **Safety Indoctrination, Form No. 500-000-16**, must be completed and signed by the employee, with a copy placed in the unit file.

2.4 TRAINING

The Unit Manager/Office Head shall ensure that safety training is provided to all employees for specific tasks or operations described in **Chapter 12**. The Unit Manager/Office Head shall ensure that employees attend and complete required safety training. All safety training shall be documented in Learning Curve.

2.5 FORMS

The following form are available from the Department's Form Library:

Form No. 500-000-16, Safety Indoctrination.

Chapter 3

ACCIDENT REPORTING AND INVESTIGATION PROCESS

3.1 REPORTING OF ACCIDENTS

- 3.1.1 All accidents that result in personal injury, illness, or property damage shall be immediately reported and investigated, regardless of the extent of injury, illness, or property damage. Employees must immediately report accidents, illnesses, injuries, incidents, and crashes to their supervisor.

Non-fatal accidents are reported by using the appropriate forms (**Form No. 500-000-18, Injury/Illness Report**, or **500-000-15, Vehicle Crash/Incident Report**). See **Chapter 4, Personal Injury/Illness Reporting**; and **Chapter 5, Vehicle Crash/Incident Reporting Process** for further details.

3.2 REPORTING OF FATALITIES

- 3.2.1 Any accident that results in the fatality of any Department employee shall be reported to the Unit Manager or his/her designee who will contact the appropriate Human Resources Manager, District Industrial Safety Office, District PIO, and the State Safety Office, Industrial Safety.
- 3.2.2 Any accident which results in a Department employee fatality related to a work activity on facilities or properties owned, leased, or regulated by the Department must be reported immediately to the respective District Secretary or Assistant Secretary.

3.3 INVESTIGATION OF ACCIDENTS

- 3.3.1 The purpose of an accident investigation is to conduct a non-fault-finding process for the purpose of gathering information and record facts about the accident that caused the injury, illness, or property damage and educate and train those involved and to prevent future recurrences. Employee fault and any subsequent actions or determinations resulting from the accident are separate from this process and come under the authority of Management and the HR Department.
- 3.3.2 The investigation should:
- (A) Identify the primary cause(s) and/or contributing factors leading to the

accident. Some of the primary causes that need to be investigated include the **Task** (safety devices used, safe work procedure, appropriate tools), **Hazardous Conditions** (improper or broken equipment, improper tool used, employees not trained to recognize), **People** (properly trained, overworked, no procedure, deviation from normal job procedure), **Personal Protective Equipment** (not provided, employees not trained, poor quality, used improperly), **Management System** (failure to identify hazards, failure to correct, training not provided, not conducting safety inspections, not providing a supervisor);

- (B) Determine what, if any, unsafe work practices or procedures caused the accident;
- (C) Determine what actions, such as eliminating unsafe conditions or correcting unsafe acts, can be taken to prevent similar occurrences;
- (D) Gather all related facts needed to answer the questions of what, when, where, why, who, and how;
- (E) Identify person(s) involved in the accident and person(s) who witnessed the occurrence;
- (F) Include an interview of each witness, if possible, which might provide information on the underlying cause(s) of the accident;
- (G) Reveal any deficiencies in operating policies, processes or procedures; and
- (H) Discover any unsafe work practices caused by untrained employees or those who need additional training.

3.4 INFORMATION GATHERING

- 3.4.1 The primary responsibility for conducting the investigation and gathering needed information about the accident rests with the immediate supervisor of the employee involved in the accident or with any other employee designated by the Unit Manager/Office Head for this purpose.
- 3.4.2 The investigation of the accident should be initiated immediately. The required reports, **Form No. 500-000-18, Injury/Illness Report** and **Form No. 500-000-15, Vehicle Crash/Incident Report** should be completed within thirty working days of the occurrence.
- 3.4.3 All information gathered from the investigation shall be recorded on the

required report form. However, if additional space is needed then the use of attachments is acceptable and at the bottom of the appropriate box state “see attachment”. The completed report should be well documented providing factual information regarding the accident to the Unit Manager/Office Head and provide a written record of the interim action(s) or recommended preventative action(s) taken to eliminate or minimize similar occurrence(s).

3.5 REVIEW PROCESS

3.5.1 The Unit Manager/Office Head may designate a group of employees to review injury/illness and crash/incident reports for the purpose of:

- (A)** Reviewing the information provided in the report for completeness and to ensure the information is detailed enough to provide the circumstances and causes leading up to the accident.
- (B)** Evaluating the interim action(s) or preventative action(s) taken to eliminate or minimize similar occurrences;
- (C)** Recommending permanent action(s) to eliminate or reduce the risk of recurrence (not discipline.)

Chapter 4

PERSONAL INJURY/ILLNESS REPORTING

4.1 RESPONSIBILITIES

4.1.1 The Employee:

- (A) The employee who is injured or becomes ill as a result of a work-related accident shall immediately report the accident to his/her immediate supervisor. The employee must complete **Section A and B** of the **Injury/Illness Report, Form No. 500-000-18**. If available the employee must sign **Section B** of the form.
- (B) The employee must provide an accurate and detailed account of how the injury/illness happened.
 - a. What they were doing when the accident happened;
 - b. Describe the type of equipment, tools or other items that were directly involved;
 - c. Describe the work environment (housekeeping, lighting, weather);
 - d. If PPE was required did it function properly;
 - e. What caused the injury/illness (may be one or more causes).

4.1.2 The Immediate Supervisor:

- (A) Shall ensure that the employee is provided appropriate first aid or medical treatment, as needed. Universal precautions must be observed as described in the **Bloodborne Pathogens Exposure Control Plan, Chapter 13**, and **Section 13.7** of this manual.
- (B) Need to identify responsible person to call Managed Care Provider (contact your Workers' Compensation Coordinator for the current phone number) who will provide instructions where the injured employee should go for medical treatment. First Aid only cases are also required to be called in to the Managed Care Provider.

- (C) As soon as the needs of the injured or ill employee are taken care of, shall conduct an investigation, and fill out **Sections C and D (1)** of the ***Injury/Illness Report, No. Form 500-000-18***
- a. **Conduct a non-fault-finding investigation for the purpose of identifying causes and solutions;**
 - b. **Gather all of the facts before making any conclusions:**
 - i. **Was the employee trained?**
 - ii. **Did the employee follow defined procedures?**
 - iii. **Was the process new to the employee?**
 - iv. **Was the correct equipment used?**
 - v. **Was a supervisor on the job?**
 - vi. **Was the employee authorized to do the work?**
 - vii. **Was the environment a contributing factor?**
 - viii. **Was the job located in a high risk area where the employee may be more concerned about the danger (traffic)?**
 - c. **The final analysis should identify what events led up to the accident, how the accident happened and then provide a plan on what preventive actions will be taken to eliminate future occurrences.**
- (D) Shall forward the report to the Unit's Safety and Health Specialist or designee.

4.1.3 The Unit's Safety and Health Specialist or designee:

- (A) Provides assistance, if needed, in investigating the accident. This assistance should be impartial, non-fault finding and provide additional facts regarding the cause ('s) of the accident along with recommendations on how to prevent future occurrences.
- (B) Fills out **Section D (2)** of the ***Injury/Illness Report (Form No. 500-000-18)***, indicating recommendations for preventive action(s),
- (C) Forwards the report to the Unit Manager/Office Head.

4.1.4 The Unit Manager/Office Head shall:

- (A) Review the employee, supervisor and safety specialist (or designee) comments for completeness and to ensure all of the facts, circumstances and causes are included in the report.
- (B) When the completed investigation supports the facts that the accident was preventable because the employee deviated from a written and/or verbal instruction, policy, procedure or work practice creating an unsafe act, then Management must review for appropriate administrative action.
- (C) When the accident cause was from an unsafe condition that may include a deficiency in the system, improper work procedures, lack of or not enough training, improper equipment, poor management decision or environmental issues then a written preventative action plan must be prepared outlining the steps to be taken to change or prevent recurrence.
- (D) Action plans must include what steps are to be taken, by whom and a proposed or actual completion date.
- (E) The information based on paragraph (B) or (C) then needs to be included in Section D (3) of Form No. 500-000-18.
- (F) Forward a copy of the completed report to the District Safety and Health Manager or designated person. For Central Office, the completed report should be forwarded to the State Safety Office, Industrial Safety, MS 53.

4.1.5 The District Safety and Health Manager or designee shall:

- (A) Provide assistance, if needed, in identifying and implementing pro-active plans that may include specialized safety training, selection of various types of equipment (this includes personal protective equipment), improved safety plans or any other action that will help in preventing future accidents.
- (B) Review all reports for completeness and to ensure they meet the requirements of this Chapter.

4.2 FORM

Form No. 500-000-18, Injury/Illness Report, is available from the Department's Forms Library.

4.3 SAFETY INFORMATION MANAGEMENT SYSTEM

The information contained in the report must be input into the Industrial Safety Information Management System (ISIMS) within 30 calendar days by an employee from within the Safety Department as defined in Section 1.5 of this manual.

Chapter 5

VEHICLE CRASH/INCIDENT REPORTING PROCESS

5.1 PURPOSE

All crashes and incidents involving Department motor vehicles, heavy equipment, motorized off-road equipment, watercraft, and aircraft, and leased, rented, and privately-owned vehicles used for official business shall be reported on **Form No. 500-000-15, Vehicle Crash/Incident Report**. Drivers/operators involved in crashes and incidents who are required to complete this report include all authorized FDOT employees, Department Of Corrections Officers and any other trained and authorized individual.

5.2 DEFINITIONS

5.2.1 Vehicle Crashes – A crash involving at least one motor vehicle which results in a fatality, injury, or property damage when such vehicle is in operation on a traffic lane. Any vehicular thoroughfare open to the public, is considered a traffic lane. Vehicle crashes also include:

- (A) Those involving off-road motorized equipment being operated on a traffic lane.
- (B) Those involving a privately-owned vehicle, or a leased or rented vehicle used by a Department employee on official business.
- (C) All backing accidents.

5.2.2 Vehicle Incidents – Vehicle incidents involving:

- (A) Damage to off-road motorized equipment not being operated on or adjacent to the traffic lane.
- (B) Damage to windshields, windows, signal lights, headlights, or tail-lights caused by tools, branches, debris, or similar objects.
- (C) Any damage caused to other property by unsecured items falling out of vehicles.
- (D) Any damage caused to other property by objects thrown during mowing

operations.

- (E) A damage to vehicles being operated off-road or in a designated Work zone.
- (F) In cases where a DOT vehicle or equipment makes contact with a POV or a POV makes contact and there is no visible damage or injuries then an incident Report must be completed.

5.3 VEHICLE CRASH

5.3.1 In the event of a vehicle crash, the driver must:

- (A) Make every effort to have the vehicle moved out of the normal flow of traffic unless the crash results in death, personal injury, or extensive damage to the vehicle so that it cannot be moved. Under these conditions, the vehicle shall not be moved unless directed by law enforcement or other authority.
- (B) Notify his/her immediate supervisor or other employees designated by the Unit Manager/Office Head as soon as possible. Follow the “Driver Instructions in the Case of **Vehicle Crash**” located in the glove compartment of the vehicle (page 9 of the Vehicle Crash/Incident Report, Form No. 500-000-15.)
- (C) Call law enforcement (FHP first) to report the accident. If law enforcement will not respond because there is minimal or no damage and there were no injuries, then request an accident case number and include this number on the crash report.
- (D) The driver must provide an accurate and detailed account of how the crash happened.
 - a. What type of work were you doing when the crash happened;
 - b. Describe the type of vehicle directly involved;
 - c. Describe the work environment (slippery ground, lighting, weather, slope, adjacent to high speed traffic, blind spot);
 - d. If this was a backing crash be specific regarding why a spotter was not used and why you had to back up versus driving forward;
 - e. Was the vehicle defective and if so describe;
 - f. What caused the crash (may be one or more causes).

- (E) Fill out **Sections A, B, C, D, and E** of the **Vehicle Crash/Incident Report, Form No. 500-000-15** and submit the report to his/her immediate supervisor before the end of the employee's shift. If the driver is on travel status, then report to the immediate supervisor upon arrival at his/her official work location or destination.

5.3.2 The immediate supervisor must:

- (A) Review the report and ensure that the driver's account and details of the crash are recorded. Review with the driver his/her account and details of the crash to ensure they have included all of the facts and causes that led up to the crash. Then:
 - a. Conduct a non-fault-finding investigation for the purpose of identifying causes and solutions;
 - b. Gather all of the facts before making any conclusions:
 - i. Was the employee trained and authorized to operate?
 - ii. Did the employee follow defined procedures?
 - iii. Was the work activity new to the employee?
 - iv. Was the vehicle inspected and serviceable?
 - v. Was a supervisor on the job?
 - vi. Was the employee authorized to do operate the vehicle?
 - vii. Was the environment a contributing factor?
 - viii. Was the job located in a high risk area where the employee may be more concerned about the danger (traffic)
 - c. The final analysis should identify what events led up to the crash, how the crash happened and then provide a plan on what preventive actions will be taken to eliminate future occurrences.
- (B) Fill out sections F and G (1) of the report. Attach all relevant information, witness statements and a copy of the police report, if available.
- (C) Forward the report to the Safety and Health Specialist or designee.
- (D) If the vehicle crash results in an injury to the driver or other Department

employee(s) fill out ***Injury/Illness Report, Form No. 500-000-18*** as required in ***Chapter 4*** of this ***Manual***.

- (E) Ensure that a new ***Vehicle Crash/Incident Report, Form No. 500-000-15*** is given to the driver to replace the forms used from the vehicle package.
- (F) Forward a copy of pages one and two of the report to the specific maintenance shop, where the vehicle requires repairs, as soon as possible. (See the contact list from the vehicle safety package.)

5.3.3 The Unit Safety and Health Specialist or designee shall:

- (A) Assist the immediate supervisor, if needed, in conducting fact finding investigations and completing reports. This assistance should be impartial, non-fault finding and provide additional facts regarding the causes of the accident along with recommendations on how to prevent future occurrences.
- (B) Ensure that the driver and the immediate supervisor have filled out the appropriate sections of the ***Vehicle Crash/Incident Report Form No. 500-000-15***, and that copies of all relevant documents are attached.
- (C) Fills out ***Section G (2)*** of the ***Vehicle Crash/Incident Report Form No. (Form No. 500-000-15)***, indicating recommendations for preventive action(s),
- (D) Submit the report to Unit Manager/Office Head.

5.3.4 The Unit Manager/Office Head shall:

- (A) Review the employee, supervisor and safety specialist (or designee) comments for completeness and to ensure all of the facts, circumstances and causes are included in the report.
- (B) When the completed investigation supports the facts that the crash was preventable because the employee deviated from a written and/or verbal instruction, policy, procedure or work practice creating an unsafe act, then Management must review for appropriate administrative action.
- (C) When the crash cause was from an unsafe condition that may include a deficiency in the system, improper work procedures, lack of or not enough training, vehicle malfunction, poor management decision or environmental issues, then a written preventative action plan must be prepared outlining the steps to be taken to change or prevent recurrence.

- (D) Action plans must include what steps are to be taken, by whom and a proposed or actual completion date.
- (F) Forward a copy of the completed report to the District Safety and Health Manager or designee.

5.3.5 The District Safety and Health Manager or designee must:

- (A) Provide guidance, if needed, in identifying and implementing pro-active plans that may include specialized operator training, refresher training, or any other action that will help in preventing future accidents.
- (B) Review all Reports for completeness and to ensure they meet the requirements of this Chapter.

5.4 VEHICLE/EQUIPMENT INCIDENT

5.4.1 In the event of a vehicle/equipment incident, the driver/operator shall:

- (A) Immediately notify his/her immediate supervisor or other employee designated by the Unit Manager/Office Head to report the vehicle incident.
- (B) The driver must provide an accurate and detailed account of how the Incident happened.
 - a. What type of work were you doing when the incident happened;
 - b. Describe the type of vehicle/equipment directly involved;
 - c. Describe the work environment (slippery ground, lighting, weather, slope, adjacent to high speed traffic, blind spot, obstacles, terrain);
 - d. Was the vehicle/equipment defective and if so describe;
 - e. What caused the incident (may be one or more causes);
 - f. If you are only a part time or emergency designated operator, when did you last receive refresher training?
- (C) Fill out **Sections A, B, C, D, and E** of the **Vehicle Crash/Incident Report, Form No. 500-000-15** and submit the report to his/her supervisor before the end of the employee's next work day shift following the incident. If the driver is on travel status, then report to the immediate supervisor upon arrival at his/her official work location or destination.

5.4.2 The immediate supervisor shall:

Follow the same process as outlined in **Section 5.3.2.**

5.4.3 The Unit Safety and Health Specialist or designee shall:

Follow the same process as outlined in **Section 5.3.3.**

5.4.4 The Unit Manager/Office Head shall:

Follow the same process as outlined in **Section 5.3.4.**

5.4.5 The District Safety and Health Manager or designee shall:

Follow the same process as outlined in **Section 5.3.5.**

5.5 VEHICLE CRASH/INCIDENT REPORT DISTRIBUTION

Responsibility for distribution of completed reports may be assigned by the individual District/Office to the District Safety and Health Manager, Safety and Health Specialist or designee. For crashes/incidents involving third parties a copy of the completed first and second page of the report must be forwarded within 24 hours of the accident to the office responsible for distributing the report to the General Council and Risk Management.

Copies are to be distributed as follows:

- (A)** One copy to the State Safety Office, Industrial Safety, MS 53, Tallahassee, FL 32399-0450 (or input into ISIMS).
- (B)** One copy to the Department's Office of General Counsel, MS 58, Tallahassee, FL 32399-0450 (when a third party is involved).
- (C)** One copy to the Division of Risk Management, Department of Financial Services, 200 East Gaines St., Tallahassee, FL 32399-0337 (when a third party is involved).
- (D)** One copy to the maintenance shop having jurisdiction of the vehicle (first page.)

5.6 ENTERING THE REPORT INTO ISIMS

The information contained in the report must be input into the Industrial Safety Information Management System (ISIMS) within 30 calendar days by an employee from within the Safety Department as defined in Section 1.5 of this manual.

5.7 FORMS

The following forms are available from the Department's Forms Library.

Form No. 500-000-15, Vehicle Crash/Incident Report

Form No. 500-000-18, Injury/Illness Report

Chapter 6

WORKPLACE SAFETY COMMITTEES

6.1 PURPOSE

A workplace safety committee consists of employees in non-supervisory and management capacities, organized to actively participate in the Department's loss prevention program and make recommendations to promote safety and health in the workplace as noted in **Chapter 7** of this *Manual*.

6.2 GENERAL REQUIREMENTS

6.2.1 A workplace safety committee shall be established in each District and the Central Office. A committee may be established for each unit location and/or a centralized committee may be established to represent all locations. The District Secretary/Assistant Secretary or designee shall have the responsibility to establish a committee.

6.2.2 The committee will be composed of management and non-supervisory employees. The number of Management members shall not exceed the number of non-Management. The District Secretary/Assistant Secretary or designee shall have the discretion of determining the number of members that will serve on the committee, and the length of tenure of the members. The State Safety Office serves as a non-voting member on the Central Office Safety Committee.

6.2.3 The appropriate union(s) may be offered the opportunity to appoint a member to each committee.

6.2.4 Each unit Manager/Office Head shall select an employee to represent the unit or office on the safety committee.

6.3 COMMITTEE FUNCTIONS

6.3.1 To generate and maintain employee interest and involvement in the Department's loss prevention programs.

6.3.2 Assist in the identification of unsafe conditions and practices and make recommendations to management for the reduction or elimination of such conditions and practices.

- 6.3.3** Assist in conducting safety inspections and hazard identification, as needed, including fleet and maintenance issues as appropriate.
- 6.3.4** Make recommendations to management for publicizing and implementing safety policies and procedures including safety awareness and incentive programs.
- 6.3.5** Meet at least once every quarter.
- 6.3.6** The Safety Committee under the direction of management, shall review and update work place safety rules, as needed, based on accident investigation findings, inspection findings and employee reports of unsafe conditions or work practices.

6.4 COMMITTEE STRUCTURE

- 6.4.1** A chairperson can be selected by the committee, by the District or Central Office Health and Safety Manager, or by the District Secretary to organize and conduct the meetings.
- 6.4.2** A secretary shall be selected by the committee to take notes during the meetings. The committee or management will post the schedule dates, times, and locations of the committee meetings in conspicuous places where employees normally gather.

Management will post minutes of the meetings in conspicuous places where employees normally gather and provide a copy to individual employees upon request.
- 6.4.3** Committee members should select a new chairperson and secretary at least every two years. The members may be reappointed for more than one term.

Chapter 7

SAFETY AWARENESS

7.1 PURPOSE

Creating and maintaining employee interest in safety is a necessary element in the Department's loss prevention program, and is consistent with the requirements of **Section 284.50, Florida Statutes**. Employees should be motivated to actively participate in the loss prevention program.

7.2 OBJECTIVES

7.2.1 A safety awareness program should:

- (A) Develop safe work habits and attitudes among employees.
- (B) Focus attention to specific causes of incidents.
- (C) Create opportunities for employees to participate in program activities.
- (D) Provide a channel of communication between employees and management.

7.3 PROGRAM ACTIVITIES

7.3.1 Each Unit Manager/Office Head shall ensure that:

- (A) An employee awareness program is promoted to develop and maintain an ongoing interest in safety among employees;
- (B) Adequate facilities including classrooms, equipment, and supplies necessary to effectively conduct the program are made available.

7.3.2 The following activities shall be given consideration for an awareness program:

- (A) **Safety Meetings:** Both on and off-the-job safety related subjects may be topics for safety meetings (see paragraph **7.3.2A (2)** of this Manual). Safety themes provided for each month in the Department's "Safety Advisor" may also be used as topics for the meetings.
 - (1) Meetings will be conducted by the supervisor or any other employee that the Unit Manager/Office Head may designate. All field employees or those employees whose job is a predominantly field

work shall attend a safety meeting at least once each month. All other employees shall attend a safety meeting at least once each quarter. Adequate time should be allotted at the safety meeting for safety and health related topics, usually 30 minutes. Unless, when operational requirements arise that cannot be rescheduled, employees are required to attend the safety and health meetings.

- (2) Topics for safety and health meetings may include but are not limited to potential job hazards, crash/injury reviews, safety inspection or any appropriate safety or health subject.
 - (3) Safety and Health Specialists/designated safety persons will, when requested, assist those who will conduct the meetings by helping in the selection of videos, safety materials, and other visual aids.
 - (4) Documentation of topics and employees' attendance shall be maintained for one year (12 months) at the unit level. **[Retention Schedule GS1-S (33)]**
- (B) **Safety Committees:** Employee membership and participation in safety committees should be encouraged. (**See Chapter 6** of this Manual for details)
- (C) All FDOT offices and field offices shall have safety and health bulletin boards. The boards shall be accessible to all employees during working hours. The items placed on the boards shall be limited to safety and health related topics only. Some examples are: safety publications, safety meeting minutes, safety training opportunities and safety recognition recipients.
- (D) **Newsletter(s):** The Safety Advisor, published by the State Safety Office, should be distributed and made available to all employees. They may also be available in facility reception areas and break rooms. Other safety related publications may also be utilized (such as safety training announcements, safety posters, etc.).
- (E) **Employee training:** Short training courses will increase employees' safety awareness. There are lists of short training videos available from the Industrial Safety Section of the State Safety Office, MS 53.
- (F) **Employee Recognition Program No. 250-000-007:** The Employee Recognition Program's objective is to encourage and motivate employees to strive for superior work results, higher levels of productivity, and creativity. Recognition must be in accordance with **Procedure No. 250-000-007, Employee Recognition Program.**

- (G) **Safety observation:** Employees should be encouraged to report unsafe conditions and unsafe work practices. (**See Section 1.8, Hazard Reporting System “Hotline”** of this Manual).

7.3.3 District Safety and Health Managers/designated safety persons shall ensure safety awareness programs are actively promoted. The State Safety Office shall ensure that the Central Office has safety awareness programs.

Chapter 8

SAFETY INSPECTION

8.1 PURPOSE

The purpose of safety inspections is to identify and minimize hazards, risks, and unsafe work practices.

8.2 SAFETY INSPECTION RESPONSIBILITIES

The Unit Manager/Office Head shall ensure that safety inspections of work activities and facilities are conducted on a regular basis. Safety inspections shall be made an integral part of the function of the supervisor or the designated safety person.

8.2.1 Supervisors or designated person shall:

- (A) On a regular basis, conduct safety inspections of all work operations and facilities for which they are responsible. This should include inspections done on a routine periodic basis, i.e., weekly, monthly, quarterly or informal daily inspection.
- (B) Use an inspection checklist **as a guide** in conducting the inspection. For assistance in making a checklist, contact the District Safety Office and/or State Safety Office.
- (C) Document any deficiencies found during the inspection and identify the action(s) needed to be taken to correct any deficiencies. A follow-up inspection must be completed within 30 days to ensure that any necessary corrective action was taken.
- (D) Maintain inspection records for one year (12 months), in accordance with ***Retention Schedule GS1-S (193)***.

8.2.2 Safety and Health Specialist/Designated safety person shall:

- (A) Conduct periodic inspections, i.e., monthly, quarterly, or semi-annually on work operations and facilities as appropriate.
- (B) Use a safety check list as a guide in conducting the inspection. An inspection checklist can be obtained from the State Safety Office or District Safety Office upon request.

- (C) When deficiencies are identified: record action(s) to be taken to correct the deficiencies, A follow-up inspection must be completed within 30 days to ensure that any necessary corrective action was taken.
- (D) Maintain inspection records for twelve months.
- (E) Provide any necessary assistance to Safety Committee initiated inspections.

8.2.3 District Safety and Health Managers or designee shall:

- (A) Conduct safety audits to ensure that safety inspections are being conducted and that actions have been taken to correct deficiencies found during such inspections.
- (B) Assist in the development of safety inspection check lists.
- (C) Monitor the progress of the safety inspection program.

8.3 DANGER TAGS

Danger tags are used to indicate that a specific piece of equipment, tool, or machine is no longer safe to use and is out of order. Any attempt to use it after it has been tagged is prohibited.

8.3.1 Authority to Issue Danger Tags

Each Unit Manager/Office Head shall designate employees who are authorized to issue danger tags. Only those designated employees and the District Safety and Health Managers (or his/her designees) will have the authority to issue these tags.

8.3.2 Responsibility

Employee shall report unsafe tools, machinery, and/or equipment to his/her supervisor. If it is determined that the item is unsafe to use contact the designated employee authorized to place a Danger Tag on the unsafe item.

8.3.3 Removal of Tags

Only employees authorized to issue accident prevention tags can remove the tags. Tags will be removed only when the authorized employee has determined that the unsafe item or equipment has been repaired, replaced, taken out of service permanently or eliminated.

8.4 UNAUTHORIZED REMOVAL OF TAGS

Any employee removing a tag without the authorized employee's knowledge shall be subject to disciplinary action in accordance with the DMS *Personnel Rule, 60L-36, F.A.C.*

Chapter 9

FIRST AID/MEDICAL ASSISTANCE

9.1 PURPOSE

The purpose of this chapter is to explain necessary medical assistance including first aid or any other universal precautions to be taken by the provider of such assistance.

NOTE: Unless specifically noted on an employee's position description, providing first aid is not a condition of employment. If employees wish to assist an injured employee, they must comply with this chapter and **Section 13.7** of this *Manual, Bloodborne Pathogens*.

9.1.1 Medical assistance must be made available to all employees in the event of injuries.

9.1.2 Transportation must be made available to transport an injured employee to an appropriate physician, walk-in facility, emergency medical facility or other health care facility.

9.1.3 First aid supplies are required to be readily available at each work location, and in all Department vehicles. When large or multiple operations are being conducted at the same location, supervisors should determine the need for additional first aid kits, equipment, and supplies. First aid kits should meet the current *American National Standard Institute (ANSI) Z 308.1*.

9.1.4 The **ANSI** standard is to be used as a minimum requirement **guide** in determining what first aid supplies need to be stocked and the items in those kits vary based on the type of work activity. The use of first aid ointments, antiseptics and burn creams should be stocked on an as needs basis due to their shelf life.

9.2 IN THE EVENT OF AN INJURY

9.2.1 In the event of an injury, the following steps are to be taken:

9.2.2 If the employee's assigned tasks include exposure to blood or other potentially infectious materials while using first aid supplies, the supervisor will ensure that appropriate personal protection equipment is available which shall include, at minimum, disposable gloves, gown, face shield, mask, and eye protection.

- 9.2.3** In work areas and operations where the eyes and body of employees may be exposed to injurious corrosive materials, facilities and/or equipment for quick drenching of the eyes and body shall be readily available.
- 9.2.4** Whenever possible, and if physically able, the injured employee will perform self-aid and clean up so as not to expose other employees to blood and other body fluids. Emergency Eye Wash Station and showers must meet the current **ANSI Z358**.
- Universal precautions should be observed by anyone assisting injured employees to prevent unanticipated exposure to blood or other body fluids. Gloves should be worn to prevent skin contact with the fluids.
- 9.2.5** Hands shall be washed immediately with soap and water after removal of the gloves.
- 9.2.6** Contaminated bandages, gauzes, and gloves shall be placed in a plastic bag and disposed of as ordinary trash.
- 9.2.7** Exposure incidents involving blood or other body fluids shall be reported in accordance with the requirements of the **Bloodborne Pathogens Exposure Control Plan, Section 13.7** of this **Manual**.

Chapter 10

STANDARDS FOR SAFE WORK PRACTICES

10.1 PURPOSE

The purpose of this chapter is to establish safe work practices standards for Department operations. This chapter provides minimum standards for work practices that when followed, should minimize the occurrence of injuries while performing such operations.

10.2 MANUAL MATERIALS HANDLING

10.2.1 The Unit Manager/Office Head must ensure, whenever feasible, that mechanical lifting and carrying aids are provided or made available to employees where manual material handling operations are routinely being performed. Materials and items weighing over 50 pounds should be lifted only with assistance or with the use of mechanical lifting devices, depending on the size, shape, and weight.

(Ref: *NIOSH Lifting Standard*)

10.2.2 **Lifting.** Before attempting to manually handle any load, the employee shall:

- (A) Size up the load as to its weight, size, and shape;
- (B) Use, when available, lifting and carrying aids such as hand trucks, dollies, pallet jacks, and carts; or
- (C) Get assistance from a co-worker.
- (D) Observe the following:
 - (1) Plan the move before lifting; remove obstructions from the chosen pathway.
 - (2) Place feet about a foot apart and close to the object for good balance.
 - (3) Bend knees to a comfortable position and get a good grip of the object with the hands and fingers. Use handles when present. Never lift objects if hands are greasy or wet.

- (4) To the extent feasible use your legs to push up and lift the load straight up, smoothly and evenly, not the upper body or back. Push with the legs; keep load close to the body.
- (5) Lift the object into carrying position, avoiding twisting movements until the lift is completed.
- (6) Turn the body with changes of foot position making sure the path of travel is clear.
- (7) Using your leg muscles, comfortably lower the load by bending the knees. When the load is securely in place, release the grip. Setting down the load properly is just as important as picking it up.
- (8) Do not lift an object from the floor to a level above the waist in one motion. Set the load down on a table or bench and then adjust the grip before lifting it higher.
- (9) Slide materials to the end of the tailgate before attempting to lift them off a pick-up truck. Do not lift over the walls or tailgate of the truck bed.
- (10) If assistance is available, coordinate and communicate movements with the employee assisting with the lift.

10.3 PERSONAL PROTECTIVE EQUIPMENT AND LIFE SAVING EQUIPMENT

The purpose of personal protective equipment is to provide a barrier or shield between employees and chemicals or physical hazards present in the workplace, or to isolate employees from such hazards. Employees are required to wear personal protective equipment appropriate for tasks that they will perform. (Personal Protective Equipment is to be used only as a last resort if engineering or administratively eliminating any hazards that could be harmful to the employee are not feasible.)

10.3.1 Hazard Assessment and Equipment Selection

10.3.1.1 The Unit Manager/Office Head shall ensure that:

- (A) A written assessment (Job Hazard Analysis) is conducted to determine what hazards are present in the workplace that would necessitate the use of personal protective equipment;
- (B) Sources of hazards are identified. The type and level of risk or the seriousness of the potential injury from each identified hazard is determined.

- (C) Proper personal protective equipment is selected and used that will protect the affected employee(s) from the identified hazards;
- (D) Approved equipment is used, tested, inspected, and properly maintained;
- (E) Employees are trained on:
 - (1) When personal protective equipment is necessary.
 - (2) What personal protective equipment is necessary.
 - (3) How to properly adjust and wear personal protective equipment.
 - (4) The limitations of the personal protective equipment.
 - (5) The proper care, maintenance, useful life, and disposal of the personal protective equipment.
- (F) Retraining is required when:
 - (1) There is reason to believe that the employee lacks the understanding and/or skill to demonstrate the proper use and care of personal protective equipment.
 - (2) If there are changes in workplace conditions or types of personal protective equipment used.

10.3.2 Head Protection

- (A) Supervisors shall ensure that all employees wear approved head protection when working at or visiting Department work sites where there is a possible danger of head injuries. The approved colors for hard hats are orange, yellow or white, and only the removable reflective 3M high visibility lime yellow/silver stickers may be used on the hard hat. These stickers are designed so that they can be removed and re-attached for inspection of the hard hat. Any other types of stickers are prohibited. Cowboy hat type hard hats are not to be used.
- (B) Head protection must be worn by employees in the following work sites and operations:
 - (1) Tree trimming;
 - (2) Under overhead construction/maintenance work;
 - (3) Under overhead sign work;

- (4) Working around equipment with moving or working parts over shoulder height;
 - (5) Using chain saws;
 - (6) Working in excavations/trenches, manholes, or catch basins that are four feet or more in depth;
 - (7) On construction sites designated as hard hat areas.
- (C) Head protection shall be inspected regularly by the employee and replaced immediately when found defective or exceeds the manufacturer's service life. Head protection is considered defective if it is cracked or otherwise damaged, faded, modified, or not equipped with an inner suspension liner. Head protection shall meet ANSI Standard 89.1.

10.3.3 Eye and Face Protection

- (A) Supervisors shall ensure all employees wear appropriate eye and face protection where their eyes and face are exposed to hazards. These hazards could include flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical fumes, gases/vapors, or potentially injurious radiation. Eye and face protection must meet ANSI/SEA Standard Z87.
- (B) Eye and face protection must be worn by all employees in the following operations:
- (1) Acetylene burning, cutting, and welding;
 - (2) Electric (ARC) welding;
 - (3) Abrasive blasting;
 - (4) Chemical handling;
 - (5) Grinding;
 - (6) Spot welding;
 - (7) Using power/powder activated tools;
 - (8) Sledge hammering, hammering, chiseling, scaling, drilling, dressing, buffing, polishing, wire brushing, weeding, or any other operation where flying objects or dust particles are generated;
 - (9) Around injurious radiation;

- (10) Cleaning with compressed air;
- (11) Chain saw operations.
- (C) Employees whose vision requires the use of corrective lenses while engaged in operations that involve eye hazards shall wear eye protection that can be worn over the prescription glasses without interference.
- (D) The supervisor shall require an employee to wear appropriate eye or face protection when in his/her judgment the work activity being performed presents a condition capable of causing injury to the employee's eyes and face.
- (E) In work areas and operations where the eyes and bodies of employees may be exposed to injurious corrosive materials, facilities and/or equipment for quick drenching of the eyes and body shall be readily available.

10.3.4 Hand Protection

Supervisors shall ensure all employees wear appropriate hand protection when their hands are exposed to hazards. These hazards include those that can cause cuts, lacerations, abrasions, punctures, chemical burns, thermal burns, and absorption of harmful temperatures. Emphasis on using ergonomic type gloves should be encouraged and matched to the hazard or exposure.

10.3.5 Foot Protection

Supervisors shall ensure that all employees wear serviceable and appropriate foot protection when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where the employees' feet are exposed to electrical hazards. Employees are responsible for inspecting their safety shoes to ensure they are serviceable (soles are not worn out, steel insert is not exposed, or the leather uppers are not worn out.)

10.3.6 Respiratory Protection

- (A) At times, certain airborne contaminants such as dusts, fumes, gases, or vapors cannot be eliminated in the workplace by accepted control measures such as enclosures, or local or general ventilation. When such measures are not feasible, respirators may be required to be worn by affected employees. Whenever possible an assessment should be conducted by an industrial hygienist or a competent person who has been trained and certified to conduct those assessments.

- (B) Supervisors shall ensure that when respirators are required to be worn by employees, the respiratory program in **Section 13.3** of this **Manual** is followed. The unit Safety and Health specialist/designated safety person shall provide assistance in implementing the program.
- (C) Employees are responsible for using respirators in accordance with the training and instructions received.

10.3.7 Hearing Protection

Employees shall be required to wear hearing protection in designated work areas or operations where the Unit Manager/Office Head has determined that the noise levels exceed a time weighted average (TWA) of 85dBA. Every effort should be made to purchase equipment where the noise level has been lowered and the dBA is listed on the specifications. For older equipment, conduct assessments to determine if noise levels can be reduced through the use of noise adsorption barriers or modification such as noise adsorption covers for jack hammers

- (A) A hearing conservation program will be administered in units where employee exposure to noise levels exceeds the allowable limits according to the hearing conservation program in **Section 13.4** of this **Manual**.

10.3.8 Fall Protection Equipment

10.3.8.1 Safety Harnesses, Lifelines, and Lanyards

- (A) Appropriate fall protection systems are required when employees are doing construction work, repair work, or painting 6 feet or more above any work surface.
- (B) Body harnesses and lanyards shall be worn and utilized when working on aerial platforms, bucket trucks, or forklift platforms and shall be inspected prior to each use. Any found to be defective or damaged should be taken out of service.
- (C) Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a dead weight of 5,400 pounds.
- (D) Personal fall arrest systems and components damaged or subject to impact loading shall not be used again. Destroy and dispose of immediately.
- (E) Body harnesses shall be used for fall arresting and safety belts shall be used only as positioning devices.

- (F) Only locking-type snap hooks shall be used for harnesses, lifelines and lanyards.
- (G) Fall arrest-systems shall be rigged so the employee can neither fall more than 6 feet nor contact any lower level.

10.3.8.2 Safety Nets

- (A) Safety nets shall be provided for work places (construction activities) more than 25 feet above any surface where ladders, scaffolds, catch platforms, safety lines, and harnesses are impractical.
- (B) When nets are used, they shall extend not less than 8 feet beyond the edge of the work surface and not more than 25 feet below the work surface.
- (C) Work operations shall not be undertaken until safety nets are in place.
- (D) Nets shall be kept free from debris.
- (E) Impact load testing must be accomplished prior to using the safety net.

10.3.8.3 Working Over or Near Water

- (A) All employees working over or near water (including being inside the work bucket of a bucket truck over water) where the danger of drowning exists are required to wear a U.S. Coast Guard approved life jacket or buoyant work vest. Inspection is required prior to and after each use for defects which may alter their strength or buoyancy.
- (B) Supervisors shall designate the nearest area free of water as a place of safety and ensure that:
 - (1) Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet.
 - (2) A life-saving skiff or boat is immediately available for rescue operations where employees are working over or adjacent to water and involving construction activities, repairing, painting or any other maintenance-related activities. ["Immediately available" means if an employee falls into the water the boat or skiff is already in the water to perform rescue operations without delay.]

10.3.9 Safety Vests

- (A) All Department employees working on DOT Right of Way, regardless of the distance from the roadway, and on any other non-DOT Right of Way where there is an exposure to traffic are required to wear approved high-visibility apparel. A minimum of a Class 2 vest is required. Flaggers working at night must wear orange or lime green Class 3 apparel.
- (B) The requirements in **Paragraph (A)** also apply to rainwear. Rain coats or rain suits must be a Class 2 or 3 high-visibility apparel with reflective stripes on the sleeves, the front and the back of the rainwear or the employee must wear at least a Class 2-vest over the orange or yellow rainwear.

10.4 FIRE PREVENTION AND PROTECTION

10.4.1 Portable Fire Extinguishers

- 10.4.1.1 Appropriate portable extinguishers, suitable to the type of hazard, must be readily available at all work sites as required by **NFPA 10** and in all Department vehicles and drivable equipment.
- 10.4.1.2 Fire extinguishers must be properly installed and secured using a wall hangar designed for this purpose or installed in an approved wall cabinet
- 10.4.1.3 Fire extinguishers in vehicles or drivable equipment must be secured and must not be located where they will create a tripping hazard for the driver or passengers.
- 10.4.1.4 Portable fire extinguishers shall be conspicuously located, easily accessible, and identified through the use of signs, arrows, or other appropriate means.
- 10.4.1.5 No supplies, materials, tools, or cabinets will be placed near portable fire extinguishers so as to obstruct their use.
- 10.4.1.6 Supervisors and/or facility managers will be responsible for the inspection, maintenance, and testing of portable fire extinguishers located in Department facilities.
 - (A) **Inspection - Monthly** documented inspection of portable fire extinguishers shall be performed to (use the tags on the fire extinguisher or a locally developed form):
 - (1) Ensure that extinguishers are in the designated locations.
 - (2) Ensure that extinguishers are fully charged.
 - (3) Ensure that extinguishers have not been discharged or tampered with.

- (4) Check pressure gauge and nozzle for loss of pressure and/or damage.
 - (5) Detect any obvious physical damage, corrosion, or other defects.
 - (6) Ensure that operating instructions are clearly visible on the front of each extinguisher and the extinguishers are mounted on hangars.
 - (B) **Maintenance** - Portable fire extinguishers shall be thoroughly examined and/or **recharged annually** by a qualified technician.
 - (C) **Replacement** - Portable fire extinguishers that are removed for maintenance or recharging shall be immediately replaced by spare extinguishers of the same type and equal rating or greater.
 - (D) **Testing** - Portable fire extinguishers will be hydrostatically tested by a competent person as required by the **69A-21.242, F.A.C.**
- 10.4.1.5** Supervisors and Unit Managers are responsible for ensuring that employees who are assigned to use portable fire extinguishers are trained to use them.
- 10.4.2 Fire Prevention**
- 10.4.2.1 Housekeeping-** The Unit Manager and/or designated person shall ensure proper housekeeping is maintained.
- (A) Offices are to be kept clean, orderly, and sanitary. Trash must be emptied regularly.
 - (B) Oily rags and other flammable or combustible wastes must be disposed of in metal containers with self-closing lids, and clearly marked "**Flammable Waste.**" These containers must be emptied daily.
 - (C) Combustible rubbish outdoors must be disposed of in containers with lids, or in containers with a self-closing lid, and clearly marked "**Trash Only**".
 - (D) Combustible materials such as lumber and containers of liquids must be piled with due regard to stability.
 - (E) Storage areas must be kept free from accumulated rubbish. Weeds and grass must be controlled.
 - (F) Vegetation must be controlled.
 - (G) All materials shall be stored with regard to their fire characteristics.

- (H) Exits shall not be obstructed.
- (I) Adequate aisles and clearances must be maintained.

10.4.2.2 Ignition Hazards

- (A) Internal combustion engine-powered equipment shall be located so that the exhausts are well away from flammable and/or combustible materials.
- (B) Smoking is prohibited within fifty feet of fuel storage areas or gas service stations. **“No Smoking or Open Flame”** signs shall be posted in these areas.
- (C) **Smoking is prohibited in all the Department buildings including all storage sheds, shops and guard shacks.**
- (D) Smoking is prohibited in all Department vehicles including boats.

Cooking that may release grease laden vapors shall not take place inside buildings or in approved kitchen areas unless an approved ventilation system is in place and has been approved by the State Fire Marshal.

- (E) Open flames or any other burning object (such as incense) is prohibited. The only exceptions would be the use of serving tray warmers for a special function (if approved by the building manager and supervisor) and the use of candles on birthday cake (only when they will be blown out immediately.)

10.4.2.3 Emergency Action Plan

- (A) An emergency action plan shall be implemented to cover those designated actions Department personnel must take to ensure employee safety and orderly evacuation from fire hazardous material release, bomb threats, hurricanes, tornadoes and other emergencies.
- (B) Prior to the implementation of an emergency action plan, a sufficient number of persons shall be trained to assist in the safe and orderly emergency evacuation of employees.
- (C) An emergency action plan shall be written to include, at a minimum, the following essential elements:
 - (1) The types of evacuation to be used in emergency circumstances;
 - (2) Emergency-escape procedures and emergency escape route assignments;

- (3) Procedures that must be followed by those individuals who remain to operate critical facility functions before they evacuate;
 - (4) Procedures to account for all employees and visitors to be accounted for after an emergency evacuation has been completed;
 - (5) Rescue and medical duties for those employees who are to perform them;
 - (6) Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan;
 - (7) The preferred means of reporting fires and other emergencies;
 - (8) Names or regular job titles of those persons responsible for maintenance of equipment and systems installed to prevent or control ignitions of fire;
 - (9) Names or regular job titles of those persons responsible for control of fuel source hazards;
 - (10) Housekeeping procedures that control the accumulation of flammable and combustible materials and residues so that they do not contribute to a fire emergency;
 - (11) A list of major workplace fire hazards and the proper handling and storage procedures, potential ignition source (such as welding, smoking and others), the control procedures, and the type of fire protection equipment or systems which can control a fire involving them.
- (D) All employees shall review the emergency action plan and be apprised of fire hazards of the materials and processes to which they are exposed.
- (E) The written emergency action plan shall be kept in the workplace and made available for employees. The plans must also be included in the ***District and Central Office Comprehensive Emergency Management Plan (CEMP)***.

10.5 ELECTRICAL SAFETY

A common cause of electrical incidents in the workplace is contact with electrical current that can result in death by electrocution or electric burns, other physical injuries, or overheating that can cause fire or explosion. Electric appliances and machines, electrical wiring and other electrical

delivery systems such as fuse boxes, circuit breaker boxes, or wiring within conduits are sources of electrical hazards.

10.5.1 Safe Work Practices

10.5.1.1 Before any work is performed, the supervisor must ensure that every part of an electric power circuit, exposed or concealed, is so located that the performance of the work will not bring any employee, tools, or machine into contact with the circuit. Warning signs must be posted and maintained where such circuit exists.

10.5.1.2 No employee will be allowed to work near any part of an electric power circuit, which the employee may accidentally contact, unless the circuit is de-energized or guarded by effective insulation. Danger tags and locks shall be placed to plainly identify the equipment or circuit(s) being serviced.

10.5.1.3 Only trained/qualified employees shall be permitted to work on electrical installations or perform maintenance or conduct electrical tests. Refer to training requirement, **Chapter 12** of this **Manual**.

Note: Training shall be of the classroom or on-the-job type.

Tasks assigned shall not exceed the degree of training.

10.5.1.4 Before use on each shift, employees must inspect all electric power tools, line cords, and plugs. Defective tools and equipment shall not be used and shall have a danger tag affixed until repaired or replaced.

10.5.1.5 Flexible cords connected to equipment shall not be used for raising or lowering the equipment.

10.5.1.6 Plugs are not to be removed from wall outlets by tugging on the line cord.

10.5.1.7 **Extension cords are prohibited from use inside any office, crew room, bridge tender's office, warehouse, or any other indoor area as permanent wiring.** Only heavy extension cords are authorized to be used for temporary electrical service for audio-visual equipment, janitorial equipment, or in construction/ maintenance activities. Power-strips with built in circuit breakers may be used but cannot be connected to other strips to reach wall outlets.

10.5.1.8 Adapters that interrupt the continuity of the equipment grounding connection must not be used.

10.5.1.9 **Only** authorized and approved current, voltage, or other electrical instruments are allowed to be used.

10.5.1.10 Metal ladders shall not be used when working on any energized electrical system.

10.5.1.11 **Only** ANSI approved and labeled rubber protective devices will be allowed to be used in electrical maintenance work. Ground Fault Circuit Interrupters must be used in wet/damp areas. Additionally, ground fault circuit interrupters should be tested at least **quarterly**.

10.6 LABORATORY SAFETY

Established safety requirements and safe work practices in performing laboratory work will reduce the exposure of laboratory employees to hazardous chemicals and enable them to handle chemicals in a safe manner **(See Section 13.8 of this Manual, Laboratory Safety Program)**.

10.7 SIGNS

Buildings containing hazardous chemicals shall be placarded according to the rules of the State Fire Marshal.

10.8 CHAIN SAW OPERATIONS

10.8.1 Chain saw operators shall wear hard hats, eye protection, face protection, gloves designed to be used for chain saws, chaps, and appropriate hearing protection.

10.8.2 Chain saw operators shall not wear any jewelry or excessively loose-fitting clothing which could become entangled in the machine's operating parts.

10.8.3 Chain saws shall be inspected prior to use to assure that all handles and guards are in place and tight, that all controls function properly, and that the muffler is in good condition.

10.8.4 The manufacturer's instructions shall be followed as to operation and adjustment of chain saws.

10.8.5 Chain saws shall be fueled only in safe areas, and not under conditions conducive to fire, such as near smoking areas, hot engines, etc.

10.8.6 Fuel shall be stored and dispensed from approved, plainly marked safety containers.

10.8.7 Chain saws shall be started at least 10 feet away from refueling areas.

10.8.8 Chain saws shall be started only on the ground or when otherwise firmly supported.

- 10.8.9 Operators shall be certain of footing and shall clear away all brush, which might interfere with cutting prior to starting a cut.
- 10.8.10 Chain saws shall be held with both hands in order to maintain control of saws during operation.
- 10.8.11 Chain saws shall be turned off when carried in hazardous conditions such as slippery surfaces or heavy underbrush.
- 10.8.12 Chain saws shall not be used to cut directly overhead or at a distance that would require the operator to lose a safe grip on the saw or to cause debris to fall on the operator.

10.9 WORK ZONE SAFETY

- 10.9.1 When setting up or supervising work zones on state and federal highways, the workers shall have training in accordance with the ***FDOT Maintenance of Traffic Training, Procedure No. 625-010-010***. The workers shall also have knowledge of the safe work practices in accordance with procedures, the ***Manual on Uniform Traffic Control Devices (MUTCD)*** from ***Rule 14-15.10***, located at <http://mutcd.fhwa.dot.gov/> and Department design standards.

10.9.2 Flagging

When operations are such that signs, signals, and barricades do not provide adequate protection on or adjacent to a highway or street, flaggers and/or other appropriate traffic controls shall be provided. Signaling shall be accomplished by flaggers in conformance with:

- (1) ***Manual on Uniform Traffic Control Devices (MUTCD)***.
- (2) ***Department Design Standards***.

- 10.9.3 Department flaggers shall wear ANSI approved high visibility safety apparel during day light hours.
- 10.9.4 The supervisor in charge shall ensure that the individual selected for flagger duty is fully trained per ***FDOT Maintenance of Traffic Training, Procedure 625-010-010*** procedure to perform his/her duties at the work site.
- 10.9.5 At night Flagger Stations SHALL be illuminated and the Flaggers are required to wear current approved ANSI/ISEA Class 3 High Visibility Safety Apparel.

10.9.6 Flag use is limited to immediate emergencies, intersections and when working on the center line or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes.

10.9.7 Flashing or hazard warning lights shall be in compliance with the Mobile Equipment Manual Topic No. 400-000-001, Section 1.4.6 Vehicle Lighting.

10.10 LADDERS

10.10.1 Portable Wood Ladders

- (A)** All wood parts shall be free from sharp edges and splinters; sound and free from shake, wane, compression failure, decay, or other irregularities. The joint between the stops and side rails shall be tight and all hardware and fittings securely attached.
- (B)** Inspections shall be conducted frequently on all extension and step-ladders.
- (C)** Safety feet and other auxiliary equipment shall be kept in serviceable condition.
- (D)** Ladders that are defective shall be red-tagged as "Dangerous-Do Not Use" and taken out of service.
- (E)** Ladders shall be used at the proper angle. The ladder shall be used at such a pitch that the horizontal distance from the top support of the foot of the ladder is 1/4 the working length of the ladder, e.g. if the object is 20 feet high the foot of the ladder will be placed 5 feet from the bottom of the object.
- (F)** Ladders shall be placed to prevent slipping or shall be latched or held in position while in use.
- (G)** Ladders shall not be placed on unstable bases.
- (H)** Splicing or tying together two ladders is prohibited.
- (I)** Standing on the top step of a stepladder is prohibited.
- (J)** Ladders used to access roofs shall extend at least 36 inches past the landing surface.

10.10.2 Portable Metal Ladders

- (A)** Rungs and steps shall be corrugated or treated with non-skid material to prevent slipping.

- (B) Single ladders shall not exceed 30 feet.
- (C) Two-section ladders shall not exceed 48 feet.
- (D) Portable metal ladders shall be prohibited from being used for electrical work or where they may contact electrical conductors.
- (E) Ladders shall be maintained in good condition and inspected regularly for damage.
- (F) Ladders having defects shall be red-tagged and taken out of service until repaired. (**Section 8.3** of this **Manual**)
- (G) Ladders exposed to oil, grease, or paint should be immediately cleaned.
- (H) The ladder shall be set up at the proper angle, with the base placed one fourth of the working length of the ladder from the vertical wall.
- (I) Ladders shall have secure footing.
- (J) Ladders shall be protected from corrosion.

10.10.3 Fixed Ladders

- (A) Metal rungs shall be treated to prevent corrosion.
- (B) Wood ladders shall be treated to resist decay using preservatives non-injurious to employees.
- (C) Ladders installed at 90 degrees to the horizontal shall have at least a 30-inch space between the ladder and any permanent object on the climbing side.
- (D) Rungs shall be free of splinters, sharp edges, burrs, or projections that may create a hazard.
- (E) Cages or safety devices shall be provided on all ladders that are more than 20 feet to an unbroken length of 30 feet in length.
- (F) Landing platforms shall be provided for each 20 feet of height on ladders without cages, wells or safety devices
- (G) Landing platforms shall have standard railings and toe boards.
- (H) Ladder safety devices shall be used on tower, chimney, and water tank ladders.

10.11 MOTOR VEHICLE AND EQUIPMENT OPERATIONS

10.11.1 The safe operation of Department motor vehicles or equipment is the responsibility of the operator.

10.11.2 All employees shall be properly licensed and required to have the license in their possession at all times when operating Department owned or leased motor vehicles or equipment and be familiar with and comply with all state and local traffic laws and ordinances. The Department ***Procedure No. 250-000-010, Driver's Record Requirements***, establishes the driver records requirements related to: (1) the appointment of new employees, the appointment of current employees, and the retention of current employees in positions that have the operation of a motor vehicle identified as a requirement to perform the job duties of the position, as stated on their position description; and (2) employees who occasionally operate vehicles (Department, rental, personal) to perform Department business.

10.11.3 A program has been established to train and provide written authorization for employees to operate vehicles 1.81 metric tons (2 tons) or greater to include all off-road equipment regardless of weight, and shall be implemented according to the ***Motor Vehicle/Heavy Industrial Equipment Operation Authorization, Section 13.5*** of this ***Manual***.

10.11.4 Vehicle Operation

- (A) All occupants of a motor vehicle are required to use the safety belts provided whenever the vehicle is in motion, regardless of whether they are driving on roadways in the yard, construction sites, or off-road sites. The proper use of safety belts includes the correct placement of the shoulder harness so it crosses the chest (not tucked under the occupant's arm.)
- (B) Always drive within the posted speed limit and govern speed according to posted speed limits, road conditions, and traffic conditions. Operators of any state owned or leased vehicle shall report within 24 hours to their immediate supervisor if they received any citation from a law enforcement officer for any motor vehicle law violation.
- (C) Use directional signals in the sufficient time to adequately warn other drivers of intended action.
- (D) Avoid sudden stops or other abrupt maneuvers.
- (E) Use proper following distances. Allow sufficient space to react to unexpected conditions.

- (F) Allow plenty of room when passing.
- (G) Yield to pedestrians.
- (H) When parking a vehicle or piece of equipment, set the brake, turn ignition off, and place transmission in low gear or in “park” if it has an automatic transmission. Some circumstances may also require the vehicle to be chocked or blocked to prevent the vehicle from rolling when parked.
- (I) Loads must be properly secured to prevent injuries to employees and the public.
- (J) Loads shall not exceed the rated vehicle payload capacities. The maximum load capacities (stenciled on the manufacturer's sticker) shall be posted on all trailers and trailer-hitches or other equipment being towed to ensure load capacities are not exceeded.
- (K) Loads that extend beyond the bed or body length of the vehicle shall be properly identified by warning signs, flags, reflectors, or lights in accordance with the Uniform Traffic Control Law and specifically **Section 316.228, F. S.**
- (L) Where possible, all vehicles will be parked so that backing is not required on departure.
- (M) All vehicle operators shall perform a walk around inspection of their vehicle prior to departure to determine any unsafe condition and/or body damage.
- (N) All vehicles with restricted view to the rear will use a spotter for assistance when backing. For vehicles such as dump trucks where the driver normally does not have a passenger or another employee to be used as a spotter, it is suggested that a backup detection system alarm be installed that will notify the driver that there is an object behind him/her.
- (O) When transporting flammable or volatile liquids or chemicals, only approved safety containers meeting Underwriters Laboratory specifications shall be used and the containers must be secured.

10.11.5 Construction Equipment, Land Clearing Vehicles

- (A) All equipment left unattended at night must have appropriate lights or reflectors to identify the location of the equipment and must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crash cushion.

- (B) Bulldozer and scraper blades, front-end loaders, buckets, dump beds, and similar equipment must be either fully lowered or blocked when being repaired or when not in use.
- (C) The operator and other persons shall be protected from hazards created by pinch points, rotating parts of the equipment, or flying chips/debris, by incorporating guards, personal protection equipment, and/or appropriate safety training.

10.11.6 Jump Starting Vehicles

- (A) Connect one red end on the jumper cable to the positive (+) terminal of the good battery, while the vehicle is running.
- (B) Connect the other red end on the jumper cable to the positive (+) terminal of dead battery.
- (C) Connect the black end on the jumper cable to the negative (-) terminal of the good battery.
- (D) Connect the other black end on the jumper cable to the engine block of the vehicle to be started.
- (E) Make sure the cable is clear of fan blades and belts.
- (F) Attempt to start the non-operable vehicle.
- (G) After inoperable vehicle has been restarted, remove cable connections in reverse order.

10.12 FORKLIFT OPERATIONS

- 10.12.1** No employee will be allowed to operate a forklift unless trained and authorized by his/her supervisor.
- 10.12.2** The operator must ensure there are no additional riders on the forklift while it is being operated.
- 10.12.3** Forklifts shall not be driven up to a person who is standing in front of a fixed object.
- 10.12.4** No employee shall be allowed to stand or pass under the elevated portion of forklift, whether loaded or empty.
- 10.12.5** When an operator leaves a forklift unattended, he/she must fully lower the load engaging means, neutralize the controls, shut off the power, set the

brakes, and remove the key. If parked on an incline, the wheels must be blocked.

- 10.12.6** A forklift is unattended when the operator is twenty-five feet or more away from the vehicle even if it remains in operator's view, or whenever the operator leaves the vehicle and it is not in operator's view.
- 10.12.7** When an operator has dismounted and is within twenty-five feet of the forklift which is still in his/her view, the operator must fully lower the load engaging means neutralize the controls, and set the brakes to prevent movement.
- 10.12.8** Operators must slow down, stop, and sound the horn at cross aisles, and other places where vision is obstructed.
- 10.12.9** Dock boards or bridge plates must be properly secured before they are driven over.
- 10.12.10** Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-centered loads. The load capacity of the forklift must not be exceeded.
- 10.12.11** The supervisor shall ensure that the forklift is checked daily before use and if found to be in need of repair, defective, or in any way unsafe, the forklift shall be taken out of service until it has been restored to a safe operating condition.

10.13 OFFICE HAZARDS AND SAFE WORK PRACTICES

This section identifies the types of hazards that are most common in office settings, and the safe practices to minimize exposure to such hazards.

10.13.1 Slips, Trips, and Falls

- (A)** Do not stand on office furniture or boxes, or climb on shelves to retrieve or store items on shelving over-shoulder height or other high locations. Use a ladder or step stool.
- (B)** Do not leave objects such as boxes or packages where they block access through aisles or stairwells.
- (C)** On stairways, use handrails and take one step at a time.
- (D)** Report worn, broken, or loose stair treads.
- (E)** Do not carry heavy or bulky materials up or down stairs.

- (F) Clean up all spills immediately.
- (G) Keep floor clear of items such as pencils, paper clips, tacks, staples and other objects that might cause a slip.
- (H) Keep all legs of your chair on the floor. Tilting back in a chair often results in over-balancing and a fall.
- (I) Do not lean sideways in a chair to pick up objects on the floor.
- (J) Watch-out for recently waxed floors, loose carpeting, floorboards or tiles, and uneven floors. These hazards should be reported to the supervisor.

10.13.2 Falling Objects

- (A) Store boxes, records, and equipment in the properly assigned storage areas. Store heavy or breakable items on lower shelves.
- (B) Materials should be stacked or piled in stable configurations. Keep frequently used materials within easy reach.
- (C) Open only one file drawer at a time to prevent the file cabinet from toppling over.

10.13.3 Striking Against Objects

- (A) Close file drawers and cabinet doors immediately after use.
- (B) Situate file cabinets so that drawers do not obstruct doorways and walkways.
- (C) Make sure vision is not blocked when carrying loads.
- (D) Approach solid doors from the side away from the hinges. This will enable you to step out of the way if someone comes through.

10.13.4 Other Office Safe Practices

- (A) Use cabinet handles when closing doors and drawers to avoid pinching fingers.
- (B) Keep fingers out of file drawers when closing.
- (C) Be alert for electrical hazards such as frayed or bare wires, overloaded outlets, or improperly grounded wires. Promptly report such hazards to the supervisor.

- (D) Extension cords are not authorized to be used in Department buildings or facilities with the exception of the following: for temporary audiovisual support, building maintenance and construction tools and only if using an extension cord rated heavy duty. The use of temporary power strip is authorized for attaching computers, lights, and other equipment provided the equipment will not overload the power strip and power strips are not attached together to reach a receptacle. Only multi-outlet power strips with UL approved surge suppressors are approved for use.
- (E) Store sharp objects (letter openers, scissors, pencils, etc.) flat inside drawers or point down in a container to prevent cuts and puncture wounds.
- (F) Use separate containers for storing pushpins or tacks. Do not mix pushpins with paper clips.
- (G) Wear finger guards when handling stacks of paper. Moisten stamps and envelopes with a sponge or sealing device.
- (H) Keep fingers away from paper cutter blade. Avoid cutting too many sheets at one time.

10.13.5 **Lifting**

When it is necessary to lift objects, observe the safe lifting practice described in **Section 10.2.2** of this **Manual**.

Chapter 11

COMPLIANCE STANDARDS

11.1 PURPOSE

The requirements in this chapter are consistent with recognized safety standards. This chapter does not contain all safety standards, but covers those regulations applicable to Department work activities, operations, and facilities. For workplace safety issues or situations not addressed in this chapter, the specific regulation should be consulted.

11.2 LABELS, SIGNS, AND FACILITY MARKINGS

This section provides information on the labels, signs and markings required by various regulations and applicable to Department facilities or operations.

11.2.1 Classification of Signs and Color Specifications [29 CFR 1910.145]

- (A) **Danger signs.** The colors red, black, and white shall be those of opaque glossy samples as specified in Table 1 of *Fundamental Specification of Safety Colors for CIE Standard Source "C", American National Standard Z53.1-2006*, which is incorporated by reference as specified in **Sec. 1910.6**. All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.
- (B) **Caution signs.** Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of *American National Standard Z53.1-2006*. All employees shall be instructed that caution signs indicate a possible hazard against which proper precaution should be taken.
- (C) **Safety instruction signs.** Standard color of the background shall be white; and the panel, green with white letters. Any letters used against the white background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of *American National Standard, Z53.1-2006*. Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

11.2.2 Warehouse Signage

- (A) **Reels and cabinets.** Where reels or cabinets are provided to contain fire hose, the warehouse supervisor or designee shall assure that they are designed to facilitate prompt use of the hose valves, the hose, and other equipment at the time of a fire or other emergency. The warehouse supervisor or designee shall assure that the reels and cabinets are conspicuously identified and used only for fire equipment. **[29 CFR 1910.158(c)(1)]**
- (B) Where gas or diesel operated equipment is used, a placard warning employees of carbon monoxide fumes must be placed on the facility wall where it can be plainly seen by employees. Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in **1910.1000. [29 CFR 1910.178(i)(1)]**
- (C) Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repairs, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked. **[29 CFR 1910.176(a); 1910.22(b)]**

11.2.3 **Welding Signage and Markings**

- (A) **Warning sign.** After welding is completed, in a confined space the hot metal shall be marked or some type of warning must be provided to other workers. **[29 CFR 1910.252(b)(4)(vii)]**
- (B) Gauges on oxygen regulators shall be marked **“Use No Oil.”** **[1910.253(e)(6)(iii)]**
- (C) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder. **[29 CFR 1910.253(b)(1)(ii)]**
- (D) Hydrogen gas cylinder storage shall be permanently marked, **“Hydrogen - Flammable Gas - No Smoking - No Open Flames.”** **[29 CFR 1910.103(b)(1)(v)]**
- (E) All filler metals and fusible granular materials shall carry the following notice, as a minimum, on tags, boxes, or other containers:

CAUTION

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See **ANSI Z49.1-2006 Safety in Welding and Cutting** published by the American Welding Society. **[29 CFR 1910.252(c)(1)(vi)(A)]**

Brazing (welding) filler metals containing cadmium in significant amounts shall carry the following notice on tags, boxes, or other containers:

WARNING CONTAINS CADMIUM–POISONOUS FUMES MAY BE FORMED ON HEATING

Do not breathe fumes. Use only with adequate ventilation such as fume collectors, exhaust ventilators, or air-supplied respirators. See **ANSI Z49.1-2006**. If chest pain, cough, or fever develops after use, call physician immediately. **[29 CFR 1910.252(c)(1)(vi)(B)]**

Brazing and gas welding fluxes containing fluorine compounds shall have cautionary wording to indicate that they contain fluorine compounds. Cautionary wording by the American Welding Society for brazing and gas welding fluxes reads as follows:

CAUTION CONTAINS FLUORIDES

This flux when heated gives off fumes that may irritate eyes, nose, and throat.

1. Avoid fumes - use only in well-ventilated spaces.
2. Avoid contact of flux with eyes or skin.
3. Do not take internally. **[29 CFR 1910.252(c)(1)(iv)(A)-1910.252(c)(1)(iv)(C)]**

11.2.4 Signage for Spray Booth/Spray Finishing Operations

"No Smoking" signs. "No smoking" signs in large letters on contrasting color background shall be conspicuously posted at all spraying areas and paint storage rooms. **[29 CFR 1910.107(g)(7)]**

11.2.5 Maintenance Shop Signage

- (A) Flammable and combustible liquid storage cabinets shall be labeled in conspicuous lettering, **"Flammable - Keep Fire Away."** **[29 CFR 1910.106(d)(3)(ii)]**
- (B) Safety cans or other portable containers of flammable liquids that have a flash point at or below 80 degrees (F) shall be painted red with either a yellow band around the can or the name of the contents stenciled on the can. Safety cans or other portable containers of flammable liquids having a flash point at or below 80° F, table containers of flammable liquids (open

cup tester), excluding shipping containers, shall be painted red with some additional clearly visible identification either in the form of a yellow band around the can or the name of the contents conspicuously stenciled or painted on the can in yellow. **[29 CFR 1910.144(a)(1)(ii)]**

- (C) Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: **Do Not Start. Do Not Open. Do Not Close. Do Not Energize. Do Not Operate.** **[29 CFR 1910.147(c)(5)(iii)]**

11.2.6 Loading Dock

- (A) **Clearance limits.** Clearance signs to warn of clearance limits shall be provided. **[29 CFR 1910.176(e)]**
- (B) A **Carbon Monoxide** wall placard shall be provided where fumes are likely from forklifts, tow motors, and vehicles idling at loading docks. **[29 CFR 1910.1200]**
- (C) Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways, and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked. **[29 CFR 1910.22(B)]**

11.2.7 Chemical Storage

- (A) Flammable and combustible liquid storage cabinets shall be labeled in conspicuous lettering, "**Flammable - Keep Fire Away.**" **[29 CFR 1910.106(d)(3)(ii)]**
- (B) All containers must be labeled with the type of contents and an appropriate hazard warning **[29 CFR 1910.1200(f)(1)(i)]**
- (C) All facilities that contain hazardous material must be properly placarded on the exterior in accordance with **National Fire Protection Association 704.**

11.2.8 Vehicle Maintenance Area

- (A) Safety cans or other portable containers of flammable liquids having a flash point at or below 80° F, table containers of flammable liquids (open cup tester), excluding shipping containers, shall be painted red with some additional clearly visible identification either in the form of a yellow band

around the can or the name of the contents conspicuously stenciled or painted on the can in yellow. **[29 CFR 1910.144(a)(1)(ii)]**

- (B) Caution signs shall be posted to indicate potential hazards (e.g., those requiring eye, ear protection). **[29 CFR 1910.145]**
- (C) Permanent aisles and passageways shall be appropriately marked. **[29 CFR 1910.22(b)(2)]**
- (D) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder. **[29 CFR 1910.253(b)(1)(ii)]**

11.2.9 Exit Markings

- (A) All exits must be clearly visible and marked by a sign reading "EXIT". **[29 CFR 1910.37 (b)(2)]**
- (B) Each exit route must be adequately lighted so that an employee with normal vision can see along the exit route. **[29 CFR 1910.37(b) (I)]**
- (C) Any door, passage, or stairway that is neither an exit nor a way of exit access and likely to be mistaken for an exit, must be marked with a sign reading "Not an Exit." **[29 CFR 1910.37 (b)(5)]**
- (D) If the direction of travel to the exit or exit discharge is not immediately apparent, signs must be posted along the exit access indicating the direction of travel to the nearest exit and exit discharge. Additionally, the line-of-sight to an exit sign must clearly be visible at all times. **[29 CFR 1910.37(b)(4)]**
- (E) Each exit route door must be free of decorations or signs that obscure the visibility of the exit route door. **[29 CFR 1910.37(b)(3)]**
- (F) Each exit sign must be illuminated to a surface value of at least five foot-candles (54 lux) by a reliable light source and be distinctive in color. Self-luminous or electroluminescent signs that have a minimum luminance surface value of at least .06-foot lamberts (0.21 cd/m²) are permitted. **[29 CFR 1910.37(b)(6)]**

11.2.10 Construction Site

- (A) In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted. **[29 CFR 1926.50(f)]**
 - (B) First aid supplies shall be easily accessible when required. **[29 CFR 1926.50(d)(1)]**
 - (C) Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose. **[29 CFR 1926.51(a)(3)]**
- 11.2.11 Dip Tanks Containing Flammable or Combustible Liquids. "No Smoking" signs shall be posted in the immediate area. [NFPA 34-1995]**
- 11.2.12 Crawler, Locomotive, and Truck Cranes**
- "Load rating chart." A substantial and durable rating chart with clearly legible letters and figures shall be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at his control station. **[29 CFR 1910.180(c)(2)]**
- 11.2.13 Radial Saws**
- Ripping and ploughing shall be against the direction in which the saw turns. The direction of the saw rotation shall be conspicuously marked on the hood. In addition, a permanent label not less than 1 1/2 inches by 3/4 inch shall be affixed to the rear of the guard at approximately the level of the arbor, reading as follows: **"Danger: Do Not Rip or Plough From This End"**. **[29 CFR 1910.213(h)(5)]**
- 11.2.14 Jacks**
- The rated load shall be legibly and permanently marked on jacks and other vehicle lifts by casting, stamping, or other suitable means. **[29 CFR 1910.244(a)(1)(ii)]**
- 11.2.15 Wiring Components**
- Pull and junction boxes for systems over 600 volts, nominal: Boxes shall provide a complete enclosure for the contained conductors or cables. Boxes shall be closed by suitable covers securely fastened in place. Covers for boxes shall be permanently marked "HIGH VOLTAGE." The marking shall be on the outside of the box cover and shall be readily visible and legible. **[29 CFR 1910.305(b)(3)-1910.305(b)(3)(iii)]**
- 11.2.16 Aerial Platforms**

A legible sign shall be affixed to the bucket requiring operators to wear a body harness and attach a lanyard, or other approved fall protection device. **[29 CFR 1910.145]** A body belt shall be worn and a lanyard attached to the boom or basket when working from an aerial lift. **[29 CFR 1910.67(c)(2)(v)]**

11.2.17 Tire Servicing

Current charts and procedures containing instructions, safety precautions, and other information applicable to the types of multi-piece rim wheels being serviced and maintained shall be available in the service area. **[29 CFR 1910.177(d)(5)]**

11.2.18 Eye and Face Protection

Areas designated for wearing eye and/or face protection shall be clearly labeled.

11.2.19 Agricultural Tractors

Each rollover protective structure (ROPS) shall have a label permanently affixed to the structure. This label shall include:

- (A) Manufacturer or fabricator name and address;
- (B) ROPS model number, if any;
- (C) Tractor make, model, or serial number that the structure is designed to fit; and
- (D) A statement that the ROPS was tested in accordance with the requirements of the standard. **[29 CFR 1928.51(c)]**

11.2.20 Confined Space

- (A) Use lock out/tag out to control hazardous energy. **[29 CFR 1910.147]**
- (B) **Caution signs** indicating a confined space when workers are present must be posted (**yellow background with black letters**). **[29 CFR 1910.145]**
- (C) If the workplace contains permit required confined spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces. **[29 CFR 1910.1469(c)(2)]**

NOTE: A sign reading **DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER** or using other similar language would satisfy the requirement for a sign.

11.2.21 Load Rating for Storage

In every building or other structure, or part thereof, used for storage purposes, the loads approved by the building official shall be marked on plates of approved design which shall be supplied and securely affixed by the owner of the building, or his duly authorized agent, in a conspicuous place in each space to which they relate. Such plates shall not be removed or defaced but, if lost, removed, or defaced, shall be replaced by the owner or his agent. **[29 CFR 1910.22(d)(1)]**

11.2.22 Refrigerant Recycling Area

All used refrigerant must be stored and labeled in accordance with **40 CFR Part 82**.

11.3 COMPETENT PERSONS

This section provides information on certain operations or equipment where a competent person is required either to erect, install, or inspect the equipment or operation, or to train employees in performing such operations or use of equipment. A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who are authorized to take prompt corrective measures to eliminate them. The competent person shall be selected or designated by the Unit Manager/Office Head. **[29 CFR 1926.32(f)]**

11.3.1 Unit Managers/Office Heads or designees shall ensure that a competent person is available whenever the following operations or activities are being conducted and that such operations comply with the following standards:

- (A) Scaffolding operations to include erecting, dismantling, and moving. **[29 CFR 1926. 451 (f) (7)] [29 CFR-1910.28 (h) (10)]**
- (B) Powered platforms installations. **[29 CFR 1910.66]**
- (C) Abrasive blasting operations. **[29 CFR 1910.94]**
- (D) Training and instruction on respirator use. **[29 CFR 1910.134 (C) (3)]**
- (E) Conducting inspection of slings and all fastenings. **[29 CFR 1910.184(d)]**

- (F) Welding operations. **[29 CFR 1910.253; 1910.155]**
- (G) Telecommunications repair/installation. **[29 CFR 1910.2128]**
- (H) Use of radioactive materials or x-rays. **[29 CFR 1910.53(b)]**
- (I) Identifying hazards and selection of control measures in asbestos operations. **[29 CFR 1910.1101]**
- (J) Exposure monitoring for cadmium. **[29 CFR 1910.1027(d)]**
- (K) Fitting of ear protective devices. **[29 CFR 1910.101(b)]**
- (L) Welding or cutting a preservative coating whose flammability is unknown. **[29 CFR 1926.354(a)]**
- (M) Safety monitoring system for fall hazards. **[29 CFR 1926.500; 1926.502]**
- (N) Crane operations. **[29 CFR 1910.-180] [1926 Subpart CC]**
- (O) Operation of personnel hoists. **[29 CFR 1926.552]**
- (P) Excavating and trenching. **[29 CFR 1926.650 - 652]**
- (Q) Lifting slab operations. **[29 CFR 1926.705]**

11.4 OPERATIONAL REQUIREMENTS

11.4.1 Tools, Machines, and Equipment

11.4.1.1 General Requirements [29 CFR 1926.300]

- (A) All tools shall be maintained in a safe condition.
- (B) When power operated tools are designed to accommodate guards, they must be equipped with such guards when in use.
- (C) Tools with exposed drives, pulleys, and belts will be guarded to prevent accidental contact with moving parts.
- (D) All personnel shall be trained to safely use all tools and equipment that they are required to use in the performance of their regular duties.
- (E) Employees using hand and power tools and exposed to the hazards of falling, flying, abrasive, and/or splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided the appropriate personal protective equipment necessary to protect them from the hazard.

- (F) Hand held power tools such as circular saws and chain saws shall be equipped with a switch that will shut off the power when hand pressure is released.
- (G) The supervisor shall not issue or permit the use of unsafe hand tools, such as wrenches with defective jaws, chisels with mushroom heads, and wooden handled tools with splintered handles or loose heads.

11.4.1.2 Electric Powered Tools [29 CFR 1926.302(a)]

- (A) Electric power-operated tools shall either be double insulated or grounded (three conductor wires and three-prong plug) and in good repair.
- (B) All double insulated tools shall be marked or labeled.
- (C) Electric cords shall not be used to hoist or lower tools.

11.4.1.3 Pneumatic Power Tools [29 CFR 1926.302(b)]

- (A) Pneumatic power tools must be secured to the hose by a positive means (factory fitting), to prevent the tool from becoming accidentally disconnected.
- (B) Safety clips or retainers are required on percussion pneumatic impact tools to prevent attachments from accidentally being expelled.
- (C) A safety device is required on automatic-feed pneumatically driven nailers, staplers, etc., which operate at more than 100 pounds per square inch (psi) pressure to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.
- (D) Compressed air used for cleaning purposes shall not exceed 30 (psi) pressures and shall be used with effective chip guarding and personal protective equipment. This 30 (psi) requirement does not apply to concrete form, mill scale, and similar cleaning operations.
- (E) Hoses and other accessories shall not be operated at pressures above the manufacturer's recommended safe operating pressures.
- (F) Air hoses shall not be used for hoisting and lowering tools.
- (G) Air hoses in excess of 1/2 inch inside diameter must have a safety device to reduce pressure at the source of supply in case of hose failure.

- (H) Airless spray guns that atomize paints and fluids at 1,000 or more pounds per square inch must be equipped with safety devices to prevent accidental pulling of the trigger.

11.4.1.4 Fuel Powered Tools [29 CFR 1926.302(c)]

All fuel-powered tools must be stopped and cooled before being refueled, serviced, or maintained.

11.4.1.5 Explosive Actuated Fastening Tools [29 CFR 1926.241]

The use of explosive actuated tools is restricted only to qualified personnel approved by the engineer or project manager. Testing of explosive actuated tools is required each day prior to loading. These tools must be used only with the correct guard, shield, or attachment in place.

11.4.2 Industrial Shop Machines

11.4.2.1 Machine Guarding [29 CFR 1926.300(b)]

- (A) All machines must have effective and properly working guards that are always in place when they are operating.
- (B) Guards will not be removed or made inoperative except for authorized maintenance.
- (C) When guards are removed during machine repair, power control switches will be locked in the "off" position and properly tagged. The machine will remain locked until guards are replaced.

11.4.2.2 Abrasive Wheels [29 CFR 1910.215]

- (A) All employees using abrasive wheels shall be protected by eye protection equipment.
- (B) All abrasive wheel bench and stand grinders shall be provided with safety guards which cover the spindle ends, nuts, and flange, and which are strong enough to withstand the effects of a bursting wheel.
- (C) An adjustable work rest of rigid construction shall be used on floor and bench mounted grinders. Such work rest shall be kept at a distance not to exceed 1/8 inch from the surface of the wheel.
- (D) An adjustable tongue guard shall be attached to the peripheral band at the top of the opening and the distance from the wheel will not exceed 1/4 inch.

- (E) All abrasive wheels shall be closely inspected prior to use and tested to ensure they are free of cracks or defects.
- (F) Soft metal such as aluminum will not be ground on an abrasive wheel unless the wheel is designed for that purpose.
- (G) All contact surface of the wheel shall be flat and free of foreign matter, e.g., non-ferrous metals such as copper and brass.
- (H) When using the wire wheel, a leather apron, gloves, and full-face shield shall be used.

11.4.2.3 Drill Presses

- (A) Only drills that are properly sharpened shall be used.
- (B) Drills shall be visually checked to make sure that the drill is running true before using.
- (C) Drills shall be run at the proper speed for the drill size and the stock being drilled.
- (D) Small drills shall be operated at high speeds, large drills at low speeds.
- (E) Chucks shall be removed before starting the drill press.
- (F) Never attempt to hold work under the drill by hand. Clamp the work securely to the table before starting the machine. If the work should slip from the clamp, never attempt to stop it with the hands.
- (G) File or scrape all burrs from drilled holes.
- (H) Do not reach around or in back of a revolving drill.
- (I) Eye protection shall be worn at all times while operating drill presses.
- (J) All gear covers must be in place while operating.
- (K) All drill presses shall be properly grounded.

11.4.2.4 Metal Saws

- (A) The operator shall stand to one side of the saw frame when turning on the power and then adjust the speed to suit the work.
- (B) Do not bend over the saw during operation.

- (C) Mount or tighten the work only when the saw is stopped.
- (D) Material that is to be cut off shall be supported so that the protruding end of long work will not fall and possibly cause injury.
- (E) Protect the protruding end so that others cannot run into it.
- (F) Ensure that the blades for both circular and band saws are in good condition.
- (G) To prevent hand injuries, use a supporting block when cutting short pieces.
- (H) Wear eye protection at all times while operating metal saws.
- (I) All grounds and gear covers must be in place while operating.

11.4.2.5 Lathes

- (A) Before turning the power on, check to see that tailstock, tool holder, and job are properly clamped. If a magnetic chuck is used, be sure the current is on before starting the machine.
- (B) When putting on or removing the chuck or face plate, use hand power only. Do not use the power that operates the lathe.
- (C) Do not leave the chuck wrench or other tools in the chuck.
- (D) Do not use a wrench on revolving work or parts.
- (E) Never try to measure the work, feel the edge, or adjust a cutting tool when the lathe is running.
- (F) When filing, ensure that a sturdy wooden handle in good condition protects the tang of the file and stand to one side so that the file is forced upward and away from the body rather than toward it.

11.4.2.6 Woodworking Machines

- (A) Fixed power-driven tools shall be provided with a disconnect switch that can be locked or tagged in the off position.
- (B) The operating speed shall be etched or otherwise permanently marked, on all circular saws over 20 inches in diameter or operating at over 10,000 peripheral feet per minute.
- (C) Automatic feed devices shall be installed wherever the work will permit.

- (D) All moving parts shall be covered or guarded to protect the operator from the hazard point.
- (E) Portable power driven circular saws shall be equipped with guards above and below the base plate or shoe. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.
- (F) Circular table saws used for ripping shall be equipped with anti-kickback fingers or dogs.

11.4.3 Abrasive Blasting [29 CFR 1910.94]

11.4.3.1 Only respiratory protection equipment that has been approved by the Mine Safety and Health Administration and the National Institute of Occupational Safety and Health against dusts produced during abrasive blasting operations shall be used. An Abrasive blasting respirator is constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive. [29 CFR 1926.57(f)(1)(ii)]

11.4.3.2 Abrasive blasting respirators shall be worn when:

- (A) Working inside blast cleaning rooms,
- (B) Using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operation in an exhaust ventilated enclosure,
- (C) The concentrations of toxic dust exceed acceptable limits.

11.4.3.3 Dust filter respirators shall only be worn in outside abrasion blasting operations when non-silica abrasive or low toxic materials are used.

11.4.3.4 Dust filter respirators shall not be worn when silica sand is used or toxic materials are being blasted.

11.4.3.5 Operators shall be equipped with heavy canvas or leather gloves and aprons.

11.4.3.6 Safety shoes shall be worn when heavy pieces of work are handled.

11.4.3.7 Equipment for protection of the eyes and face shall be supplied to the operator when the respirator design does not provide the same protection.

11.4.3.8 The air for abrasive blasting respirators shall be free from harmful dusts, mists, or noxious gases.

- 11.4.3.9** If the air is supplied from a regular compressed air line:
- (A) The trap and carbon filter shall be provided and regularly maintained to remove oil, water, scale, and odor.
 - (B) A pressure-reducing diaphragm or valve shall be installed.
 - (C) An automatic control shall be provided to either sound an alarm or shut down the compressor in case of overheating.
- 11.4.3.10** Dust shall not be permitted to accumulate on the floor or ledges outside of an abrasive blasting enclosure.
- 11.4.3.11** The blast-cleaning nozzle must be equipped with an operating valve that can be held open manually. A support shall be provided to hold the nozzle when it is not being used.
- 11.4.4** **Spray Booth/Spray Finishing Operations**
- 11.4.4.1** **General Requirements**
- (A) Spray booths shall be designed to sweep air currents toward the exhaust outlet.
 - (B) Interiors shall be smooth without edges to prevent pocketing of residue.
 - (C) Floor covering shall be non-combustible.
 - (D) Spray booths shall be designed so the air velocity over the open face of the booth shall not be less than 100 linear feet per minute. A visible gauge or audible alarm or pressure-activated device shall be installed to ensure this requirement is maintained.
 - (E) All discarded filter packs shall be disposed of in accordance with local codes.
 - (F) Spray booths shall be protected with an automatic sprinkler system.
 - (G) Filters shall be non-combustible.
 - (H) Spray booths shall be separated from other operations by not less than three (3) feet.
 - (I) Spray booths shall be constructed so that all portions are accessible for cleaning. A clear space of not less than 3 feet on all sides shall be maintained free from storage or combustible construction.

- (J) Wiring conformance. Electrical wiring and equipment shall conform to the provisions of **29 CFR 1910.107(c)(4)** and shall otherwise be in accordance with subpart S of this part. **[29 CFR 1910.107(c)(4)]**
- (K) No open flame or other sources of ignition shall be within 20 feet of any spraying area unless separated by a partition.
- (L) Portable electric lamps shall not be used in any spraying area during spraying operations.
- (M) Mechanical ventilation shall be kept in operation at all times while spraying and for a sufficient time thereafter to allow vapors and residue to be exhausted.
- (N) Add: Individuals not involved in spray finishing operations must not be allowed within 20 feet of the spraying and overspray area.
- (O) Those employees that are spray finishing must be provided with and wear appropriate respiratory protection (as determined by air monitoring results) any material in the finish or its solvent to below the limits established for air contaminants.
- (P) When spray painting is conducted out-of-doors. OSHA states that spray painting out-of-doors means an area away from the main building and completely open at all times on at least two sides.

11.4.4.2 Flammable/Combustible Liquids

- (A) Storage of flammable and combustible liquids shall conform to the requirements of **29 CFR 1910.106**.
- (B) Flammable/combustibles kept in spraying operations should not exceed one day or one shift use. Open or glass containers shall not be used.
- (C) Shut-off valves shall be provided where a hose is attached to piping or containers.
- (D) All pressure hoses and coverings shall be inspected daily.

11.4.4.3 Maintenance

- (A) Spraying operations shall not be conducted outside the predetermined spraying areas.
- (B) Spray finishing employees' clothes shall not be left on the premises overnight unless stored in metal lockers.

- (C) “**NO SMOKING**” signs shall be posted at all spraying areas and paint storage rooms.

11.4.5 Dip Tanks [29 CFR 1910.23 and 1910.124]

11.4.5.1 General Requirements

- (A) Portable containers used for fitting or refilling dip tanks shall be positively grounded and electrically bonded.
- (B) No open flames spark producing devices, or heated surfaces having a temperature sufficient to ignite the vapors shall be within 20 feet of a dip tank.
- (C) Waste cans shall be provided for rags and other impregnated materials. The cans shall be metal and specifically approved for this type of disposal.
- (D) If fire protection is not provided per 29 CFR 1910.125(f) covers on dip tanks shall be arranged to close automatically in the event of a fire.
- (E) Periodic inspections of dip tank facilities shall be conducted.
- (F) “**NO SMOKING**” signs shall be posted in the vicinity of dip tanks.
- (G) Areas in the vicinity of dip tanks shall be provided with extinguishers suitable for flammable and combustible liquid fires.

11.4.6 Welding and Cutting [29 CFR 1910.252]

11.4.6.1 General Requirements

- (A) When combustibles cannot be moved from the welding/cutting area, the requirements of **NFPA 51B** shall be followed. No cutting and welding operation will be permitted without authorization from the Unit Manager/Office Head.
- (B) Suitable fire extinguishers shall be available.
- (C) Fire watches are required if welding or sparks could easily ignite cutting and combustibles in the area. This could be greater than or less than 35 feet from point of operation.
- (D) Cutting or welding shall not be conducted in areas not specifically authorized by the Unit Manager/Office Head, in the presence of explosive atmospheres which exist or may develop, and where quantities of combustibles are stored.

- (E) Supervisors are responsible for the safe handling and use of the cutting and welding equipment.
- (F) Areas shall be made fire safe before cutting or welding is conducted.
- (G) No welding or cutting shall be done on used drums, barrels, tanks, or containers until they have been cleaned thoroughly.
- (H) All welding cables shall be placed so they are clear of passageways, ladders, and stairways.
- (I) Ventilation requirements as directed by **[29 CFR 1926.353]** when conducting Construction activities.

11.4.6.2 Oxygen, Fuel, Gas Welding, and Cutting [29 CFR 1910.253]

(A) Transporting, Moving, and Storing Compressed Gas Cylinders

- (1) Valve protection caps shall be in place.
- (2) Cylinders shall not be intentionally dropped, stricken, or permitted to strike each other violently.
- (3) Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved.
- (4) When transporting cylinders by cranes or derricks, a cradle, boat, or suitable platform shall be used.
- (5) Valve protection caps shall not be used for lifting.
- (6) Cylinders shall not be moved unless the regulators are removed and valve protection caps are in place, unless they are secured on a special truck.
- (7) Cylinders shall not be placed so close to work that sparks, hot slag, or flame will reach them.
- (8) Cylinders shall be placed so that they will not become part of an electrical circuit.
- (9) Cylinders shall be placed in an upright position, and chained or otherwise restrained to prevent falling. Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1 m) feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned

places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

11.4.6.3 Use of Fuel Gases [29 CFR 1926.350(d)]

- (A) Only properly instructed and qualified employees will operate equipment using fuel gases.
- (B) Fuel gas shall not be taken into confined spaces.
- (C) Fuel gas and oxygen manifolds must be clearly identified and placed in well-ventilated area. The manifold hose connections must be such that the hose cannot be interchanged between fuel gas and oxygen manifolds. Header connections will be supplied.
- (D) Oxygen and fuel gas hoses must be easily distinguished from each other by color or surface characteristics. Torches must be inspected at the beginning of each shift for leaking valves, couplings, and connections. Pressure regulators must be in proper working order while in use.
- (E) Cylinders not having fixed hand wheels shall have keys, handles, or non-adjustable wrenches on valves stems while in service.
- (F) Valves shall be closed before moving cylinders.
- (G) Valves shall be closed when work is finished.
- (H) Empty cylinder valves shall be closed.
- (I) Before connecting the regulator, the valve shall be opened slightly and closed immediately while the operator stands to one side of the outlet.
- (J) Acetylene cylinder valves shall be opened as little as one-half turn of the spindle - preferably no more than three-fourths of a turn.
- (K) When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use.
- (L) Acetylene shall never be utilized at a pressure in excess of 15 pounds per square inch (psi) gage.

11.4.6.4 Arc Welding and Cutting [29 CFR 1910.254]

- (A) Oxygen cylinders and fitting shall be kept away from combustible material, especially oil and grease, as oxygen is not compatible with these products.
- (B) Only the correct manual electrode holders shall be used. If the portion gripped by the hand contains current, it must be fully insulated against the maximum voltage encountered to ground.
- (C) Proper welding cables and connectors must be used and must be completely insulated. Splicing, if used, shall be equal to the insulating quality of the cable and shall not be located within 10 feet of the electrode holder.
- (D) Ground return cables must have a safe current-carrying capacity equal to or greater than the specified maximum output capacity of the units serviced. When a structure or pipeline is employed as a ground circuit, a determination must be made that the required electric contact exists at all joints.
- (E) The frames of all arc welding and cutting machines shall be grounded with a third wire or a separate wire, which is grounded at the source of the current.
- (F) Arc welding or cutting operations shall be shielded by noncombustible or flameproof screens to protect employees and other persons in the vicinity from the direct rays of the arc.
- (G) Employees performing any type of welding, cutting, or heating shall be protected by suitable eye protection equipment.

11.4.6.5 Resistance Welding [29 CFR 1910.255]

- (A) All equipment shall be installed by a qualified electrician.
- (B) A safety type disconnecting switch, circuit breaker, or circuit interrupter shall be provided near the machine.
- (C) Operators shall be properly trained and determined competent to operate the equipment before being designated to do so.
- (D) Controls of all automatic air and hydraulic chargers shall be guarded against accidental activation.
- (E) All doors and panels shall be kept blocked on the resistance welding machines.

- (F) Appropriate shields shall be provided to protect workers and passing employees from the sparks.
- (G) Fire curtains shall be provided.
- (H) For spot and seam welding, voltage shall not exceed 120 volts during operation.

11.4.6.6 Welding, Cutting, and Heating Relative to Preservation Coatings [29 CFR 1926.354]

- (A) The flammability of protective coatings must be determined before welding, cutting, or heating is commenced.
- (B) When coatings are highly flammable, they shall be stripped from the area to prevent ignition. Protective measures must be taken when the preservative coating is toxic.

11.4.7 Battery Rooms and Battery Charging [29 CFR 1926.441]

11.4.7.1 General Requirements

- (A) Batteries of the unsealed type shall be located in the enclosures with outside vents and arranged so as to prevent escape of fumes, gases, or electrolyte spray into other areas.
- (B) The room/area housing batteries will be well ventilated to prevent accumulation of explosive gases or toxic vapors.
- (C) Face protection that provides side as well as frontal protection shall be provided and worn.
- (D) Rubber aprons and gloves shall be provided and worn.
- (E) Facilities for quick flushing of eyes will be provided within 25 feet of the battery handling area.
- (F) “**NO SMOKING**” signs will be posted in the area.
- (G) Fire extinguishers shall be provided, as required by the State Fire Marshal.
- (H) Racks and trays must be electrolyte resistant. The racks shall be located in an area of minimal personnel and vehicle traffic; separate rooms are desirable.

- (I) Procedures for electrolyte disposal shall be in accordance with environmental regulations.

11.4.7.2 **Battery Charging**

- (A) Battery charging must be performed in areas designated for that purpose.
- (B) When batteries are being charged, the vent caps shall be kept in place to avoid electrolyte spray.

11.4.8 **Refrigerant Recycling**

11.4.8.1 Records must be maintained at all facilities that service motor vehicle air conditioners.

11.4.8.2 All used refrigerant must be kept in gray containers with a yellow cover, with a label reading "**Dirty Refrigerant, Do Not Use Without Recycling**".

11.4.8.3 Refrigerant recycling and recovery equipment manufactured on or after November 15, 1993, shall meet EPA requirements.

11.4.9 **Automotive Service Stations**

11.4.9.1 Fueling facilities, both attended and unattended, will comply with the requirements of **National Fire Code 30A** and the rules of the State Fire Marshal.

- (A) A tested automatic closing type hose nozzle shall be provided on island type dispensers used for Class I liquids.
- (B) A hose nozzle used for dispensing Class I liquids into a portable container shall be manually held open during dispensing.

11.4.9.2 **Portable Containers**

- (A) Dispensing of Class I and Class II fuels in portable containers is prohibited unless the container is metal and is an approved container.
- (B) Safety can means an approved closed container, of not more than 5 gallons capacity, having a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure. **[29 CFR 1926.155(I)]**

11.4.9.3 **Unattended Self-Service Stations**

- (A) Emergency controls (clearly identified) shall be installed at a location acceptable to the State Fire Marshal at a minimum of 20 feet from the dispenser, but not more than 100 feet from the dispenser to shut off power to all dispensing devices in an emergency. Additional controls shall be installed on each group of dispensers or the outdoor equipment used to control the dispensers.
- (B) An approved, tested automatic closing type hose nozzle valve with latch hold-open device shall be provided on fuel hoses used for Class I liquids.
- (C) A telephone or other approved clearly identifiable means of notifying the fire department shall be provided on site.
- (D) Additional fire protection shall be provided when required by the State Fire Marshal.

11.4.9.4 Drainage and Waste Disposal

Crankcase draining and liquids shall not be dumped into sewers, streams, or upon the ground as required by National Pollutant Discharge Elimination System (NPDES) permit issued.

11.4.9.5 Sources of Ignition

Smoking and the use of matches and lighters shall not be permitted within 50 feet of areas used for fueling.

11.4.9.6 Fire Control

At least one or more Class 4 B: C fire extinguishers shall be located within 100 feet of each pump dispenser.

11.4.9.7 Signs

- (A) The following signs shall be posted in the dispensing area:
 - (1) **"WARNING - It is unlawful and dangerous to dispense gasoline into unapproved containers. No Smoking - Stop Motor."**
 - (2) **IN CASE OF FIRE OR SPILL:**
 - (a) Use emergency stop button.
 - (b) Report accident by calling [include local fire department number and phone location]

(B) Operating instructions shall also be conspicuously posted in the dispensing area. These instructions shall include:

- (1) Location of emergency controls.
- (2) Requirement for user to stay outside of vehicle during dispensing.

11.4.10 Servicing of Single and Multi-Piece Rim Wheels [29 CFR 1910.177]

11.4.10.1 Training and Instruction

(A) No employee shall service a multi-piece rim wheel unless the employee has been trained. Training at a minimum shall include the instruction applicable data contained in the charts or rim manuals.

(B) Each employee shall be able to demonstrate his/her ability to service multi-piece rim wheels safely, including performance of the following tasks:

- (1) Demounting of tires (including deflation)
- (2) Inspection of wheel components
- (3) Mounting of tires (including inflation within a restraining device)
- (4) Handling of wheels
- (5) Inflation of tires when wheels are mounted on a vehicle
- (6) Installation and removal of wheels

11.4.10.2 Tire Servicing Equipment

(A) A restraining device shall be available. The supervisor will ensure that employees use the restraining device while servicing multi-piece rim wheels. Restraining device is an apparatus such as a cage, rack assemblage of bars and other components that will constrain all rim components during an explosive separation of a multi-piece rim wheel, or during the sudden release of contained air of a single rim wheel. **[29 CFR 1910.177(b)]**

(B) The restraining device shall have the capacity to withstand the maximum force that would be transferred to it during an explosive wheel separation occurring at 150 percent of maximum tire specification pressure for the wheels being serviced.

- (C) Restraining devices shall be capable of preventing rim components from being thrown outside or beyond the frame of the device for any wheel position within the device.
- (D) Restraining devices shall be inspected prior to each day's use. Any restraining device or barrier exhibiting damage such as cracks at welds, cracked or broken components, bent or sprung components, pitting or structural damage shall be removed from service immediately. The supervisor shall furnish and assure that an airline assembly consisting of the following components be used for inflating tires: A clip-on chuck; An in-line valve with a pressure gauge or a presettable regulator; and A sufficient length of hose between the clip-on chuck and the in-line valve (if one is used) to allow the employee to stand outside the trajectory. **[29 CFR 1910.177(d) (4)]**
- (E) When inflating tires, use a clip-on chuck and an in-line valve with a gauge or pressure regulator.
- (F) Current charts and procedures containing instructions, safety precautions, and other information applicable to the types of multi-piece rim wheels being serviced shall be maintained and available in the service area.
- (G) A current rim manual containing instructions for the type rims being serviced shall be available in the service area.
- (H) Only those tools recommended in the rim manual for the type of wheel being serviced may be used to service multi-piece rim wheels.

11.4.10.3 Wheel Component Acceptability

- (A) Wheel components shall not be interchanged except as provided in the charts or in the applicable rim manual.
- (B) Wheel components shall be inspected prior to assembly. Rim bases, side rings, or lock rings which are bent out of shape, pitted from corrosion, broken, or cracked shall not be used and shall be rendered unusable and discarded.
- (C) Mating surfaces of the rim gutter, rings, and tire shall be free of dirt, surface rust, scale, or rubber buildup prior to mounting and inflation.

11.4.10.4 Operating Instructions for Servicing Multi-Piece Rim Wheels

- (A) Tires shall be completely deflated by removing the valve core.

- (B)** Tires shall be completely deflated by removing the valve core, before a wheel is removed from the axle in either of the following situations:

 - (1)** When the tire has been under-inflated at 80 percent or less of its recommended pressure.
 - (2)** When there is obvious or suspected damage to the tire or wheel components.
- (C)** Rubber lubricants shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire.
- (D)** Tires shall be inflated only when contained by a restraining device except when the wheel assembly is on the vehicle. Tires that are under-inflated but have more than 80 percent of the recommended pressure may be inflated while the wheel is on the vehicle if remote control inflation equipment is used and no employees are in the path of the trajectory. An exception to this requirement is contained in the following paragraph.
- (E)** When multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless it can be demonstrated that performance of the servicing makes the employee's presence in the path of trajectory necessary.
- (F)** When a tire is being partially inflated without a restraining device for the purpose of seating the lock ring or to round out the tube, such inflation shall not exceed 3 (psi).
- (G)** When a tire is in a restraining device, the employee shall not rest or lean any part of his body or any equipment on or against the restraining device.
- (H)** After inflating the tire, the rim, tire, and rings shall be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment to the tire, rim, or rings is necessary, the tire shall be deflated by removal of the valve core before the adjustment is made.
- (I)** No attempt shall be made to correct the seating of side and lock rings by hammering, striking, or forcing the components while the tire is pressurized.
- (J)** Cracked, broken, bent, or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated.
- (K)** Extension handles (cheaters) will not be used on wrenches for the purpose of removing nuts.

- (L) Mechanical equipment or other assistance will be provided when it is necessary for the tire shop employee(s) to handle heavy or extremely bulky tires and wheels.

11.4.10.5 Operating Instructions for Single Piece Rim Wheels

- (A) Tires shall be completely deflated by removal of the valve core before dismounting.
- (B) Mounting and demounting of the tire shall be done only from the narrow ledge of the wheel. Care shall be taken to avoid damaging the tire beads while mounting tires on wheels.

Tires shall be mounted only on compatible wheels of matching bead diameter and width.

- (C) Nonflammable rubber lubricant shall be applied to bead and wheel mating surfaces before assembly of the rim wheel unless the tire or wheel manufacturer recommends against the use of any rubber lubricant.
- (D) If a tire-changing machine is used, the tire shall be inflated only to the minimum pressure to force the tire bead onto the rim ledge while on the tire changing machine.
- (E) If a bead expander is used, it shall be removed before the valve core is installed and as soon as the rim wheel becomes airtight (the tire bead drops onto the bead seat).
- (F) Tires may be inflated only when contained within a restraining device, positioned behind a barrier or bolted on the vehicle with the lug nuts fully tightened.
- (G) Tires shall not be inflated when any flat, solid surface is in the trajectory and within one foot of the sidewalk.
- (H) Employee shall stay out of the trajectory when inflating a tire. [**29 CFR 1910.177 Appendix A Trajectory**]
- (I) Tires shall not be inflated to more than the inflation pressure stamped in the sidewall unless the manufacturer recommends a higher pressure.
- (J) Tires shall not be inflated above the maximum pressure recommended by the manufacturer to seat the tire bead firmly against the rim flange.
- (K) No heat shall be applied to a single piece wheel.

- (L) Cracked, broken, bent, or otherwise damaged wheels shall not be reworked, welded, brazed, or otherwise heated.

11.4.11 Vehicle Rollover Protection and Warning Devices [29 CFR 1926.1001 and 1002]

11.4.11.1 The following vehicles will be provided with rollover protection, seat belts, and service braking system capable of stopping or holding the equipment fully loaded: fenders or mud flaps shall be required if the vehicle is capable of exceeding speeds of 15 miles per hour.

- (A) Scrapers
- (B) Loaders
- (C) Crawler or wheel tractors
- (D) Bulldozers
- (E) Off-highway trucks
- (F) Graders
- (G) Agricultural or industrial tractors

11.4.11.2 All two-directional equipment such as rollers, compactors, bulldozers, etc., must be equipped with an audible reverse signal or alarm.

11.4.12 Hazardous Waste Disposal

11.4.12.1 The Unit Manager shall ensure that:

- (A) Hazardous waste is properly stored, handled, and disposed of;
- (B) Approved storage facilities are made available for hazardous waste;
- (C) Storage facilities are properly placarded in accordance with **NFPA 704 (National Fire Protection Association)**;
- (D) Appropriate fire suppression equipment is made available;
- (E) Hazardous waste is not stored within 50 feet of the facility property line;
- (F) All containers of hazardous waste are marked "**Hazardous Waste**" and the date the waste started accumulating must be included.

11.4.12.2 Hazardous Waste Generators

- (A) All Department facilities where hazardous wastes are generated must have an assigned U.S. Environmental Protection Agency (USEPA) identification number.
- (B) Storage of hazardous wastes must not exceed the storage requirements outlined in **40 CFR Part 264**.
- (C) The Unit Manager shall ensure that all shipments of hazardous wastes are properly manifested and a log maintained reflecting the manifest number, name of transporter, amount of waste shipped, and the date the original manifest was returned.
- (D) All hazardous waste must be packaged, labeled, marked, and placed in accordance with **49 CFR Parts 100-185**.
- (E) The generator of the documentation must maintain records of all its hazardous waste operations. A copy of each manifest with the handwritten signature of the transporter and the signature and date of acceptance by the designated disposal facility must be maintained for three (3) years and then sent to the Department of State to be transferred to electronic format (**Retention Schedule No. G-11** and **Records Management, Procedure No. 050-020-025**).
- (F) The generator must keep a copy of each **Annual Report** and **Exception Report** for at least three (3) years from the due date of the report (March 1), and then send it to the Department of State to be transferred to electronic format.
- (G) The generator must keep records of any test results, waste analysis, or other determinations made for at least three (3) years from the date that the waste was last sent to an on-site or off-site treatment, storage, or disposal facility, and then sent to the Department of State to be transferred to electronic format.
- (H) The generator who ships hazardous waste off-site must submit an **Annual Report**. Once the generator has received a USEPA identification number, the FDEP (Florida Department of Environmental Protection) will send an **Annual Report** form to be submitted.
- (I) The generator who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated treatment, storage, or disposal facility within thirty-five (35) days of the date the waste was accepted by the initial transporter must contact the transporter and/or owner or operator of the designated facility to determine the status of the hazardous waste.

- (J) The generator must submit an **Exception Report** to the Secretary of the FDEP if he/she has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated treatment or the initial transporter accepted disposal facility within forty-five (45) days of the date the waste.

11.4.12.3 Hazardous Waste Spills

First responders who are responsible for only notifying proper authorities are required to be trained at the awareness level to understand what hazardous substances are, the risks involved, and what action to take in notifying the proper authorities for cleanup.

11.4.13 Boating Operations

Technically, a boat is classified as a vessel, but for the Department's purposes they will also be classified as vehicles.

- (A) Smoking in boats is prohibited.
- (B) Employees shall not be authorized to use a boat (with the exception of johnboats and utility boats used in culverts or streams) unless they have successfully completed an approved safety course meeting the requirements of the U.S. Coast Guard and all other applicable State and Federal regulations.
- (C) Boats shall be equipped with appropriate U.S. Coast Guard approved personal flotation devices (PFD) for each person aboard.
- (D) All boats shall be required to carry visual distress signals for use during daylight and nighttime operations.
- (E) Because certain navigational rules require sound signals, a whistle, horn, or bell shall be carried on board all boats.
- (F) All boats shall use navigational lights between sunset and sunrise.
- (G) Anchor lights shall be used on all boats at anchor unless the boat is less than 23 feet in length or the boat is anchored in or near a narrow channel, fairway, or anchorage or where other vessels normally navigate.
- (H) For diving operations, the red and white diver's flag shall be displayed or the nationally recognized Alpha diver's flag. (Refer to the **Bridge Underwater Operations, Procedure No. 850-010-011**).
- (I) A first aid kit shall be carried in the boat.

- (J) A float plan should be completed and filed with the supervisor before leaving the facility.
- (K) Standing in small utility boats while in the water should be avoided.
- (L) Employees shall not sit on the gunnels, seat backs, or raised pedestal seats while underway.
- (M) Unless anchoring both fore and aft, boats shall not be anchored by the stern.
- (N) All equipment in the boat shall be secured before getting underway.
- (O) Fill all portable fuel tanks on the dock. Wipe off all spilled fuel immediately.
- (P) After fueling, open all hatches and windows and let the boat air out; run the blower (if equipped) before starting the engine.
- (Q) All gas powered or diesel-powered boats shall have at a minimum one type B-1 hand portable fire extinguisher.
- (R) All employees in boats shall wear a U.S. Coast Guard approved PFD. The only exception is divers during diving operations. (Refer to the ***Bridge Underwater Operations, Procedure No. 850-010-11***).
- (S) Cutting or welding work in a gas-powered boat is prohibited.

11.4.14 **Diving Operations [29 CFR 1910.401 and 1926.1071]**

Working in an underwater environment is inherently hazardous in that it continually subjects divers to life-threatening safety and health hazards which include high pressure, temperature extremes, unpredictable sea states, toxic substances, abnormal stresses, physical hazards (such as falling), loose or sharp underwater objects, hazardous sea creatures/plant life, and hazards involved while using underwater tools and equipment. For procedures and requirements for diving operations, refer to ***Bridge Underwater Operations, Procedure No. 850-010-011***.

11.4.15 **Storage Facilities and Storage Areas**

The Department uses both inside and outside storage facilities. Warehouses, storage yards, and supply dumps are all part of storage operation. Employees working in any type of storage facility to prevent hazards caused by the methods of storage and to protect the materials being stored must observe safe work practices.

11.4.15.1 Warehouse - Inside Storage

- (A) **Hazardous Substances** - Dangerous materials, such as flammable liquids, corrosives, toxic substances, and hazardous materials will be stored only in accordance with the requirements of the State Fire Marshal and other appropriate state (FDEP) and local standards. Hazardous substances shall be stored in special containers in well-ventilated, fire-resistant areas. All sources of ignition including smoking shall be prohibited in these storage areas. Certain other commodities such as oils and grease, which are subject to spontaneous combustion, will be stored where they present no hazards to employees or property.
- (B) **Floors** - Floors in warehouses will not be overloaded at any time. For upper storage areas, safe load capacities will be established and posted in plain view of all employees.
- (C) **Stacked Material** - Materials will be piled in neat stacks, stabilized by dunnage, if necessary. Leaning or unbalanced stacks will be re-piled immediately to prevent their falling.
- (D) **Electric Light Fixture Clearance** - Stacked materials will be kept at least 18 inches away from electric light fixtures. Guards shall be installed over hanging light fixtures to prevent accidental breakage of the bulb and injury to employees.
- (E) **Ignition Hazard** - Smoking will not be permitted in any storage area.
- (F) **Fire Equipment** - Stored materials will be kept at least 18 inches from automatic sprinkler valves, fire hoses, extinguishers, sprinkler heads, exits, and fire doors; for non-sprinkler areas, there must be 24 inches of clearance that spans across the ceiling in an invisible plane beneath the ceiling.
 - (1) Stacked materials, bins, and shelves will be arranged to permit immediate access to all storage areas during a fire.
 - (2) Fire exits shall be marked and easily accessible.
- (G) **Second Deck Storage Bins** - Hand rails and ladders (portable or fixed) shall be provided for safe access to second deck storage bins. Materials that require frequent handling should not be stored in second deck storage bins.
- (H) No one will stand on boxes, chairs, tables, desks, or any other makeshift stand to reach supplies or stock stored on shelves. Always use a safe stepladder.

- (I) **Housekeeping** - Floors shall be kept clean and free of tripping hazards. Aisles and stairways shall be kept free of obstructions that interfere with operations.
- (J) **Aisles** - Proper aisles should be maintained for the safe storage/removal of materials. This allows for enough room to carry or transport supplies and equipment by hand or with powered equipment.
 - (1) Aisle spaces should be kept to a minimum as it limits storage space, but aisles shall be adequate for handling the type of materials to be stored.
 - (2) Aisles should be straight and lead directly to exits.
 - (3) Intersections of aisles should be located where there is maximum illumination and visibility.
- (K) **Mechanical Materials Handling Equipment** - Mechanical devices will be used when loads are too heavy or bulky to be lifted or carried efficiently or safely by hand. Fork lifts, conveyors, hand trucks, chutes, rollers, and hoists, when properly used, simplify materials handling and greatly reduce accident, injury, and damage potential.

11.4.15.2 **Stored Materials - Outdoors**

- (A) Both temporary and permanent storage shall be neat and orderly. Materials piled haphazardly or strewn about increase the possibility of incidents and injuries to employees and damage to materials. These areas should also be free of grass and weeds.
- (B) Drums or containers for dispensing flammable or other liquids shall be stored on racks in outside areas. Drip pans shall be provided to catch spills. Flammable liquid drums shall have a means for grounding against static electricity.
- (C) **Lumber Storage**
 - (1) Lumber shall be sorted by size and length and stored in separate piles.
 - (2) Firm ground shall be selected for outdoor lumber piling or stacking.
 - (3) During un-stacking, the pile must never be undermined by removal of boards from the lower rows first. Boards must be removed from top rows first.

- (4) A periodic check should be made to determine if there is shifting of stacked or piled material.
- (5) Used lumber will have all nails removed before it is stacked for storage.

(D) Bagged Materials Storage

- (1) Bagged materials shall not be stacked more than 10 bags high without setbacks, except when restrained by supports of appropriate strength.
- (2) Bags shall be cross-tied with the mouths of the bags toward the inside of the pile.
- (3) During unstacking, the pile must never be undermined by the removal of bags from the lower rows. Bags must be removed from the top rows.
- (4) The entire top of the stack shall be kept nearly level and the necessary setback maintained.

(E) Concrete Blocks, and Hay or Straw Bales

- (1) These materials shall be stacked in tiers on solid, level surfaces.
- (2) The stacks shall be set back and secured to prevent toppling.
- (3) Hay or straw bales are a fire hazard and shall be kept dry.
- (4) Hay or straw bale storage areas shall be properly posted with "**NO SMOKING**" and "**NO SOURCES OF IGNITION**" signs within 50 feet.

(F) Steel and Aluminum - Reinforcing sheet, structural aluminum, and steel shall be stored in orderly piles away from walkways and roadways. These items shall be securely piled to prevent items from sliding off or the pile toppling over.

(G) Pipe - Pipes shall be stacked and blocked so as to prevent spreading or rolling. Separate stacks shall be made for each size, and should not be more than 5 feet high. Before removing pipe, the inside should be checked for any wasp/hornet nests and/or reptiles/animals.

(H) Round Piling or Poles

- (1) Round piling or poles shall be stored in an orderly manner on a solid, level surface.
 - (2) Either a pyramid stack or battened stack shall be used.
 - (3) The lower tier of stacks shall have all piles or poles securely chocked to prevent lateral spread.
 - (4) Unloading of round pilings, poles, or pipe shall be done so that no person is required to be on the unloading side of the carrier after the tie wires have been cut or during the unloading of stakes.
- (I) **Sand, Gravel, Dirt, Crushed Stone, and Asphalt Mix**
- (1) When operators remove any of these materials from stockpiles, either manually or by mechanical means, they shall ensure that no overhang or vertical face exists.
 - (2) Materials stored or stacked against walls or partitions shall not be at a height that will endanger the stability or exceed the strength of walls or partitions.
- (J) **Drums** - Drums should be stored on racks designed so that the drum is kept horizontal or on pallets to keep the drum off of the ground to prevent moisture from corroding the bottom. This storing practice should be used regardless of whether the drums are stored indoors or outdoors. Outdoors, if the drums are stored vertically, a tarp or some type of protection must be used to cover the tops to keep out any water, (which also causes corrosion on the top.)

11.4.16 Working Surfaces, Floor Openings, and Stairways

(A) Walking-Working Surfaces

- (1) All shop areas, utility rooms, halls, and storerooms shall be kept clean and orderly.
- (2) All floors shall be kept clean and as dry as possible.
- (3) Aisles used by material handling equipment shall be appropriately marked on the floor.
- (4) Aisles, passageways, and floors shall be kept free of any obstructions such as protruding rails, splinters, holes, or loose boards.

- (5) Covers or guardrails shall be provided to protect employees from open holes, ditches, etc.

(B) Guarding Floor Openings, Wall Openings, and Holes

- (1) A floor opening is any opening measuring at least 12 inches or more in any floor, roof, or platform through which a person may fall.
- (2) Every stairway floor opening shall be guarded by a standard railing. All exposed sides (except entrance) shall be guarded.
- (3) All ladder-way floor openings shall be guarded by a railing with toe boards and a swinging gate.
- (4) Every hatchway and chute floor opening shall be guarded by either a hinged floor opening with standard railing or a removable railing with toe board on two sides and fixed railings with toe boards on all other exposed sides.
- (5) When covers are not in place, all pit and trap door openings that are used infrequently shall either be constantly attended by an employee or protected on all exposed sides by removable railings.
- (6) An employee shall constantly attend every temporary floor opening, including manholes, when the cover is not in place until the work requiring the opening has ended. If the posting of an employee is ineffective or not feasible, removable railings should protect the opening.
- (7) **Wall Openings**
 - (a) All wall openings where there is a drop of more than 4 feet shall be protected by a rail, roller, picket fence, half door or equivalent barrier.
 - (b) Every temporary wall opening shall have adequate guards.
- (8) **Open sided Floors, Platforms, and Runways**
 - (a) Every open sided floor or platform 4 feet or more above the adjacent floor or ground level shall be guarded by standard railings.
 - (b) Toe boards shall be provided when employees can pass beneath the open sides or falling materials could cause a hazard.

(C) Stairway Railings and Guards

Every flight of stairs having four or more risers shall be equipped with applicable standard handrails.

(D) Stair Treads

All treads shall be reasonably slip-resistant and nosing's shall be of non-slip finish.

(E) Fixed Industrial Stairs

This requirement includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits.

- (1) Stairs shall be made to carry a load of five times the normal line load anticipated.
- (2) The width of the stairs shall be a minimum width of 22 inches.
- (3) Stairways shall be designed and installed at horizontal angles between 30 and 50 degrees.
- (4) All treads shall be slip resistant.
- (5) Stairways platforms shall be no less than the width of the stairway and a minimum of 30 inches in length measured in the direction of travel.
- (6) Railings and handrails shall be provided on the open sides of all exposed stairways and stair platforms.
- (7) A vertical clearance above any stair tread shall be at least 7 feet.

11.4.17 Cranes

(A) Crawler, Locomotive, and Truck Cranes

- (1) Only trained and designated employees shall be permitted to operate a crane.
- (2) Rated load capacities, recommended operating speeds, and special hazard warnings shall be conspicuously posted on all equipment within view of the operator.

- (3) The operator shall be prohibited from dragging loads sideways with the crane.
- (4) The operator shall be prohibited from leaving his/her position at the controls while the load is suspended.
- (5) Employees shall be prohibited from standing or passing under a load on a hook.
- (6) No tools, equipment, oilcans, waste, etc., shall be left lying loose in or about the cab.
- (7) The minimum clearance between electrical lines and the crane shall be 10 feet from lines rated 50 kilovolts or below; greater clearances are needed from higher voltage lines.
- (8) The accessible area within the swing radius of the rear of the superstructure of the crane shall be barricaded in such a manner to prevent an employee or equipment from being struck.
- (9) All hauling vehicles whose payload is loaded by means of cranes, power shovels, etc. shall have a cab shield or canopy.
- (10) Operators of cranes, hoists, or similar lifting equipment shall take signals from only one person who is knowledgeable of the standard hand signals. Illustrations of standard hand signals shall be posted at conspicuous training locations.

(B) Inspections

- (1) **Daily** - to be conducted by a designated competent person on all control mechanisms, all safety devices, hydraulic systems, hooks, ropes, and electrical systems.
- (2) **Monthly** - for brakes, crane hooks, and ropes.
- (3) **Annually** - a complete inspection conducted by a competent person or government/private agency, including certification, record of when, who inspected, results, and what was inspected.

(C) Vehicle-Mounted Elevating and Rotating Work Platforms

- (1) Lift controls shall be tested each day prior to using equipment.
- (2) Only trained employees shall be authorized to operate this equipment.

- (3) Employees shall be prohibited from sitting or climbing on the edge of the basket and from using planks, ladders, or other devices for a work position.
- (4) A full body harness with lanyard or other approved fall protection devices shall be required to be worn and attached to the boom or basket.
- (5) Brakes shall be set, and outriggers, when used, positioned on a solid surface.
- (6) Load limits shall be used when the vehicle is on an incline.
- (7) Wheel chocks shall be used when the vehicle is on an incline.
- (8) Aerial trucks shall be prohibited from being moved when the boom is elevated in a working position and employees are in the basket.
- (9) Employees are prohibited from belting off to an adjacent pole, structures or piece of equipment while working from an aerial lift.
- (10) Articulating boom and extended boom platforms designed as personnel carriers shall have both platforms and lower controls. The controls shall be plainly marked.

(D) Overhead and Gantry Cranes

- (1) The load rating shall be clearly marked on each side of the crane.
- (2) Only trained, designated employees shall be allowed to operate the crane.
- (3) All exposed moving parts shall be guarded.
- (4) Electrical equipment shall be protected from dirt, grime, and moisture.
- (5) All live electrical parts shall be covered.
- (6) Modifications to the cranes shall be prohibited unless authorized and approved in writing by the manufacturer.
- (7) Operators shall be prohibited from moving loads over the heads of employees, leaving lifting devices unattended with a load suspended, or allowing employees to stand under a suspended load.

- (8) Inspections shall be conducted:**
- (a) Daily** - on all functional operational mechanisms, hydraulic systems, tanks, pumps, hooks, hoist chains, and connections.
 - (b) Monthly** - on all hooks, hoist chains, and ropes (cables). Requires a certification record including date of inspection, signature of inspector, and what was inspected.
 - (c) Periodic** - at least annually, on all of the above including bolts, units, brakes, gears, electrical, drive gears, sheaves, wire ropes, and other components by a competent person, or a governmental/private agency which shall provide a certified record of occurrence, inspector, and results.
- (9)** Hooks with more than 15 percent in excess of normal throat opening or more than 10-degree twist from the plane of the unbent hook shall be discarded.

Chapter 12

TRAINING REQUIREMENTS

12.1 PURPOSE

This chapter identifies the training required by the Department and the Occupational Safety and Health Administration, Code of Federal Regulations (**29 CFR 1910, 1926, and 1928**). Training is required and necessary in order to ensure employees perform assigned tasks in a safe and efficient manner. This training also applies to Department of Correction officers, contract laborers, Other Personnel Services and temporary workers as appropriate.

12.2 GENERAL REQUIREMENTS

12.2.1 All safety training, including safety related awareness training, **must be coordinated through the responsible Central or District Personnel Office and Central or District Industrial Safety Office or designated office.** Districts may choose to use computer based training, contracted training, or in-house trainers who have the experience, training, and knowledge to conduct specific training courses.

Refresher training should be conducted as required by Department policy and/or OSHA regulations, and when there are any changes to current adopted OSHA standards or Department policies or procedures relating to employee's safety.

12.2.2 Employees shall be allowed sufficient time during normal duty hours to attend required safety training.

12.2.3 Instructors shall maintain current certification, if required, on the courses they are authorized to teach.

12.2.4 All training shall be documented within Learning Curve.

12.3 TRAINING AND EDUCATION

12.3.1 Unit Managers/Office Heads shall ensure that training and education of employees are provided (and that employees attend and successfully complete) in the following areas as appropriate:

- 12.3.2(A) Safety requirements for employees working in confined spaces. **[29 CFR 1910.146]**
- (B) Noise and hearing protection training for employees when assessment indicates employees are exposed to noise at or above an eight-hour time weighted average of 85 decibels or when required to wear hearing protection. **[29 CFR 1910.95(k), 1926.101; Required Annually]**
- (C) Respirator protection training for employees required to use respirators. **[29 CFR 1910.134(b) (3), 1926.103; Required Annually]**
- (D) General principles of fire extinguisher use by type and the hazards involved in its use. **[29 CFR 1910.157, 1926.150; Required Annually]**
- (E) Operation of forklift trucks. **[29 CFR 1910.178; Required every 3 years.]**
- (F) Crane operation (overhead, gantry, and truck). **[29 CFR 1910.179-180, 1926.550]**
- (G) Operation of cutting/welding equipment. **[29 CFR 1910.252-255, 1926.350, 1926.351]**
- (H) Operation of aerial lifts. **[29 CFR 1910.67]**
- (I) First Responder Awareness Level course for all employees who are likely to witness or discover a hazardous substance release. First Responder (First on the Scene) training should be annually and annual refresher training thereafter. **[29 CFR 1910.120]**
- (J) Work operation requiring employees to use energy control procedures (Lock out/Tag out of energy sources). **[29 CFR 1910.147]**
- (K) Work situation where there is potential exposure to airborne lead at any level. **[29 CFR 1910.1025; Required Annually]**
- (L) Employees who are responsible for electrical repair that presents risks of electrical shock and other electrical hazards. **[29 CFR 1910.331-335, 1926.404]**
- (M) Bloodborne pathogen exposure training for Department divers. **[29 CFR 1910.1030; Required Annually]**
- (N) Exposure to harmful plants or animals. **[29 CFR 1926.21]**
- (O) Servicing multi-piece rim wheels. **[29 CFR 1910.177]**

- (P) Safe handling procedures, material contents, and safety data sheet for employees who work with hazardous materials. **[29 CFR 1926.21; 29 CFR 1910 Subpart Z; 1910.106; 1910.1200; 1910.1450]**
- (Q) Chain saw operations. **[29 CFR 1910.266]**
- (R) Paint spray applications per **NFPA 33 (National Fire Protection Association)**.
- (S) The use, care, proper application of, limitations, and the necessity for any type of personal protective equipment. Employees shall be trained in accordance with the requirements of **[29 CFR 1910.132]**
- (T) Operation of woodworking equipment. **[29 CFR 1926.302; 1926.304]**
- (U) Installation, removal, operation, and maintenance of LP gas. **[29 CFR 1910.110]**
- (V) Proper use of hand tools. **[29 CFR 1926.301]**
- (W) Operation of agricultural tractors, upon initial assignment and annually thereafter. **[29 CFR 1928.51(d)]**
- (X) For all employees on emergency plans and fire prevention plans. **[29 CFR 1910.38]**
- (Y) Training on danger and caution signs **[29 CFR 1910.145]**

12.3.3 Training for Construction Related Activities

The training provided may range from an awareness level for inspectors or project managers to identify specific hazards, to a full training program designed for employees involved in actually conducting construction related activities.

Awareness Level Training for Construction Related Activities

ALL construction employees must complete the Construction OSHA Awareness Training course as described in Chapter 11 of the Construction Training and Qualification Manual. The purpose of that chapter is to provide an Occupational Safety and Health Awareness Training Course for DOT construction personnel ONLY. Construction personnel may, in addition to the required training, attend an authorized OSHA 10 hour Construction Outreach Training Program, upon completion of which a Student Completion Card will be issued.

12.3.4 New Employees

All new employees must have training in those areas as they relate to their assigned duties and activities. This training should be completed within the first year of the employee's hire date. Appropriate safety training must be determined and initiated immediately after the hire date to ensure the new employee understands the safety requirements of the job.

The training must include the recognition and avoidance of unsafe conditions and the regulations applicable to construction and maintenance work and activities. **[29 CFR 1926.21(b) (2)]** This can incorporate any of the following specific areas:

- (A) Personal Protective Equipment (when to use and how to maintain) **[29 CFR 1926.28]**
- (B) Hearing Protection (when to use, types, and how to maintain) **[29 CFR 1926.101]**
- (C) Scaffolding Safety (basic installation, approved ladder, and railing) **[29 CFR 1926.451]**
- (D) Fall Protection (types of devices, use of a harness, inspection of equipment, when to use, the 6-foot rule, engineering requirements, etc.) **[29CFR 1926.502]**
- (E) Material Hoists, Personnel Hoists and Elevators (inspections, proper use, load capacities, and crane inspection) **[29 CFR 1926.552]**
- (F) Earth Moving Equipment/Motor Vehicles (back up alarms, working around equipment and vehicles) **[29 CFR 1926.602, 604]**
- (G) Excavation and Trenching (hazard recognition, shoring, ingress/egress, etc.) **[29 CFR 1926.650]**
- (H) Barges (used for marine construction of bridges, etc.) **[29 CFR 1926.605]**
- (I) Demolition of structures (awareness only) **[29 CFR 1926.859]**
- (J) Cranes (working around safely, swing radius, etc.) **[29 CFR 1926.550]**
- (K) Concrete and Masonry (hazardous dust, and safety requirements) **[29 CFR 1926.700]**
- (L) Working safely in work zones (night and day) (special hazards and how to work safely around them)

- (M) Working in confined spaces (culverts, storm water systems, drainage pipes and other areas not designed for human occupancy) **[29 CFR 1926.21]**
- (O) Hazardous Materials and Safety Data Sheets **[29 CFR 1926.59 and 1910.1200]**

12.4 SPECIAL TRAINING

The following are special training areas:

- (A) First Aid/CPR/AED training, for all field employees; First Aid/CPR/AED training when requested for office employees where AEDs are present.
- (B) Training requirements for personnel involved in planning, designing, supervising, and maintaining work zone safety in accordance with the Department **Procedure No. 625-010-010, Maintenance of Traffic Training**. Training for all flaggers on the requirements of the **Manual, Maintenance of Traffic Training on Uniform Traffic Control Devices, Millennium Edition (MUTCD)** or the latest edition.
- (C) Equipment operation training for employees who operate state-owned equipment.
- (D) Training on proper lifting procedures.
- (E) Annual refresher training for part-time and emergency equipment operators.
- (F) Defensive Driving shall be taken by employees as stipulated by the Department's Executive Committee and published within Learning Curve.

Chapter 13

PROGRAMS

13.1 PURPOSE

This chapter provides written safety plans and programs for Confined Space Entry, Respiratory Protection, Hearing Conservation, Motor Vehicle/Heavy Equipment Authorization, Lock-Out/Tag-Out, Bloodborne Pathogens Exposure Control, Laboratory Safety/Chemical Hygiene, Hazard Communication and Indoor Air Quality.

13.2 CONFINED SPACE ENTRY

This section provides the information necessary for identifying confined spaces at Department owned or leased properties and the measures to be taken to ensure safe entry of employees in such confined spaces.

13.2.1 Definitions

- (A) **Confined Space** - An enclosed space that:
- (1) Is large enough for an employee to bodily enter,
 - (2) Has limited or restricted means of entry or exit (for example, tanks, vaults, wells, tunnels, and pits), and
 - (3) Is not designed for continuous employee occupancy.
- (B) **Permit-Required Confined Space (PRCS)** - A confined space that has one or more of the following characteristics:
- (1) Contains or has the potential to contain a hazardous atmosphere.
 - (2) Contains a material that has the potential for engulfing an entrant.
 - (3) Has an inside configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section.
 - (4) Contains any other recognized serious hazards.
- (C) **Entry** - The action by which a person passes through an opening into a permit-required confined space.

- (D) **Entry Permit** - The written or printed document that is provided to allow and control entry into a permit space.
- (E) **Engulfment** - The surrounding and/or capturing of an entrant by divided particulate matter or liquid.
- (F) **Hazardous Atmosphere** - An atmosphere that may expose employees to risk of death or incapacitation, injury, or illness by reason of oxygen deficiency less than 19.5% for enrichment greater than 23% flammability or explosivity, or toxicity.
- (G) **Non-Permit Confined Space (NPCS)** - A space which by configuration meets the definition of a confined space but which after evaluation is found not to contain, or with respect to atmospheric hazards, does not have the potential to contain any hazard capable of causing death or serious physical harm.

13.2.2 General Requirements

(A) Confined Space Identification/Classification

- (1) Unit Managers/Officer Heads or designees shall ensure that the following are conducted:
 - (a) Confined space awareness training for employees;
 - (b) An evaluation of the potential (PRCS) including but not limited to manholes, culverts, catch basins, storm sewers, storm water inlets, and steel reinforced concrete and prestressed concrete box girders to identify; and
 - (c) Based on the evaluation of hazards, classify the confined spaces as either (PRCS) or (NPCS). Since posting or installing signs on confined spaces located on or off roadways is not realistic, a single form can be developed by the District Safety Officer or designee identifying the types of confined spaces in the District and then what each space is classified as. This form can then be distributed to other units in the District that may be involved in entering existing or new confined spaces.

(B) Re-Evaluation of Hazards

Re-evaluation of the hazards based on possible changes in activities in the identified confined space or other physical or environmental conditions which could adversely affect the space must also be conducted.

13.2.3 Entry in Confined Spaces

- (A) Except under certain conditions, **no** Department employee will be allowed to enter a PRCS.
- (B) No Department employee will be allowed to walk or crawl through existing underground storm water pipes for the purpose of inspecting, repairing or replacing damaged pipe. Where repair or replacement of underground pipes is required then access to the pipe must be done by trenching/excavating or contracting out the job. The use of optic cameras can also be used to determine the extent and location of any pipe damage.
- (C) If the Unit Manager/Office Head has determined that the only hazard in the identified confined space is atmospheric and ventilation alone can control the hazard, entry into the confined space may be authorized. In such a case, the requirements for alternative protection procedures under **29 CFR 1910.146(c)(5)** shall be followed and complied with.
- (D) All entries into confined spaces must be documented to include the results of the air sampling and when the gas monitor was last calibrated.

13.2.4 GAS MONITORS

- (A) Ensure these are calibrated per the Manufactures recommended schedule and before you enter a confined space.
- (B) Based on the manufactures instructions for testing, ensure the sensors are serviceable before entering a confined space. The sensors normally last about two years based on the manufacture.
- (C) When you purchase or rent a gas monitor make sure it comes with a testing hose that is long enough to extend down into the confined space so tests can be conducted at the entrance, half way down and at the bottom.

13.2.5 Contractors

Unit Managers/Office Heads shall ensure that when another employer, such as a contractor, performing work that involves entry into a confined space that has been identified as a PRCS, the employer shall be provided with sufficient information about the PRCS involved and the necessary requirements to comply with **29 CFR 1910.146**.

13.3 RESPIRATORY PROTECTION PROGRAM

In the control of occupational diseases caused by breathing harmful airborne contaminants, the primary objective is to prevent atmospheric

contamination. This shall be accomplished, where feasible, by accepted engineering control measures such as enclosure or confinement of operations, general and local exhaust ventilation, and substitution of less toxic materials. Respirators are to be used only when engineering controls of respiratory hazards are not feasible, or when engineering controls are being installed, or in emergencies or as required per OSHA Silica Dust Standard [29 CFR 1916.1153(c)(1) table 1.

13.3.1 Responsibilities

- (A)** Unit Managers/Office Heads or designees are responsible for ensuring that when respirators are required and used, that the respiratory protection program is implemented.
- (B)** Employees are responsible for using respiratory protection in accordance with the training and instructions received.

13.3.2 Respirator Need and Selection

The need for respiratory protection shall be determined through periodic inspections and testing by industrial hygienists or other qualified competent persons. The basis for respirator selection is dependent upon the airborne contaminant present; the physical, physiological, chemical, and toxicological properties of the contaminant; the applicable threshold limit value or permissible exposure level for the contaminant; the location of the hazardous area with respect to a safe area having respirable air; the period of time for which respiratory protection is to be provided; the activities of workers in the hazardous area; and the physical characteristics, functional capabilities, and limitations of respirators of various types.

13.3.3 Physical Examination

Employees requiring the use of respirators as part of their job duties shall not be allowed to use respirators unless it has been determined by a physician that they are physically able to perform the tasks while using a respirator. A physician will also review the employee's medical status annually. Any paperwork provided by the physician regarding the testing or medical evaluation, other than a statement they passed or failed the hearing test, is considered to be medical and must be maintained in the employees personnel file.

Occasional Use: Sometimes workers may wear respirators to avoid exposures to hazards even if the exposure level does not exceed the limits set by OSHA standards. If you use a respirator voluntarily that is provided by your employer you must: read and comply with all manufacturer's

instructions and warnings; use only approved respirators designed for the specific hazard; and comply with **Section 13.3.4 (B)**, of this **Manual**.

13.3.4 Respirator Training/Instructions

- (A)** Respirator users will be instructed and trained in the proper use of how a respirator should be worn, how to adjust it, and how to determine if it fits properly, proper storage and how to clean. The respirator user should have an opportunity to handle the respirator, have it fitted properly, test its face piece-to-face seal, wear it in normal air for familiarity period, and finally to wear it in a test atmosphere.
- (B)** Respirators shall not be worn when conditions prevent a good face seal. Such conditions may be growth of beard, sideburns, or temple piece on glasses. Each time the wearer puts on the respirator, the fitting needs to be checked.
- (C)** All training will be documented and entered into the Learning Curve System.

13.3.5 Respirators Cleaning, Inspection, and Storage

- (A) Cleaning** - Respirators shall be cleaned and disinfected before and after each use.
- (B) Inspection** - Respirators shall be inspected before and after each use. The inspections shall include a check of the tightness of connections and the condition of the face piece, headband, valves, connecting tubes, and canisters. Rubber or elastic parts shall be checked for pliability and signs of deterioration.
- (C) Storage** - After inspection, cleaning, and necessary repair, respirators shall be stored and protected from dust, sunlight, heat, excessive moisture, and damaging chemicals. Routinely used respirators may be stored in plastic bags in such a way that the faceplate and exhalation valve will rest in a normal position. Respirators will not be stored in lockers or toolboxes unless they are in carrying cases or cartons.
- (D)** Only qualified and experienced persons designated by the Unit Manager/Office Head shall be authorized to repair respirators.

13.3.6 Program Monitoring

To assure the adequacy of the respiratory protection program, monitoring shall be conducted by the supervisors and unit safety and health specialists or designated safety persons.

13.4 HEARING CONSERVATION PROGRAM

13.4.1 General Requirements

- (A) Unit Managers/Office Heads shall ensure that an assessment is made of all work operations or processes that may expose employees to noise levels that equal or exceed an eight-hour TWA of 85 dBA.
- (B) A noise survey shall be conducted by adequately equipped and qualified personnel to evaluate the noise levels, following the criteria under **29 CFR 1910.95**.
- (C) When the evaluation of a work operation or process indicates that an employee's noise exposure **exceeds the allowable levels**, the following shall be instituted:

(1) Administrative/Engineering Controls

These controls must first be considered and used.

- (a) Administrative controls include reducing the employee's exposure time so they are not exposed to noise levels that exceed 85 dBA based on an 8-hour time weighted average (this means the various noise levels are measured during the employees normal work shift and then the time weighted average would be the average decibel level of noise for the 8 hour day.)
- (b) Engineering controls include identifying ways of reducing the noise level through the use of noise suppression materials, retrofitting the equipment with mufflers or other equipment that will reduce the noise level or purchasing equipment designed to operate with a reduced noise level.

(2) Personal Protective Equipment

If these controls are not feasible or do not work, personal protective equipment must be provided:

- (a) Hearing protectors must be available to all employees (**exposed at or above 85 dBA**).
- (b) Employees should be given the opportunity to select hearing protectors, with the assistance of a qualified and

trained person, as to which size and type of protector is suitable for their work environment.

(3) Audio Monitoring Program

- (a)** Audio monitoring should identify employees who need to be included in the program and ensure the proper selection of hearing protectors.
- (b)** Audio monitoring shall be conducted by qualified personnel and has to be repeated whenever a change in operation, process, equipment, or controls takes place and increases the noise level.
- (c)** Each employee exposed at or above an 8-hour TWA of 85 dBA must be notified of the results of the monitoring.

(4) Audiometric Testing Program

- (a)** Audio-metric testing shall be made available, at no cost, to any employee whose exposure equals or exceeds an 8-hour TWA of 85 dBA.
- (b)** Audio-metric testing shall be performed by a certified professional or qualified technician, and audiograms established in accordance with the requirements of **29 CFR 1910.95**.

(5) POSTER

A copy of the Hearing Conservation Standard is required to be displayed on each unit's safety bulletin board. This standard is available in the form of a poster from the OSHA website.

(6) Training

Training shall be conducted for all employees determined to be exposed to TWAs of 85 dBA and above, repeated annually and include:

- (a)** The effects of noise on hearing.
- (b)** The purpose of hearing protection and information on selection, fitting, use, and care.
- (c)** The purpose and procedures for audiometric testing.

13.4.2 Record Keeping

- (A) Noise measurement records shall be maintained for two years and audiometric test records shall be maintained for the duration of the affected employee's employment. Audiometric test records are considered to be medical records and must be maintained in the employees personnel file.
- (B) All training will be documented within the Learning Curve system.

13.5 MOTOR VEHICLE/HEAVY INDUSTRIAL EQUIPMENT OPERATION AUTHORIZATION

13.5.1 Responsibilities

- (A) Unit Managers/Office Heads shall ensure that:
 - (1) Only qualified applicants are hired and employed as Department equipment operators (refer to ***Recruitment and Selection for Career Service Positions, Topic No. 250-015-005***).
 - (2) A list of currently authorized motor vehicle and equipment operators is prepared and maintained and each supervisor is provided with a copy of the list.
- (B) Supervisors shall immediately suspend driving privileges of employees who do not have a valid driver's license.
- (C) Operators shall:
 - (1) Properly care for, inspect and safely operate all vehicles or equipment they are assigned to operate. Refer to Mobile Equipment Manual, Topic 400-000-001.
 - (2) Report to their supervisor no later than the next workday following the suspension or revocation of their driver's license or commercial driver's license.

13.5.2 Training and Authorization of Operators

- (A) **The Unit Managers/Office Heads or designee shall:**
 - (1) Assign the responsibility, in writing, for verifying the competency of equipment operators and training to Department operators qualified by experience, training, and knowledge of equipment, or
 - (2) Contract the training of operators with outside sources.

- (3) Ensure contract laborers, OPS, temporary workers, inmates who are authorized to use small motorized equipment (i.e., riding mowers, chain saws, lawn mowers, weed eaters, etc.) have received training from an experienced and authorized unit trainer who shall train the operator in safety and proper operations procedures. This training shall be documented using adopted forms. Inmates are to be trained by their DOC officer.

(B) Current Operators

- (1) Each Unit will develop a list of authorized equipment operators to include all operators' names, initials of supervisors, and all types of vehicles and equipment at the facility.
 - (a) Check off only those vehicle or equipment types the employee is authorized to operate.
 - (b) Provide a current copy of this list to all supervisors in the unit.
- (2) All operators currently authorized to drive specific equipment will have their authorization reconfirmed with the approval of the Unit Manager/Office Head or designee.

(C) New Employees

- (1) The supervisor shall prepare the vehicle operator authorization list:
 - (a) The supervisor shall either coordinate with the Department qualified operators to verify the competency of the employee, or, if contractors are being used, the supervisor shall coordinate the enrollment of the employee in the training program.
 - (b) The supervisor may authorize the employee to operate the equipment provided the new employee can show proof of training by his/her previous employer, demonstrate that he/she can operate the equipment satisfactorily, and knows the proper safety requirements for operation.
- (2) The trainer (outside contractor or Department qualified operator) will train the employee on all operational characteristics and inspection of the equipment to include proper safety procedures. Training will consist of hands-on operation and instruction.
- (3) Upon satisfactory completion of training, the supervisors or their designee will enter into the Learning Curve system.

(D) Annual Evaluation/Remedial Training

- (1) Competency should be evaluated annually for all operators who operate the vehicle or equipment on a part-time or emergency basis and document the date this was accomplished. The immediate supervisor should maintain documentation of this competency evaluation either on a matrix that lists the vehicles and equipment each employee is authorized to operate or through some other means. and instead of inputting this in the Learning Curve system (since it is not training) identify on the form that a competency test was conducted and file the form in the employees personal file.
- (2) If remedial training is required, after the employee successfully completes this training the supervisor will document and have it entered into the Learning Curve system.

(E) Vehicle Crash/Incident Review

All vehicle crashes/incidents in which an employee authorized to operate Department equipment or vehicle was determined to have operated it in an unsafe manner, will be reviewed by the appropriate Unit Manager/Office Head or designee and District Safety Manager or Designee to determine if the employee should be allowed to continue to operate the equipment or vehicle.

13.6 HAZARDOUS ENERGY CONTROL PROGRAM (LOCK-OUT/TAG OUT)

This program has been established to ensure, whenever the possibility of unexpected machine or equipment start-up exists, or when the unexpected release of stored energy could occur and cause injury to employees, that the machine or equipment is isolated from its energy source(s) and is rendered inoperative prior to servicing or maintenance. Energy sources include electrical, mechanical, hydraulic, chemical, thermal, and any other source of energy.

13.6.1 Responsibilities

(A) Unit Manager/Office Head

Unit Managers/Office Heads or designees are responsible for ensuring that:

- (1) Employees authorized to repair, clean, or perform maintenance on any machine or equipment follow the lockout/tag out requirements of this program;

- (2) Authorized employees are given instructions and are required to understand the type and magnitude of the energy source(s) that the machine or equipment utilizes and the methods and means necessary to isolate and control the energy source(s);
- (3) Isolating devices, such as manually operated electrical circuit breakers, disconnect switches, or line valves controlling the energy source to the equipment or machines that will be locked-out or tagged-out are located and identified; and
- (4) A list of all equipment requiring energy control is maintained.

(B) Authorized Employees

Before repairing, servicing, or performing maintenance on a machine or equipment, the authorized employee must:

- (1) Notify all other employees, such as those operating and/or using the machine or equipment or those required to be in the area in which servicing or maintenance of the machine or equipment is being carried out, that a lock-out/tag out is going to be utilized and the reason for its use;
- (2) Know the type and magnitude of the energy, the hazards of the energy to be controlled, and the means of control;
- (3) Shut down the machine or equipment by using recommended stopping procedures, such as pressing the stop button, moving the switch to "**off**" position, or opening the toggle switch;
- (4) Isolate the main power source, switch(s), valve(s) or other sources of energy by moving them to the "**off**" position to render it inoperative;
- (5) Place a lockout/tag out device(s) on switch(s) or other energy source in an "**off**" or safe position;
- (6) Make sure that stored or residual energy such as those on springs, hydraulic systems, air, gas, steam, or water pressure, is relieved or restrained by methods such as repositioning, bleeding down, or blocking;
- (7) After making sure no employees are exposed, operate the push button or other normal operating controls(s) to verify or test that the machine or equipment will not operate; and

- (8) Make sure the operating control(s) are returned to **neutral** or "**off**" position after the test. The necessary repairs, servicing, or maintenance may then be performed.

(C) Other Employees

All other employees, upon observing that there is a lock out or tag-out device in place on an energy-isolating device, must not attempt to start, energize, or use the machines or equipment being serviced or maintained.

13.6.2 More Than One Authorized Employee

- (A) If more than one employee is authorized to lockout or tag-out equipment, each shall place his/her own issued lock, or completely filled out tag-out device, on the energy-isolating device(s).
- (B) When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tag-out device (HASP) may be used.
- (C) If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet that allows the use of multiple locks to secure it. Each employee will then use his/her own lock to secure the box cabinet.
- (D) As each employee no longer needs to maintain his/her lockout protection, that employee will remove his/her lock from the box or cabinet authorized for group lockout or tag-out.

13.6.3 Restoring Machines or Equipment to Service

When servicing or maintenance is completed and the machine or equipment is ready for normal operation, the authorized employee shall:

- (1) Check the area around the machines or equipment to make sure that no employee is exposed;
- (2) After removing all tools and reinstalling guards and other machine or equipment components, remove the lockout devices and reenergize the machine or equipment; and
- (3) Notify all other employees that the servicing or maintenance has been completed and the machine or equipment is ready for use.

13.6.4 Drawbridge Equipment Servicing, Repair, Maintenance, and Inspection

Servicing, repair, maintenance, or inspection has to be performed on equipment or machines on drawbridges. Normally, the energy (power) source to any equipment or machine that has to be maintained or repaired has to be locked or tagged-out to prevent unexpected start-up of the equipment or machine and avoid injury to servicing employees. However, in drawbridge operation, it may not be possible to totally lockout the power source as a drawbridge is expected to render uninterrupted operation or service.

13.6.4.1 To ensure the safety of the employee(s) performing maintenance work on drawbridges while the drawbridge remains in operation, the following must be observed:

(A) Authorized Employee - When more than one (1) employee is involved in the maintenance work, only one employee will be designated and authorized to place or remove the lock or tag-out device, and communicate with designated bridge tender.

(1) The employee authorized to service, repair, or perform any maintenance on any drawbridge equipment or machine must:

(a) Be given instructions and understand the type and source of energy the machine or equipment uses;

(b) Identify the power source controlling the equipment or machine and place a lock or tag device on the power source and operating control in the “**off**” position. (The power source may be located or controlled in the bridge console.)

(c) Inform the designated bridge tender of the reason for locking or tagging the operating control;

(d) Give specific instructions to the designated bridge tender that the lock or tag must not be removed or the controls placed in the “**on**” or operating position without being expressly told to do so; and

(e) Ensure that radio and/or visual communication is maintained with the designated bridge tender at all times.

(B) When informed by the designated bridge tender of a request for a bridge opening and the need to operate drawbridge controls, the authorized employee must first ensure that it is safe, for himself (or any other employee performing the maintenance work) and for operation of the equipment or machine being maintained, before allowing the designated bridge tender to remove the “lock or tag” device and turn the power on. When there is more

than one (1) bridge tender, only one will be designated to communicate with authorized maintenance employee. The designated bridge tender must:

- (1) Maintain radio and/or visual communication with authorized employee at all times;
- (2) Inform the maintenance employee when there is a request for a bridge opening;
- (3) Not remove the lock or tag device placed on the operating controls or place the control on the “on” or “operating” position without prior authorization from the employee performing maintenance work;
- (4) When drawbridge operation is completed, place the operating controls on the “off” position and replace the lock or tag-out device on the operating controls; and
- (5) Contact the authorized maintenance employee so work on the equipment or machine can be resumed.

13.7 BLOODBORNE PATHOGENS OCCUPATIONAL EXPOSURE CONTROL PLAN

13.7.1 Purpose and Scope

The purpose of this Plan is to establish a preventative safety program for Department employees who could be or are exposed to Bloodborne Pathogens. This Plan applies to Department Motor Carrier Compliance law enforcement officers and Department divers who are required as part of their job to render emergency care or have other duties that may expose them to Bloodborne Pathogens. This Plan also applies to other Department employees who may have unanticipated exposure to Bloodborne Pathogens.

13.7.1.1 The Plan does not apply to contractors, consultants, contract employees and other non-Department employees.

13.7.2 References

Section 284.50, Florida Statutes; Executive Order 2000-292; 29 CFR 1910.1030.

13.7.3 Definitions

- (A) Blood** - Human blood, human blood components, and products made of human blood.

- (B) **Bloodborne Pathogens** - Pathogenic microorganisms that are present in human blood and other body fluids, which can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- (C) **Confidential Medical Record** - Means a medical record required to be established for each employee with occupational exposure and also required to be kept confidential.
- (D) **Contaminated** - Presence or reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- (E) **Contaminated Laundry** - Uniforms which have been soiled with blood or other potentially infectious materials on an item or surface.
- (F) **Decontamination** - The use of physical or chemical means to remove, inactivate, or destroy Bloodborne Pathogens on a surface or item to the point they are no longer capable of transmitting infectious particles, and the surface or item is rendered safe for handling, use or disposal.
- (G) **Engineering Controls** - Controls that isolate or remove Bloodborne Pathogens from the work place.
- (H) **Exposure Incident** - An occupational exposure (skin, eye, mucous membrane) or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties while rendering First Aid/CPR and/or performing the resulting clean-up.
- (I) **HBV** - Hepatitis B Virus.
- (J) **HIV** - Human Immunodeficiency Virus.
- (K) **Hand-Washing Facilities** - A facility providing an adequate supply of running potable water, soap, and single use towels or hot air-drying machines.
- (L) **Occupational Exposure** - Reasonably anticipated skin, eye, mucous membrane or parenteral contact with blood or other potentially infectious materials (OPIM) that may result from the performance of an employee's duties. This determination is made without taking into account the use of personal protective equipment.
- (M) **Other Potentially Infectious Materials (OPIM)** - These materials include the following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, and saliva in dental procedures.

- (N) **Potentially Infectious Materials** – Such materials include any body fluid visibly contaminated with blood, and all body fluids in situations where it is difficult to differentiate between body fluids. Other potentially infectious materials also include any unfixed tissue or organ (other than intact skin) from a human (living or dead); HIV containing cell or tissue cultures, organ cultures, and HIV or HBV containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with Human HIV or HBV.
- (O) **Parenteral** - The action of piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.
- (P) **Personal Protective Equipment (PPE)** - Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g. uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard, are not considered to be PPE.
- (Q) **Regulated Waste** - Liquid or semi-liquid blood or other potentially infectious materials and contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed. Regulated waste also includes items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, such as: contaminated sharps, pathological, and microbiological wastes containing blood or other potentially infectious materials.
- (R) **Source Individual** - Any individual, living or dead, whose blood or other potentially infectious fluids may be a source of occupational exposure to the employee.
- (S) **Sterilize** - The use of physical or chemical procedures to destroy all microbial life.
- (T) **Universal Precautions** - An infection control approach in which all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other Bloodborne Pathogens.
- (U) **Virus** - Extremely small microorganisms that can only grow in the cells of other organisms.

13.7.4 Responsibilities

- (A) **Unit Management** - Each Unit Manager/Office Head is responsible for assuring the requirements of this Plan are implemented in his/her area of responsibility.

- (B) **Unit Safety Personnel** - Unit safety personnel/designated safety persons shall ensure that this Plan is followed and to provide assistance to the unit regarding its implementation.
- (C) **Supervisors** - Supervisors are responsible for assuring that training is conducted for employees designated as first aid responders and that the Plan is implemented in areas within their jurisdictional control.
- (D) **Employees** - Employees designated as first aid responders are responsible for complying with the requirements of this Plan. All employees are responsible for reporting all exposure incidents including unanticipated exposures immediately to their supervisor.

13.7.4.1 **Exposure Determination/ Designated First Aid Responders**

Exposure to blood or OPIM may occur whenever an employee performs First Aid or CPR on another employee or while performing duties, which are required by the job. The Department has designated divers as first aid responders. The Department has not designated other employees as first aid responders.

13.7.4.2 **Training**

- (A) Unit Managers/Office Heads shall ensure that all employees designated as first aid responders receive annual training on Bloodborne Pathogens. Training will be done in accordance with the Department course entitled ***"Prevention of Bloodborne Diseases in the Workplace," Course No. ST-09-0028.*** At a minimum, training shall address the following:
 - (1) The Exposure Control Plan and its location in the Unit.
 - (2) A general discussion of the epidemiology and symptoms of blood borne diseases.
 - (3) Modes of transmittal.
 - (4) Recognition of tasks and other activities that may involve exposure to blood or other potential infectious material.
 - (5) Explanation of the use and limitations of methods that prevent or reduce exposure, including: engineering controls, work practices, and personal protective equipment.
 - (6) Information on types, usage, location, removal, handling, decontamination, and disposal of personal protective equipment.

- (7) Explanation of the selection of personal protective equipment.
- (8) Information on the Hepatitis-B vaccination, including its efficacy, safety, method of administration and benefits of the vaccination, and the fact that it is provided free of charge.
- (9) Information on emergency procedures in case of an accident involving blood or other potential infectious materials.
- (10) Explanation of procedures to follow if an exposure incident occurs, including the method of reporting the incident and medical follow-up.
- (11) Information on the post-exposure evaluation and the required follow-up.
- (12) Explanation of signs, labels, and color-coding required by the regulations.
- (13) Disposal of bio-hazardous wastes.
- (14) Opportunity to ask questions of the trainer.

13.7.4.3 Record Keeping

- (A) Medical records will be kept in the District/Central Personnel Office file for all employees with occupational exposure, which will include the following:
 - (1) Name and Social Security number of the employee.
 - (2) Employee Hepatitis-B vaccination status, including date of vaccination, records relating to employee's ability to receive the vaccine, and signed declination form, where applicable.
 - (3) Copy of results of examinations, medical testing, and follow-up procedures.
 - (4) Health care professional's written opinion.
 - (5) All information provided to the evaluating health care professional in the event of an exposure incident.
- (B) Medical records will be kept **confidential** and not be discussed or reported without the employee's express written consent. Records shall be maintained for at least the duration of employment plus **thirty (30) years** as required by the bloodborne pathogens standard.

- (C) Training records will also be recorded in **Learning Curve** and shall include:
 - (1) Date of training
 - (2) Outline of training described in the **Learning Curve Course Catalog**,
 - (3) Name of instructor, and
 - (4) Names of attendees.

13.7.5 Methods of Control

13.7.5.1 The following methods of preventive controls shall be practiced minimizing the potential for exposure:

- (A) **Universal Precautions** - An approach to infection control where all human blood or certain human body fluids are treated as if known to be infectious of HIV, HBV and other bloodborne pathogens.

Note: Whenever possible the injured employee, if physically able, will perform self-aid and clean up so as not to expose other employees to blood and other body fluids.

- (B) **Engineering Controls** - Engineering controls are devices, which isolate or minimize Bloodborne Pathogen hazards from the work place. Engineering controls can be designed into the workplace operations, cleaning or maintenance programs to minimize potential exposure. Examples of engineering controls can be as simple as a broom and dustpan, hand washing facilities, or antiseptic hand cleaners. Engineering controls need to be reviewed and updated annually.

- (C) **Work Practice Controls** - Work practice controls are designed to help minimize or eliminate exposure to Bloodborne Pathogens. The following work practice controls, at a minimum, shall be observed:

- (1) Employees shall wash their hands immediately, or as soon as feasible, after removal of contaminated gloves or other personal protective equipment.
- (2) Following any contact of body areas with blood or any other infectious materials, employees shall wash their hands and any other exposed skin with soap and water as soon as possible and flush exposed mucous membranes with water.
- (3) Equipment, which becomes contaminated, is examined prior to servicing or shipping, and decontaminated as necessary.

- (4) Ensure that an appropriate biohazard warning label, available from the warehouse, is attached to any contaminated equipment, identifying the contaminated portions. All affected employees, handlers, and shippers will be informed of the remaining contamination.
- (D) **First Aid/CPR Safe Work Practices** - The following safe work practices shall be observed by designated employees while rendering First Aid and CPR.
- (1) Gloves shall be worn at all times when rendering First Aid/CPR.
 - (2) Gloves shall be worn when handling items or touching surfaces that may be potentially contaminated with blood or OPIM.
 - (3) Other personal protective equipment should be worn if there is a possibility the employee will be exposed to blood or OPIM to include face shields and/or protective and disposable gowns/aprons.
 - (4) Hands and other skin surfaces shall be washed immediately and thoroughly with water and soap, or antiseptic cleanser, if contaminated with blood or OPIM.
 - (5) Hands shall be immediately washed after gloves are removed.
 - (6) Employees shall not handle sharp objects without proper personal protective equipment and use of mechanical means such as tongs, or a dustpan and broom.
 - (7) Uniform clothing, supplied by the Department, which becomes contaminated with blood or OPIM during responses shall be removed immediately (or as soon as possible) and separated from other soiled clothing until properly laundered. Contaminated clothing shall be placed in designated containers and labeled per the uniform contractor's requirements and placed in a safe area. The uniform contractor will be informed of the contaminated clothing and have it removed as soon as possible.
 - (8) Personal clothing that becomes contaminated (not supplied uniforms) shall be removed and changed immediately (or as soon as possible). Soiled clothing shall be placed in appropriate areas in a labeled container for cleaning or disposal. Dry cleaning is an acceptable means of decontamination.

- (9) Areas and equipment which become contaminated with blood or OPIM shall be cleaned immediately with a bleach solution (**1:10 dilution of household bleach**).
 - (10) The employee who has an exposure incident shall receive a medical evaluation immediately, which may include Hepatitis-B vaccination on the recommendation of a health care professional. Complete **Form No. 500-000-07, Employees Declination Statement**, if employee declines the vaccination. This form when completed shall be treated as **confidential medical record** and shall be filed accordingly.
 - (11) Where hand washing facilities are not feasible, appropriate antiseptic hand cleaner in conjunction with clean cloth/paper towels or antiseptic towelettes shall be provided. Employees shall wash with soap and running water as soon as feasible.
- (E) **Incidental Exposure During Clean up** - The following safe work practices apply to exposure incidents that may occur to persons who may be designated to perform clean up. Every conceivable practice is not necessarily listed and evaluation of every action in light of possible exposure shall be considered before proceeding, including training of such designated persons.
- (1) Gloves shall be worn before performing cleanup that could present exposure of blood or OPIM.
 - (2) Other personal protective equipment should be worn if there is a possibility the employee will be exposed to blood or OPIM to include face shields and/or eye protection and disposable gowns/aprons.
 - (3) Accident sites where blood or OPIMs are present shall be disinfected before cleanup begins.
 - (4) Personal protective equipment (i.e., gloves) shall be worn and proper equipment (i.e., dustpan) used in handling broken glassware or other sharp objects. Sharp objects shall be placed in designated containers and disposed of in an acceptable manner.
 - (5) Hands shall be washed after gloves are removed.
 - (6) Uniform clothing, supplied by the Department, which becomes contaminated with blood or OPIM during clean up shall be removed immediately (or as soon as possible) and separated from other soiled clothing until properly laundered. Contaminated clothing shall be placed in designated containers and labeled per the uniform contractor's requirements and placed in a safe area. The uniform

contractor will be informed of the contaminated clothing and have it removed as soon as possible.

- (7) Personal clothing that becomes contaminated shall be removed and changed immediately (or as soon as possible). Contaminated clothing shall be placed in a labeled container for cleaning or disposal. Dry cleaning is an acceptable means of decontamination.
- (8) If an employee has an exposure incident while performing cleanup, the employee shall receive a medical evaluation immediately, which may include Hepatitis-B vaccination. Complete **Form No. 500-000-07, Employee Declination Statement**, if employee declines the vaccination. This form when completed shall be treated as confidential medical record and shall be filed accordingly.
- (9) Where hand-washing facilities are not feasible, appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes shall be provided. Employees shall wash with soap and running water as soon as feasible.

13.7.6 Personal Protective Equipment (PPE)

13.7.6.1 The purpose of PPE is to eliminate or minimize the likelihood that blood or OPIM will contact the employee's skin, eyes, mucous membranes, or clothing. Necessary equipment shall be supplied and kept accessible for employee use at no cost; employees shall be trained in their use. Equipment shall be correctly worn, and removed to prevent exposures. To ensure that personal protective equipment is not contaminated and is in a condition to protect employees from potential exposure, the Department adheres to the following practices:

- (A) All personal protective equipment is inspected by the supervisor and repaired or replaced as needed to maintain its effectiveness.
- (B) Reusable personal protective equipment is cleaned, laundered, and decontaminated by trained personnel, as needed.
- (C) Single-use personal protective equipment or equipment that cannot be decontaminated is disposed of according to appropriate procedures.
- (D) To make sure that personal protective equipment is used as effectively as possible, employees shall adhere to the following practices when using personal protective equipment.
 - (1) Any garments penetrated by blood or other infectious materials are removed, prior to leaving a work area whenever possible.

- (2) All potentially contaminated personal protective equipment is removed as soon as possible and prior to leaving a work area.
- (E) Gloves are worn in the following circumstances:
 - (1) Whenever employees anticipate hand contact with potentially infectious materials.
 - (2) When handling or touching contaminated items or surfaces.
- (F) Disposable gloves are replaced as soon as practical after contamination or if they are torn, punctured, or otherwise lose their ability to function as an "**exposure barrier**".
- (G) Discard utility gloves when they show signs of cracking, peeling, tearing, puncturing, or deterioration.
- (H) Masks and eye protection (such as goggles, face shields, etc.) are used whenever splashes or sprays may generate droplets of infectious materials.
- (I) Place used protective equipment in designated containers for decontamination or disposal.

13.7.7 Housekeeping

13.7.7.1 Equipment and work areas shall be kept clean and sanitary. Bins, pails, and other containers shall be inspected regularly and kept clean and sanitary. Broken glass or other contaminated material, which can cause a puncture, or cut to the skin shall be picked up with mechanical means (e.g., dustpan, tongs, etc.). Contaminated uniforms shall be contained in a leak-proof container and labeled. Arrangements must be made with the uniform contractor for pick up.

13.7.7.2 Unit Managers/Office Heads shall ensure that all regulated wastes are handled according to federal, state, and local county/city codes. The following are minimum requirements for handling and disposing of regulated waste:

- (A) Regulated waste is discarded or "bagged" in containers that are:
 - (1) Closable.
 - (2) Puncture-resistant, if the discarded materials have the potential to penetrate the container.
 - (3) Leak-proof, if the potential for fluid spill or leakage exists.

- (4) Red in color or labeled with the appropriate biohazard warning label.
- (B) Containers for this regulated waste are placed in appropriate locations in the facility within easy access of employees.
- (C) Waste containers are maintained upright, routinely replaced, and not allowed to overfill.
- (D) Contaminated laundry is handled as little as possible and is not sorted or rinsed where it is used.
- (E) Whenever employees move containers of regulated waste from one area to another, the containers are immediately closed and placed inside a secondary container, if leakage is possible from the first container.
- (F) All materials to be disposed of will be properly labeled, packaged, temporarily stored away from employees, and then promptly picked up by an approved vendor.

13.7.8 Decontamination

Equipment decontamination will be accomplished by using a 1/10 solution of bleach and water. The area will be wiped down with disposable towels, and then the bleach/water solution will be applied to the area.

13.7.9 Hepatitis-B Vaccination

13.7.9.1 To protect from the possibility of Hepatitis B infection, vaccination is available, at no cost, to all Department divers who have occupational exposure to blood or other potentially infectious materials unless:

- (A) The employee has previously received the series;
- (B) Antibody testing reveals that the employee is immune;
- (C) Medical reasons prevent the taking of the vaccination; or
- (D) The employee chooses not to participate.

13.7.9.2 All employees designated as first aid responders are strongly encouraged to receive the Hepatitis B vaccination series. However, if an employee chooses to decline HB vaccination, **Form No. 500-000-07, Employee Declination Statement** must be filled out. This form when completed shall be treated as **confidential medical record** and shall be filed accordingly. An employee who declines may request and obtain the vaccination at a later date and at no cost.

- 13.7.9.3** The vaccination consists of a series of three (3) inoculations over a six (6) month period, performed under the supervision of a licensed physician or other health care professional.
- 13.7.9.4** **Hepatitis B Vaccine:** Employees who have been offered Hepatitis B vaccine shall be listed using **Form No. 500-000-05, List of Employees Offered the Hepatitis-B Vaccine**. This form when completed shall be treated as confidential medical record and shall be filed accordingly.
- 13.7.10** **Post-Exposure Evaluation and Follow-Up**
- 13.7.10.1** Should an exposure incident occur, the employee shall inform his/her supervisor immediately. Each exposure incident must be investigated and documented on **Form No. 500-000-04, Exposure Incident Report**, by the Supervisor. The Unit's Safety and Health Specialist/designated safety person will assist in the investigation, as needed. This form when completed shall be treated as **confidential medical record** and shall be filed accordingly.
- 13.7.10.2** A confidential medical evaluation and follow-up shall be conducted immediately and the following tasks performed:
- (A) Document the routes of exposure and how the exposure occurred.
 - (B) Identify the source individual unless infeasible or prohibited under **Section 381.004, F.S.**
 - (C) Obtain consent and test source individuals as soon as possible to determine HIV and HBV infectivity and document the source's blood test result.
 - (D) Collection and testing of employee's blood for HBV and HIV serological status (employee's consent required).
- 13.7.10.3** The health care professionals responsible for an employee's Hepatitis B vaccination and post-exposure evaluation and follow-up must be provided the following information:
- (A) A copy of the **Bloodborne Pathogen Standard**.
 - (B) A description of the affected employee's duties as they relate to the employee's exposure incident.
 - (C) Route(s) of exposure and circumstances of exposure.
 - (D) A copy of the exposed individual's medical records, including **Form No. 500-000-06, Employee Hepatitis B Vaccination Status**.

- (C) Result of the source individual's blood test, if possible.

13.7.11 Health Care Professional's Written Opinion

13.7.11.1 After the evaluation, the health care professional will provide the Department with a written opinion within (15) days after the completion of the evaluation. A copy of this opinion will be furnished to the exposed employee. In keeping with the emphasis on confidentiality, the written opinion will contain only the following information:

- (A) For Hepatitis B vaccinations, whether vaccination is recommended for the exposed employee and if the employee has received the Hepatitis B vaccination.
- (B) For post-exposure evaluation and follow-up, whether or not the employee has been informed of the results of the medical evaluation and any medical conditions which may require further evaluation and treatment.
- (C) All other diagnoses will remain confidential and will not be included in the written report to the Department.

13.7.12 Labels

13.7.12.1 The following items (if applicable) must be labeled properly:

- (A) Containers for regulated waste.
- (B) Laundry bags and containers.
- (C) Contaminated equipment.

13.7.12.2 Labels affixed to contaminated equipment should indicate which portions of the equipment are contaminated.

13.7.13 Forms

These forms are available from the Department's Forms Library

Form 500-000-07, Employee Declination Statement

Form 500-000-05, List of Employees Offered the Hepatitis-B Vaccine

Form 500-000-06, Employee Hepatitis-B Vaccination Status

Form 500-000-04, Exposure Incident Report

Note: *These forms, when completed, shall be treated as confidential medical records and shall be filed accordingly.*

13.8 LABORATORY SAFETY PROGRAM

To prevent employee exposure to hazardous materials, Materials Laboratories shall develop and implement a Chemical Hygiene Plan (CHP). The CHP will include checklists for monitoring compliance with mandatory regulations and standards and non-mandatory prudent practices for laboratory safety. All CHPs shall be submitted to the State Safety Office for approval. The State Safety Office shall perform **Quality Assurance Reviews** to evaluate compliance with the CHP.

13.8.1 Definitions

- (A) **Action level** - A concentration for a specific substance, calculated as an eight (8) hour time weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance. Typically it is one-half that of the Permissible Exposure Limit (PEL) for that substance.
- (B) **Asphyxiate** - A chemical (gas or vapor) that can cause death or unconsciousness by suffocation. Simple asphyxiates such as nitrogen either use-up or displace oxygen in the air. They become especially dangerous in confined or enclosed spaces. Chemical asphyxiates, such as carbon monoxide and hydrogen sulfide, interfere with the body's ability to absorb or transport oxygen to the tissues.
- (C) **Carcinogen** - Any substance that causes the development of cancerous growths in living tissue, either those that are known to induce cancer in man or animals or experimental carcinogens that have been found to cause cancer in animals under experimental conditions.
- (D) **C.A.S. Number** - Identifies a particular chemical by the Chemical Abstracts Service, a service of the American Chemical Society that indexes and compiles abstracts of worldwide chemical literature called "Chemical Abstracts". These numbers are always contained in brackets.
- (E) **CFR** - Code of Federal Regulations

- (F) **Chemical Hygiene Plan (CHP)** - A written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment, and work practices that are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular work place and meets the requirements of **29 CFR 1910.1450(e)**.
- (G) **Chronic Exposure** - A series of exposures occurring over a long period of time.
- (H) **Combustible** - Capable of burning, generally in air under normal conditions of ambient temperature and pressure, unless otherwise specified. Combustion can occur in cases where an oxidizer other than the oxygen in air is present, e.g., chlorine, fluorine, or chemicals containing oxygen in their structure.
- (I) **Corrosive** - Any gas, liquid, or solid that causes destruction of human tissue or a liquid that has a severe corrosion rate on steel. Generally, a substance that has a very low or a very high pH.
- (J) **Designated Area** - An area which may be used for work with "select carcinogens, reproductive toxins, or substances which have a high degree of acute toxicity. A designated area may be the entire laboratory, an area of a laboratory, or a device such as a laboratory hood. A designated area shall be placarded to reflect the designated hazard.
- (K) **Dose** - The concentration of a substance and the time period during which the exposure occurs. The dose received links to hazard and toxicity.
- (L) **Emergency Spills** - Accidental chemical discharges that present an immediate danger to personnel and/or the environment.
- Note: Under these circumstances, leave the spill site immediately and send for help. Management of these spills is the responsibility of specially trained and equipped personnel.*
- (M) **Employee** - An individual employed in a laboratory work place that may be exposed to hazardous materials in the course of his or her assignments.
- (N) **Fires**
- Class A** Fires in ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics.

- Class B** Fires in flammable liquids, oils, greases, tars, oil-based paints, lacquers, and flammable gases.
- Class C** Fires that involve energized electrical equipment where the electrical conductivity of the extinguishing medium is of importance; when electrical equipment is de-energized, extinguishers for class A or B fires may be safely used.
- Class D** Fires in combustible metals such as potassium, sodium, lithium, magnesium, titanium, and zirconium.

(O) Flammable - Any substance which may be classified as:

- (1) Flammable Gas** - A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or a gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit.
- (2) Flammable Liquid** - Any liquid having a flashpoint at or below 199.4°F (93°C). **[29 CFR 1910.106(a)(19)]**
- (3) Flammable Solid** - A solid, other than a blasting agent or explosive, that is liable to cause fires through friction, absorption of moisture, spontaneous chemical change, retained heat from processing, or which can be ignited readily, and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered a flammable solid if, when tested by the method described in **16 CFR 1500.44**, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

(P) Hazard - The possibility that exposure to a substance will cause injury when a specific quantity is used under certain conditions.

(Q) Health Hazard - A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. This term includes carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

- (R) **IDLH** - Immediately dangerous to life or health concentrations represent the maximum concentration from which one could escape within 30 minutes without a respirator and without experiencing any escape-impairing (e.g., severe eye irritation) or irreversible health effects.
- (S) **Incompatible** - The term applied to two substances to indicate that one material cannot be mixed with the other without the possibility of a dangerous reaction.
- (T) **Ingestion** - Taking a substance into the body through the mouth as food, drink, medicine, or unknowingly as on contaminated hands or cigarettes, etc.
- (U) **Inhalation** - The breathing in of an airborne substance that may be in the form of gases, fumes, mists, vapors, dusts, or aerosols.
- (V) **Irritant** - A substance that produces an irritating effect when it contacts skin, eyes, nose, or respiratory system.
- (W) **Lethal Concentration** - The concentration of an air contaminant that will kill 50 percent of the test animals in a group during a single exposure.
- (X) **Minor Spills** - Small chemical leaks that usually are detected early and present no immediate danger to personnel or the environment. These are spills that can be safely corrected with the advice of knowledgeable laboratory or supervisory personnel.
- (Y) **Safety Data Sheet (SDS)**. The Hazard Communication Standard (HCS). *[29 CFR 1910.1200]*
- (Z) **NFPA** - The National Fire Protection Association is a voluntary membership organization whose aims are to promote and improve fire protection and prevention. NFPA has published several volumes of codes known as the National Fire Codes.
- (AA) **OSHA** -The Occupational and Safety Health Administration is a federal or state agency under the Department of Labor that publishes and enforces safety and health regulations for most businesses and industries in the United States.
- (BB) **Oxidizer** - A substance such as chlorate, permanganate, inorganic peroxide, nitrocarbonitrate, or a nitrate that yields oxygen readily to stimulate the combustion of organic matter.

- (CC) Oxygen Deficiency** - An atmosphere having less than the normal percentage of oxygen found in normal air. Normal air contains approximately 21% oxygen at sea level.
- (DD) Permissible Exposure Limit (PEL)** - An exposure limit that is published and enforced by OSHA as a legal standard. PEL may be either a time-weighted-average (TWA) exposure limit (8 hour), a 15-minute short term exposure limit (STEL), or a ceiling (C). The PELs are found in **Tables Z-1, Z-2, or Z-3 of 29 CFR 1910.1000**. This level of exposure is deemed to be the maximum safe concentration and is generally the same value as the threshold limit value (TLV).
- (EE) Personal Protective Equipment (PPE)** - Any device or clothing worn by the worker to protect against hazards in the environment. Examples are respirators, gloves, and chemical splash goggles.
- (FF) Reactive** - A substance that, by itself, is readily capable of detonation, explosive decomposition, or explosive reaction at normal or elevated temperatures and pressures.
- (GG) Respirator** - A device which is designed to protect the wearer from inhaling harmful contaminants.
- (HH) Respiratory Hazard** - A particular concentration of an airborne contaminant that, when it enters the body by way of the respiratory system or by being breathed into the lungs, results in some bodily function impairment.
- (II) Sensitizer** - A substance that may cause no reaction in a person during initial exposures, but afterwards, further exposures will cause an allergic response to the substance.
- (JJ) Short Term Exposure Limit** - Represented as STEL or TLV-STEL, it is the maximum concentration to which workers can be exposed for a short period of time (15 minutes) no more than four times throughout the day with at least one hour between exposures.

- (KK) Threshold Limit Value (TLV)** - Airborne concentrations of substances devised by the American Conference of Governmental Industrial Hygienists (ACGIH) that represents conditions under which it is believed nearly all workers may be exposed day after day with no adverse effect. TLVs are advisory exposure guidelines, not legal standards that are based on evidence from industrial experience, animal studies, or human studies when they exist. There are three different types of TLVs: Time Weighted Average (TLV-TWA), Short Term Exposure Limit (TLV-STEL), and Ceiling (TLV-C). (See also PEL.)
- (LL) Time Weighted Average** - (TLV-TWA, Threshold Limit Value-Time Weighted Average) The time weighted average airborne chemical concentration for a normal eight-hour work day and a 40-hour work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.
- (MM) Toxic** - Substances such as carcinogens, irritants, or poisonous gases, liquids, and solids which are irritating to or affect the health of humans.
- (NN) Toxicity** - The potential of a substance to exert a harmful effect on humans or animals and a description of the effect and the conditions or concentrations under which the effect takes place.
- (OO) Vapor** - The gaseous form of substances which are normally in the liquid or solid state (at normal room temperature and pressure).
- (PP) Water Reactive** - Substances that react violently when in contact with water. They can be either flammable solids or corrosives.

13.8.2 Permissible Exposure Limits

For laboratory uses of OSHA regulated substances, the Unit Manager/Office Head shall assure that laboratory employees' exposures to such substances do not exceed the permissible exposure limits specified in **29 CFR 1910, Subpart Z**.

13.8.3 Employee Exposure Determination

- (A)** Initial monitoring: The Unit Manager/Office Head shall measure the employee's exposure to any substance regulated by a standard which requires monitoring if there is reason to believe that exposure levels for that substance routinely exceed the action level (or in the absence of an action level, the PEL).
- (B)** Periodic monitoring: If the initial monitoring discloses employee exposure over the action level (or in the absence of an action level, the PEL), the

Unit Manager/Office Head shall immediately comply with the exposure monitoring provisions of the relevant standard (**29 CFR 1910.1450, Occupational Exposures to Hazardous Chemical in Laboratories and the Chemical Hygiene Plan**).

- (C) Termination of monitoring: Monitoring may be terminated when there is no reason to believe that exposure levels routinely exceed the action level (or in the absence of an action level, the PEL).
- (D) Employee notification of monitoring results: The Unit Manager/Office Head shall, within 15 working days after the receipt of any monitoring results, notify the employee of these results in writing either individually or by posting results in an appropriate location that is accessible to employees.

13.8.4 Chemical Hygiene Plan

- (A) Each Department materials testing and research laboratory shall develop and carry out the provisions of a written CHP which is:
 - (1) Capable of protecting employees from health hazards associated with hazardous chemicals in that laboratory; and,
 - (2) Capable of keeping exposures below the PEL (specified in **Paragraph (c) of CFR 1910.1450, Occupational Exposures to Hazardous Chemical in Laboratories**).
- (B) The CHP shall be readily available to employees.
- (C) The CHP shall include each of the following elements and shall indicate specific measures that the Unit Manager/Office Head will take to ensure laboratory employee protection:
 - (1) Standard operating procedures relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals;
 - (2) Criteria that the Unit Manager/Office Head will use to determine and implement control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of personal protective equipment, and hygiene practices; particular attention shall be given to the selection of control measures for chemicals that are known to be extremely hazardous;
 - (3) A requirement that fume hoods and other protective equipment are functioning properly and specific measures that shall be taken to ensure proper and adequate performance of such equipment;

- (4) Provisions for employee information and training as prescribed in **Section 13.8.5** of this *Manual*;
 - (5) A requirement that signs identify specific hazards and provide safety instructions is posted in the laboratory;
 - (6) The circumstances under which a particular laboratory operation, procedure or activity shall require prior approval from the Unit Manager/Office Head before implementation;
 - (7) Provisions for medical consultation and medical examinations in accordance with **Section 13.8.6** of this *Manual*;
 - (8) Designation of personnel responsible for implementation of the Chemical Hygiene Plan, including the assignment of a Chemical Hygiene Officer;
 - (9) Provisions for additional employee protection for work with particularly hazardous substances. These include "select carcinogens," reproductive toxins, and substances which have a high degree of acute toxicity. Specific consideration shall be given to the following provisions which shall be included where appropriate:
 - (a) Establishment of a designated area;
 - (b) Use of containment devices such as fume hoods or glove boxes;
 - (c) Procedures for safe removal of contaminated waste; and
 - (d) Decontamination procedures.
- (D) The State Safety Office shall notify all the Materials Office Laboratories of any changes/revisions to applicable CFR provisions.

13.8.5 Employee Information and Training

- (A) The Unit Manager/Office Head shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area.
- (B) Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The frequency of refresher information and training shall be determined by the Unit Manager/Office Head.

- (C) Employees shall be informed of:
 - (1) The contents of **29 CFR 1910.1450** and its appendices, which shall be made available to employees;
 - (2) The location and availability of the Laboratory's CHP;
 - (3) The permissible exposure limits for OSHA regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable OSHA standard;
 - (4) Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory; and,
 - (5) The location and availability of known reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory including, but not limited to, SDS received from the chemical supplier.

- (D) Employee training shall include:
 - (1) Methods and observations that may be used to detect the presence or release of a hazardous chemical (such as monitoring conducted by the Unit Manager/Office Head, continuous monitoring devices, etc.);
 - (2) The physical and health hazards of chemicals in the work area and the measures employees can take to protect themselves from these hazards including specific procedures that have been implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
 - (3) Employees shall be trained on the applicable details of the lab's written CHP.

13.8.6 Medical Consultation and Medical Examinations

- (A) The Unit Manager/Office Head shall provide all employees who work with hazardous chemicals an opportunity to receive medical attention, including any follow-up examinations which the examining physician determines to be necessary, under the following circumstances:
 - (1) Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee

- may have been exposed in the laboratory, the employee shall be provided an opportunity to receive an appropriate medical examination;
- (2)** Where exposure monitoring reveals an exposure level routinely above the action level (or in the absence of an action level, the PEL) for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements, medical surveillance shall be established for the affected employee as prescribed by the particular standard; and
 - 3)** Whenever an event takes place in the work area such as a spill, leak, explosion, or other occurrence resulting in the likelihood of a hazardous exposure.
- (B)** All medical examinations and consultations shall be performed by or under the direct supervision of a licensed physician and shall be provided through the Department's Managed Care Provider.
- (C)** The Unit Manager/Office Head shall provide the following information to the physician:
- (1)** The identity of the hazardous chemical(s) to which the employee may have been exposed;
 - (2)** A description of the conditions under which the exposure occurred including quantitative exposure data, if available; and
 - (3)** A description of the signs and symptoms of exposure that the employee is experiencing, if any.
- (D)** For examination or consultation required under this section, the Unit Manger/Office Head shall obtain a written opinion from the examining physician which shall include the following:
- (1)** Any recommendation for further medical follow-up;
 - (2)** The results of the medical examination and any associated tests;
 - (3)** Any medical condition which may be revealed in the course of the examination which may place the employee at increased risk as a result of exposure to a hazardous workplace; and,

(4) A statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.

(E) The written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure.

13.8.7 Hazard Identification (Signs, Labels, and SDS)

(A) The Unit Manager/Office Head shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.

(B) The Unit Managers/Office Head shall maintain all SDS received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees.

(C) The Unit Manager/Office Head shall ensure that signs are posted to designate specific hazards and safety instructions.

13.8.8 Use of Respirators

(A) Where the use of respirators is necessary to maintain exposure below permissible exposure limits, the Unit Manager/Office Head shall provide, at no cost to the employee, the proper respiratory equipment. Respirators shall be selected and used in accordance with the requirements of the Department's Respiratory Protection Program addressed in **Section 13.3** of this manual.

13.8.9 Recordkeeping

(A) The Unit Managers/Office Head shall establish and maintain for each employee an accurate record of any measurements taken to monitor employee exposures and any medical consultation and examinations including tests or written opinions required by the **29 CFR 1910.1450, Occupational Exposures to Hazardous Chemical in Laboratories**.

(B) The Unit Manager/Office Head shall assure that such records are kept, transferred, and made available in accordance with **29 CFR 1910.1020, Access to Employee Exposure and Medical Records**.

13.8.10 Prudent Practices in the Laboratory

Established safety requirements and safe work practices in performing laboratory work will reduce the exposure of laboratory employees to

hazardous chemicals and enable them to handle chemicals in a safe manner.

13.8.10.1 Hazards of Chemicals

Hazards of chemicals generally fall into two categories:

- (A) Physical hazards such as fire, explosions or reaction with other chemicals;
- (B) Health hazards developed from inhaling, swallowing, or having eye or skin contact.

13.8.10.2 General Requirements

The Unit Manager/Office Head of a laboratory facility shall ensure that:

- (A) An employee, qualified by training and experience and who is familiar with the specific laboratory operation, is designated to provide technical guidance and implementation of safe laboratory work practices and procedures;
- (B) An inventory and listing of all chemicals used in the laboratory is conducted to identify hazardous chemicals;
- (C) Exposure levels of employees to hazardous chemicals are determined or measured by a qualified industrial hygienist;
- (D) Records are maintained of any measurement taken to monitor employee exposure;
- (E) Control measures are provided and used to reduce employee exposure, including the use of PPE;
- (F) The laboratory and the areas where chemicals are stored are well ventilated;
- (G) Fume hoods and other local ventilation devices are installed and function properly;
- (H) Employees are trained to recognize and understand the hazardous chemicals with which they are working;
- (I) SDS are available for every hazardous chemical used;
- (J) Eyewash fountains and showers are provided for quick drenching or flushing of the eyes and body for emergency use of employees exposed to corrosive chemicals; and

- (K) Waste chemicals are placed in labeled containers and disposed of in the approved manner.

13.8.10.3 Safe Work Practices

- (A) Before starting work with hazardous chemicals, read container label information, and the **Safety Data Sheet**, and follow the precautions described.
- (B) Do not remove any container label and report to the supervisor any container without a label.
- (C) Periodically check all stored containers to make sure that containers, labels, and contents are in good condition.
- (D) Use fume hoods for any operation where chemical fumes, vapors, or dusts are released. Keep hood closed except when making adjustments to it.
- (E) Do not store materials in hoods or in places that can block vents or air flow.
- (F) Use PPE and clothing such as goggles, gloves, and long-sleeved clothing that has been specifically selected and provided for the operation being performed.
- (G) Waste chemicals must be placed in properly covered and labeled containers. Do not pour waste chemicals down drains or place them in regular trashcans.
- (H) Do not touch electrical equipment with wet hands or while standing on a wet surface.
- (I) Check wires and plugs to be sure they are not frayed or otherwise damaged.
- (J) Operate only equipment for which you have been trained in its proper use.
- (K) Use tongs or heat-resistant gloves when working with equipment that uses heat.
- (L) Do not eat, drink, chew gum, or apply cosmetics in areas containing hazardous chemicals.
- (M) Always wash areas of exposed skin before leaving the lab.
- (N) After completion of a task and/or at the end of the work day, clean up the work area(s).

13.9 HAZARD COMMUNICATION

This section provides information on how employees can have access to information on hazards of chemicals and how to recognize and handle hazardous chemicals used in the workplace.

Container Labeling

- (A) Supervisors shall ensure that all containers of hazardous chemicals used in the workplace are labeled, tagged, or marked with information giving the identity of the hazardous chemical and the appropriate hazard warnings, including portable containers, except those portable containers into which the hazardous chemical are transferred from labeled containers, and which are intended **only** for the immediate use of the employee who performs the transfer.
- (B) Employees must not deface or remove container labels and shall immediately report any missing or defaced labels to their supervisors.

13.9.1 Hazardous Chemical Inventory

- (A) Supervisors shall make a list of hazardous chemicals in the work area for which they are responsible. The list must include the chemical name, where used (for example, crew operation), and where the SDS are located.
- (B) Products with hazardous chemical ingredients used in the workplace where the duration and frequency of employee exposure to the products is determined not to be greater than exposures experienced during normal household use of the product should not be included in this list.

13.9.2 Safety Data Sheets (SDS)

- (A) The supervisor shall maintain copies of **Safety Data Sheets** in his/her office for chemicals used in the workplace/shop or field activity for which he/she is responsible. Employees shall have access to the **SDS** sheets at all times.
- (B) The local warehouse and/or supervisor will maintain a master copy of all **SDS** currently used.

13.9.3 Training

Training can consist of a computer based training program that covers the elements of the Hazardous Communication Program and then the supervisor must review each SDS sheet with their employees based on which chemicals the crews are required to use.

13.9.3.1 Employees Who Use Hazardous Chemicals

- (A) Supervisors shall instruct employees (or use a CBT program):
 - (1) On the nature and effects of each hazardous chemical;
 - (2) How to read and interpret information on labels and SDS;
 - (3) On the physical and health hazards of chemicals;
 - (4) Specific procedures to provide protection such as safe work-practices, emergency procedures and use of PPE;
- (B) **Training must be accomplished** within 30 days of employment, **and when new hazardous chemicals are used.**
- (C) **Training must be documented using *Form 500-000-14, Employee Toxic Substance Training Record***, and signed by the employee, with a copy placed in the unit file.

13.9.3.2 Employees Who Only Work Around Stored, Closed Container of Hazardous Chemicals

The supervisor shall instruct employees on proper procedure for dealing with emergency situations such as leaks and spills.

13.9.3.3 Supervisors

Unit Managers/Office Heads shall ensure that supervisors are provided the training to enable them to properly instruct their employees concerning hazardous chemicals.

13.9.4 Responsibilities of Other Employees

13.9.4.1 Department employees responsible for ordering and receiving hazardous chemicals shall ensure that:

- (A) Copies of **SDS** are furnished with the chemicals ordered;
- (B) Containers are appropriately labeled with the identity of contents and appropriate hazard warnings;
- (C) No hazardous chemicals are issued to employees unless **SDS** are available;
- (D) No hazardous chemicals are accepted without the appropriate labels and/or the required **SDS**;

(E) Non-hazardous chemicals are ordered, if at all possible.

13.9.4.2 Non-Department employees, such as contractors, contract laborers, inmates, who may encounter any hazardous chemicals during the normal course of work in Department facilities, will be provided with the following information by the supervisor.

(A) Hazards of the chemicals

(B) Labeling system in use

(C) Protective measures in effect

(D) Safe handling procedures

(E) Location of SDS

13.9.4.3 Unit Managers/Office Heads shall make sure that any contractor who brings hazardous chemicals onto Department property or worksites has copies of **SDS** available on those chemicals and that containers of those chemicals are properly labeled. The contractor is responsible for enforcing these requirements. This requirement includes cleaning services, construction work, painting or any other service where chemicals or any other hazardous material is being used.

13.9.5 Signs

Buildings containing hazardous chemicals shall be placarded according to the rules of the State Fire Marshal.

13.10 INDOOR AIR QUALITY

We recognize that indoor air quality is essential to employee's health and productivity. We have established the following procedures to promote indoor air quality for employees in our buildings. This written Indoor Air Quality Program applies to all FDOT facilities.

13.10.1 Responsibilities

Unit Managers are responsible for ensuring this program is implemented for their facilities and the following procedures are followed. A person may be designated, such as the facility manager, to be responsible for handling employee concerns/complaints about indoor air quality, conduct investigations, facilitate repairs or further investigations as necessary and maintain the required records.

District Safety Offices or Loss Control Departments, Facilities Department, and the District Environmental Office are responsible for monitoring the program and receiving copies of any employee complaints or potential indoor air quality issues.

13.10.2 Types of Building Problems

Sick building syndrome is a condition associated with complaints of discomfort including headache; nausea; dizziness; dermatitis; eye, nose, throat, and respiratory irritation; coughing; difficulty concentrating; sensitivity to odors; muscle pain; and fatigue. The specific causes of the symptoms are often not known but sometimes are attributed to the effects of a combination of substances or individual susceptibility to low concentrations of contaminants. The symptoms are associated with periods of occupancy and often disappear after the worker leaves the worksite.

Building-related illnesses are those for which there is a clinically defined illness of known etiology and include infections such as legionellosis and allergic reactions such as hypersensitivity diseases and are often documented by physical signs and laboratory findings.

13.10.3 Factors that Contribute to Indoor Air Quality

Indoor air quality is not a simple, easily defined concept like a desk or a leaky faucet, nor is the only cause mold. It is a constantly changing interaction of complex factors that affect the types, levels, and importance of pollutants in indoor environments. These factors include: sources of pollutants or odors; design, maintenance and operation of building ventilation systems; moisture and humidity; and occupant perceptions and susceptibilities. In addition, there are many other factors that affect comfort or perception of indoor air quality. According to the National Institute for Occupational Safety and Health (NIOSH) found that the primary sources of indoor air quality problems are:

(A)	Inadequate ventilation	52%
(B)	Contamination from inside building	16%
(C)	Contamination from outside building	10%
(D)	Microbial contamination	5%
(E)	Contamination from building fabric	4%
(F)	Unknown sources	13%

13.10.4 Ventilation

Ventilation includes the use of natural, dilution, local exhaust, or increased ventilation efficiency. The most effective engineering control for prevention of indoor air quality problems is assuring an adequate supply of fresh outdoor air through natural or mechanical ventilation. A major component of proper ventilation is ensuring the filters being used do not reduce the air flow. Air conditioner filters are rated based on the size of particles they will remove so it is important to install filters with the highest rating possible without reducing the air flow in the air handler. Vents must be located where they are not close to where vehicles idle, loading docks or close to vegetation. Also, failure to maintain proper temperature, humidity, and air movement in a building can lead occupants to block supply registers if they emit air that is uncomfortably hot or cold; this disrupts air flow patterns. Placement of partitions or other barriers within a space can also impair air movement. In addition, locating air supply and return registers too close together can result in an uneven distribution of fresh air and insufficient removal of airborne contaminants. Precautions must be taken to maintain comfortable thermal conditions and proper placement of supply and return registers, and furnishings.

13.10.5 Management of Pollutant Sources, Both Inside and Outside the Building

Pollutants can be generated by outdoor or indoor sources, including building maintenance activities, pest control, housekeeping, renovation or remodeling, new furnishings or finishes, and building occupant activities.

One important goal of an Indoor Air Quality Program is to minimize people's exposure to pollutants from these sources. Some of the key pollutant categories include:

- (A) Biological contaminants.** Excessive concentrations of bacteria, viruses, fungi (including molds), dust mite allergen, and pollen may result from inadequate maintenance and housekeeping, water spills, inadequate humidity control, condensation, or may be brought into the building by occupants, infiltration, or ventilation air.
- (B) Chemical pollutants.** Sources of chemical pollutants include tobacco smoke, emissions from products used in the building (i.e. office equipment; furniture, wall and floor coverings; and cleaning and consumer products), accidental spill of chemicals, pesticide application and gases such as carbon monoxide and nitrogen dioxide, which are products of combustion.

- (C) **Particles.** Particles are solid or liquid substances which are light enough to be suspended in the air, the largest of which may be visible in sunbeams streaming in a room. However, smaller particles that you cannot see are likely to be more harmful to health. Particles of dust, dirt, or other substances may be drawn into the building from outside such as smoke from people smoking by the entrance doors, and can also be produced by activities that occur in buildings, like sanding wood or drywall, printing, copying and operating equipment.
- (D) **Water Intrusion.** Uncontrolled water intrusion into buildings (roof leaks, flooding, pipe condensation, plumbing leaks, or sewer backups) is a serious problem that has the potential to support microbial growth. All employees should routinely observe their workplace for evidence of water intrusion (i.e. roof leaks, pipe leaks). Employees should notify their supervisor immediately if they observe evidence of water intrusion so that corrective action can be taken. Ceiling tiles with water damage must be removed and replaced immediately. Carpet, and wall boards not dried within 48 hours may have to be removed to prevent or remove any mildew or mold that is now growing inside the material.
- (E) **Construction and Renovation.** Renovation work and/or new construction projects that have the potential to result in the spread of dust, stone and other small particles, toxic gases or other potentially harmful substances into occupied areas in quantities hazardous to health must be controlled in order to minimize employee exposure. The following protocol must be used to ensure that employees' exposure to potentially harmful substances is minimized:
- 1) Obtain SDS for all products to be utilized on the project and maintain on-site throughout the duration of the project.
 - 2) Choose the least toxic product that is technically and economically feasible.
 - 3) Consider performing the renovation/construction project when building is least occupied.
 - 4) Consider temporarily relocating employees to an alternate worksite.
 - 5) Notify potentially affected employees, in writing, at least 24 hours prior to commencement of chemical use or dust generation. Isolate the work area from occupied areas.

- 6) Use mechanical ventilation or local exhaust ventilation to maintain a negative pressure gradient between the work area and occupied areas.
- 7) Close off work area from other occupied areas by using barriers such as plastic or other materials to seal areas where contaminants would escape and expose workers.

If despite these preventive actions, employees are exposed to air contaminants resulting in health effects, employees must be instructed to report any work-related health symptoms to their supervisor so they can be accurately assessed and investigated when indicated.

13.10.6 Preventive Maintenance Schedule for HVAC

Preventive maintenance schedules that follow manufacturers' specifications must be in place for heating, ventilation and air conditioning systems (HVAC) systems in the workplace. Damaged and inoperable components must be repaired or replaced as appropriate and a work order to show actions taken will be completed. **Regular preventive maintenance not only ensures that the system is operating properly, but also can result in cost savings in operating efficiency as well as increased employee productivity.** The unit is required to maintain a log of preventive maintenance activities. At a minimum, the log requires the date, activity performed, and the initials of the maintenance person. If the HVAC system is serviced by an outside contractor, arrange for the service technician to update the on-site preventive maintenance log to ensure compliance with the standard. Documentation of preventive maintenance and repairs to the ventilation system are to be retained in accordance with the FDOT Retention Schedule and include the following information:

- (1) Date that preventive maintenance or repair was performed
- (2) Person or company performing the work
- (3) Documentation of:
 - (a) Checking and/or cleaning condenser coils
 - (b) Checking and/or changing air filters
 - (c) Checking and/or changing belts
 - (d) Lubrication of equipment parts
 - (e) Checking the functioning of motors

- (f) Confirming that equipment is in operating order
- (g) Checking for microbial growth in condensate pans or standing water

13.10.7 Investigating Potential IAQ Complaints

If employees begin to experience health symptoms that they believe are related to poor indoor air quality, they should notify their supervisor so that their concerns can be investigated. The IAQ program requires that employees' complaints be promptly investigated. IAQ investigations can be simple or very complex and technical to a degree that is beyond this Program. Employee complaint investigations should include detailed interviews with some of the affected employees. The investigation should also include a thorough inspection of the building for known irritants and allergens including new carpet, furniture, carpet cleaning, chemicals/pesticides, mold, and pollen producing plants, rodents, or insect infestation. A log of employee complaints must be maintained because this information is useful in establishing the time and location so patterns can be identified. Also, it is important for the employer to understand which employees are experiencing symptoms to first determine if the problem is isolated to one area and HVAC or the entire building and also so the supervisor can arrange for employees to seek medical attention, if needed.

13.10.8 Types of Symptoms and Complaints

The effects of IAQ problems are often nonspecific symptoms rather than clearly defined illnesses. Symptoms commonly attributed to IAQ problems include:

- (1) Headache
- (2) Fatigue
- (3) Shortness of breath
- (4) Sinus congestion
- (5) Cough
- (6) Sneezing
- (7) Eye, nose, and throat irritation
- (8) Skin irritation
- (9) Dizziness

(10) Nausea

All of these symptoms, however, may also be caused by other factors, and are not necessarily due to air quality deficiencies. “Health” and “comfort” are used to describe a spectrum of physical sensations. For example, when the air in a room is slightly too warm for a person’s activity level, that person may experience mild discomfort. If the temperature continues to rise, discomfort increases and symptoms such as fatigue, stuffiness, and headaches can appear. Some complaints by building occupants are clearly related to the discomfort end of the spectrum. One of the most common IAQ complaints is that “there’s a funny smell in here.” Odors are often associated with a perception of poor air quality, whether or not they cause symptoms. Environmental stressors such as improper lighting, noise, vibration, overcrowding, ergonomic stressors, and job-related psychosocial problems (such as job stress) can produce symptoms that are similar to those associated with poor air quality.

13.10.9 Responding to building-related health concerns of workers

It is important that recording and responding to IAQ complaints be done to include an adequate and timely response. These include:

- (A)** Logging all complaints or problem reports
- (B)** Collecting information about each complaint
- (C)** Ensuring confidentiality
- (D)** Determining a plan for response
- (E)** Identifying appropriate resources for response
- (F)** Applying remedial action
- (G)** Providing frequent feedback to building occupants regarding the complaint and response actions
- (H)** Follow-up to ensure that remedial action has been effective

13.10.10 Notification of Employees

The facility manager or unit manager must notify employees at least 24 hours in advance or promptly in emergency situations, of work to be performed on a building that may introduce air contaminants into their work area (keep in mind that some people are allergic to latex paint, dust, carpet that contains certain chemicals, etc.) This notification will also be in writing,

posted on the employee bulletin board, and will identify the planned project and the start date. The notification will also include information on how to access **Safety Data Sheets (SDS)** or other hazard information. Communication with building occupants is essential for successful mold remediation. Some occupants will naturally be concerned about mold growth in their building and the potential health impacts. Occupants' perceptions of the health risk may rise if they perceive that information is being withheld from them. The status of the building investigation and remediation should be openly communicated including information on any known or suspected health risks.

13.10.11 Mold Basics

Molds are part of the natural environment. Molds are fungi that can be found anywhere - inside or outside - throughout the year. About 1,000 species of mold can be found in the United States, with more than 100,000 known species worldwide.

Outdoors, molds play an important role in nature by breaking down organic matter such as toppled trees, fallen leaves, and dead animals. We would not have food and medicines, like cheese and penicillin, without mold.

Indoors, mold growth should be avoided. Problems may arise when mold starts eating away at materials, affecting the look, smell, and possibly, with the respect to wood-framed buildings, affecting the structural integrity of the buildings.

When excessive moisture or water accumulates indoors, mold growth often will occur, particularly if the moisture problem remains uncorrected. While it is impossible to eliminate all molds and mold spores, controlling moisture can control indoor mold growth.

All molds share the characteristic of being able to grow without sunlight; mold needs only a viable seed (spore), a nutrient source, moisture, and the right temperature to proliferate. This explains why mold infestation is often found in damp, dark, hidden spaces; light and air circulation dry areas out, making them less hospitable for mold.

Since mold requires water to grow, it is important to prevent excessive moisture in buildings. Some moisture problems in buildings have been linked to changes in building construction practices since the 1970s, which resulted in tightly sealed buildings with diminished ventilation, contributing to moisture vapor buildup. Other moisture problems may result from roof leaks, landscaping or gutters that direct water into or under a building, or

unvented combustion appliance. Delayed or insufficient maintenance may contribute to moisture problems in buildings. Improper maintenance and design of building heating/ventilating/air-conditioning (HVAC) systems, such as insufficient cooling capacity for an air conditioning system, can result in elevated humidity levels in a building.

13.10.12 Health Effects

Currently, there are no federal standards or recommendations, (e.g., OSHA, NIOSH, EPA) for airborne concentrations of mold or mold spores. There are many types of mold. Most typical indoor air exposures to mold do not present a risk of adverse health effects. Molds can cause adverse effects by producing allergens (substances that can cause allergic reactions). Potential health concerns are important reasons to prevent mold growth and to remediate existing problem areas.

The onset of allergic reactions to mold can be either immediate or delayed. Allergic responses include hay fever-type symptoms such as runny nose and red eyes.

Molds can also cause asthma attacks in some individuals who are allergic to mold. In addition, exposure to mold can irritate the eyes, skin, nose and throat in certain individuals. Symptoms other than allergic and irritant types are not commonly reported as a result of inhaling mold in the indoor environment.

13.10.13 Prevention

Moisture control is the key to mold control. When water leaks or spills occur indoors - act promptly. Any initial water infiltration should be stopped and cleaned promptly. A prompt response (within 24-48 hours) and thorough clean-up, drying, and/or removal of water-damaged materials will prevent or limit mold growth.

Mold prevention tips include:

- (A) Fix leaky plumbing and leaks in the building envelope as soon as possible.
- (B) Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.
- (C) Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation.

To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).

- (D) Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.
- (E) Vent moisture-generating appliances, such as dryers, to the outside where possible.
- (F) Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30-50%, if possible. Maintain temperature in the range of 68 – 76 F.
- (G) Perform regular building/HVAC inspections and maintenance as scheduled.
- (H) Clean and dry wet or damp spots within 48 hours.
- (I) Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.

13.10.14 Questions That May Assist in Determining Whether a Mold Problem Currently Exists

- (A) Are building materials or furnishings visibly moisture damaged?
- (B) Have building materials been wet more than 48 hours?
- (C) Are there existing moisture problems in the building?
- (D) Are building occupants reporting musty or moldy odors?
- (E) Are building occupants reporting health problems that they think are related to mold in the indoor environment?
- (F) Has the building been recently remodeled or has the building use changed?
- (G) Has routine maintenance been delayed or the maintenance plan been altered?

13.10.15 Remediation Plan

Remediation includes both the identification and correction of the conditions that permit mold growth, as well as the steps to safely and effectively remove mold damaged materials.

Before planning the remediation assess the extent of the mold or moisture problem and the type of damaged materials. If you choose to hire outside assistance to do the cleanup, make sure the contractor has experience with mold remediation. Check references and ask the contractor to follow the recommendations in EPA's publication, "***Mold Remediation in Schools and Commercial Buildings***," or other guidelines developed by professional or governmental organizations.

The remediation plan should include steps to permanently correct the water or moisture problem. The plan should cover the use of appropriate personal protective equipment (PPE). It also should include steps to carefully contain and remove moldy building materials in a manner that will prevent further contamination. Remediation plans may vary greatly depending on the size and complexity of the job, and may require revision if circumstances change or new facts are discovered.

The remediation manager's highest priority must be to protect the health and safety of the building occupants and remediators. Remediators should avoid exposing themselves and others to mold-laden dusts as they conduct their cleanup activities. Caution should be used to prevent mold and mold spores from being dispersed throughout the air where they can be inhaled by building occupants. In some cases, especially those involving large areas of contamination, the remediation plan may include temporary relocation of some or all of the building occupants.

13.10.16 Mold Remediation/Cleanup Methods

The purpose of mold remediation is to correct the moisture problem and to remove moldy and contaminated materials to prevent human exposure and further damage to building materials and furnishings. Porous materials that are wet and have mold growing on them may have to be discarded because molds can infiltrate porous substances and grow on or fill in empty spaces or crevices. This mold can be difficult or impossible to remove completely.

As a general rule, simply killing the mold, for example, with biocide is not enough. The mold must be removed, since the chemicals and proteins, which can cause a reaction in humans, are present even in dead mold.

A variety of cleanup methods are available for remediating damage to building materials and furnishings caused by moisture control problems

and mold growth. The specific method or group of methods used will depend on the type of material affected. Some methods that may be used include the following:

Table 1: Water Damage - Cleanup and Mold Prevention

Guidelines for Response to Clean Water Damage within 24-48 Hours to Prevent Mold Growth*

Water-Damaged Material†	Actions
Books and papers	<ul style="list-style-type: none"> • For non-valuable items, discard books and papers. • Photocopy valuable/important items, discard originals. • Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet and backing - dry within 24-48 hours	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Reduce ambient humidity levels with dehumidifier. • Accelerate drying process with fans.
Ceiling tiles	<ul style="list-style-type: none"> • Discard and replace.
Cellulose insulation	<ul style="list-style-type: none"> • Discard and replace.
Concrete or cinder block surfaces	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans, and/or heaters.
Fiberglass insulation	<ul style="list-style-type: none"> • Discard and replace.
Hard surface, porous flooring§	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.

(Linoleum, ceramic tile, vinyl)	<ul style="list-style-type: none"> • Check to make sure under flooring is dry; dry under flooring if necessary.
Non-porous, hard surfaces (Plastics, metals)	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.
Upholstered furniture	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans, and/or heaters. • May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture.
Wallboard (Drywall and gypsum board)	<ul style="list-style-type: none"> • May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace. • Ventilate the wall cavity, if possible.
Window drapes	<ul style="list-style-type: none"> • Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	<ul style="list-style-type: none"> • Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood floors.) • Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. • Wet paneling should be pried away from wall for drying.

Even if materials are dried within 48 hours, mold growth may have occurred. Items may be tested by professionals if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then Personal Protective Equipment and containment are required by OSHA. An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary.

13.10.17 Wet Vacuum

Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should not be used to vacuum porous materials, such as gypsum board. Wet vacuums should be used only on wet materials, as spores may be exhausted into the indoor environment if insufficient liquid is present. The tanks, hoses, and attachments of these vacuums should be thoroughly cleaned and dried after use since mold and mold spores may adhere to equipment surfaces.

13.10.18 Damp Wipe

Mold can generally be removed from nonporous surfaces by wiping or scrubbing with water and detergent. It is important to dry these surfaces quickly and thoroughly to discourage further mold growth. Instructions for cleaning surfaces, as listed on product labels, should always be read and followed.

13.10.19 Disposal of Damaged Materials

Building materials and furnishings contaminated with mold growth that are not salvageable should be placed in sealed impermeable bags or closed containers while in the remediation area. These materials can usually be discarded as ordinary construction waste. It is important to package mold-contaminated materials in this fashion to minimize the dispersion of mold spores. Large items with heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before being removed from the remediation area. Some jobs may require the use of dust-tight chutes to move large quantities of debris to a dumpster strategically placed outside a window in the remediation area.

13.10.20 Use of Biocides

The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation, although there may be instances where professional judgment may indicate its use (for example, when immuno-compromised individuals are present). In most cases, it is not possible or desirable to sterilize an area, as a background level of mold spores comparable to the level in outside air will persist. However, the spores in the ambient air will not cause further problems if the moisture level in the building has been corrected.

Biocides are toxic to animals and humans, as well as to mold. If you choose to use disinfectants or biocides, always ventilate the area, using outside air if possible, and exhaust the air to the outdoors. When using fans, take care not to extend the zone of contamination by distributing mold spores to a previously unaffected area.

13.10.21 Mold Remediation Guidelines

This section presents remediation guidelines for building materials that have or are likely to have mold growth. The guidelines are designed to protect the health of cleanup personnel and other workers during remediation. These guidelines are based on the size of the area impacted by mold contamination. Please note that these are guidelines; some professionals may prefer other remediation methods, and certain circumstances may require different approaches or variations on the approaches described below. If possible, remediation activities should be scheduled during off-hours when building occupants are less likely to be affected.

Level I: Small Isolated Areas (10 sq. ft or less) - e.g., ceiling tiles, small areas on walls.

Remediation can be conducted by the regular building maintenance staff as long as they are trained on proper clean-up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the **OSHA Hazard Communication Standard** ([29 CFR 1910.1200](#)).

Respiratory protection (e.g., N-95 disposable respirator) is recommended. Respirators must be used in accordance with the **OSHA Respiratory Protection Standard** ([29 CFR 1910.134](#)). Gloves and eye protection should be worn.

The work area should be unoccupied. Removing people from spaces adjacent to the work area is not necessary, but is recommended for infants (less than 12 months old), persons recovering from recent surgery, immune-suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).

Containment of the work area is not necessary. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.

Contaminated materials that cannot be cleaned should be removed from the building in a sealed impermeable plastic bag. These materials may be disposed of as ordinary waste.

The work area and areas used by remediation workers for egress should be cleaned with a damp cloth or mop and a detergent solution.

All areas should be left dry and visibly free from contamination and debris.

Level II: Mid-Sized Isolated Areas (10-30 sq. ft.) – e.g., individual wallboard panels.

Remediation can be conducted by the regular building maintenance staff. Such persons should receive training on proper clean-up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the **OSHA Hazard Communication Standard** ([29 CFR 1910.1200](#)).

Respiratory protection (e.g., N-95 disposable respirator) is recommended. Respirators must be used in accordance with the **OSHA Respiratory Protection Standard** ([29 CFR 1910.134](#)). Gloves and eye protection should be worn.

Surfaces in the work area that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/debris and prevent further contamination.

Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.

Contaminated materials that cannot be cleaned should be removed from the building in a sealed impermeable plastic bag. These materials may be disposed of as ordinary waste.

The work area and areas used by remediation workers for egress should be HEPA vacuumed and cleaned with a damp cloth or mop and a detergent solution.

All areas should be left dry and visibly free from contamination and debris.

Level III: Large Isolated Areas (30 –100 square feet) – e.g., several wallboard panels.

Industrial hygienists or other environmental health and safety professionals with experience performing microbial investigations and/or mold remediation should be consulted prior to remediation activities to provide oversight for the project.

Level IV: Extensive Contamination (greater than 100 contiguous square feet in an area).

Industrial hygienists or other environmental health and safety professionals with experience performing microbial investigations and/or mold remediation should be consulted prior to remediation activities to provide oversight for the project.

13.10.22 Resolving Air Quality Problems.

Building managers and tenants must work together to improve indoor air quality; areas to address include:

13.10.23 Regularly clean or replace HVAC system filters.

Use the most efficient filters possible while still maintaining the ability to supply adequate air flow to the spaces. Ensure that filters are installed in the correct orientation relative to airflow, that they are the appropriate size, and that they are seated in the filter rack properly. Take precautions to minimize air flowing around the filters instead of through them.

13.10.24 Regularly inspect outdoor air intakes.

Open all outdoor air intakes that are closed. Adjust or repair those that are not working properly. Regardless of the air flow required for heating and cooling, the minimum outdoor air flow recommended by ASHRAE should always be provided to each space.

13.10.25 Regularly inspect office building exhaust fans to make sure all are working properly.

Dysfunctional exhaust fans can result in suboptimal pressure differences throughout the building and can create or exacerbate IEQ problems.

13.10.26 Use less conservative cycle times for the HVAC system.

Start the HVAC system earlier in the morning before workers arrive to reduce temperature fluctuations and control humidity levels. Simply providing a more thermally comfortable working environment may reduce the number of IEQ complaints.

13.10.27 Never store paints, cleaners, or other chemicals in HVAC equipment rooms.

Odors and potentially harmful vapor contaminants can easily be circulated throughout the entire space being supplied by an HVAC system.

TRAINING:

Courses are available within the Department that will provide for the specific safety training required of employees. Training is prescribed in **Chapter 12** of the **Manual**.

FORMS:

All forms, manuals, and procedures referenced in this Manual can be found in the Forms and Rules Section on the Department *Infonet* website through the following link: <http://infonet.dot.state.fl.us/>