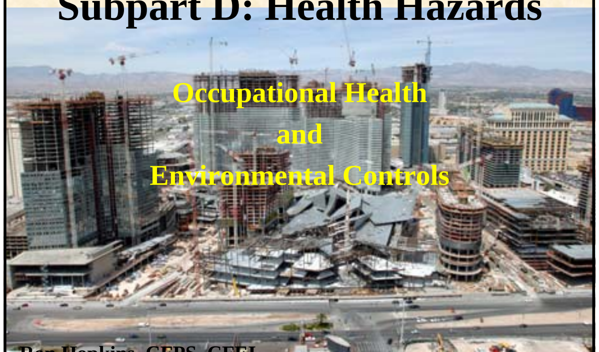
Subpart D: Health Hazards



Ron Hopkins, CFPS, CFEI
Instructor, EKU OSHA Ed Center
Richmond, Kentucky

Occupational Health and Environmental Controls, Subpart D

Upon successful completion of this module, each participant will be able to:

A. Identify requirements for medical services and sanitation.

B. Discuss requirements for noise exposure on construction sites.

C. Discuss ventilation requirements for construction operations.

D. Explain requirements for construction chemical hazard communication.

Subpart D: Occupational Health and Environmental Controls

§1926.50 Medical services and first aid
§1926.51 Sanitation
§1926.52 Occupational noise exposure
§1926.53 Ionizing radiation
§1926.54 Nonionizing radiation
§1926.55 Gases, vapors, fumes, dusts, and mists
§1926.56 Illumination
§1926.57 Ventilation

Subpart D: Occupational Health and Environmental Controls

§1926.60 Methylenedianiline (MDA)

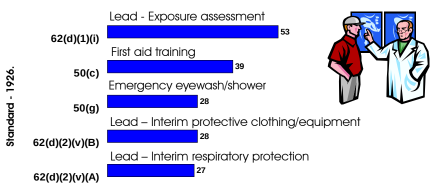
§1926.62 Lead

§1926.64 Process safety management of highly hazardous chemicals

§1926.65 Hazardous waste operations and emergency response

§1926.66 Criteria for design and construction of spray booths

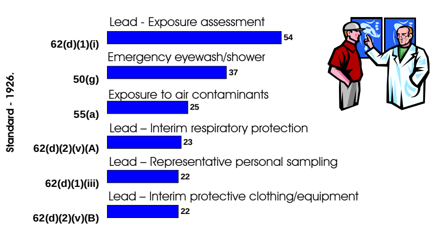
Subpart D - Occupational Health & Environmental Controls
(1926.50 - 66)



Number of Serious Violations - FY 2010

5

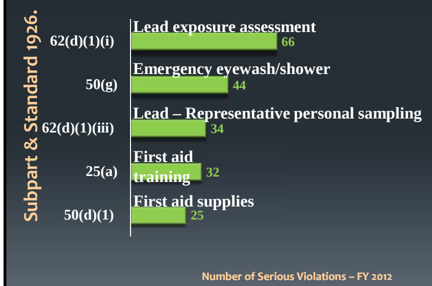
Subpart D - Occupational Health & Environmental Controls
(1926.50 - 66)



Number of Serious Violations - FY 2011

6

Subpart D Occupational Health & Environmental Controls (1926.50 - 66)



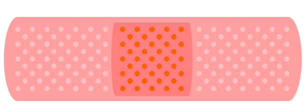
OSHA

Medical Services, 1926.50

- Medical personnel available for advice and consultation
- Provisions made *prior to commencement of the project* for prompt medical attention in case of serious injury.
- Medical facility readily available and/or person trained in first-aid available at the work site

Medical Services

- First aid supplies, approved by the consulting health professional, readily available (Appendix A)
- The first-aid kit consists of materials approved by the consulting physician
- in a weatherproof container with individual sealed packages for each type of item.



Medical Services

- The contents of the first-aid kit shall be checked by the employer before being sent out on each job and
- At least weekly on each job to ensure that the expended items are replaced.

Medical Services

- Proper equipment for prompt transportation of the injured person to a physician or hospital, or
- A communication system for contacting necessary ambulance service is required

Medical Services

- Emergency numbers posted
- Eyewash required for toxic and/or corrosives

Sanitation, 1926.51

- **Adequate supply of potable water shall be provided in all places of employment**
- **Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap.**
- **Water cannot be dipped from containers.**

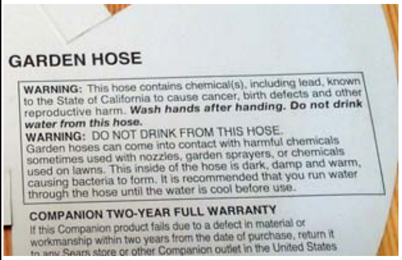
Sanitation

- **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**
- **The common drinking cup is prohibited**

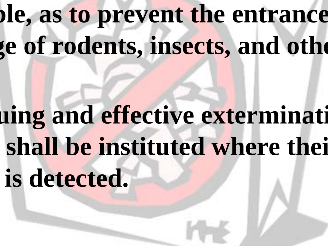
Potable Water

- **Means water which meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in 40 CFR part 141, or water which is approved for drinking purposes by the State or local authority having jurisdiction.**

Garden Hose



Sanitation



- Every enclosed workplace constructed, equipped, and maintained, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin.
- A continuing and effective extermination program shall be instituted where their presence is detected.

Sanitation

- Washing facilities maintained in a sanitary condition
- Lavatories provided with hot & cold, or tepid running water
- Soap provided

1926.51 Table D - 1

Number of Employees	
20 or less	1
20 or more	1 toilet seat and 1 urinal per 40 workers
200 or more	1 toilet seat and 1 urinal per 50 workers

Noise Exposure, 1926.52

- Noise levels in excess of Table D - 2 require administrative or engineering controls to control noise levels
- If above is not feasible PPE provided to reduce noise exposure to acceptable levels

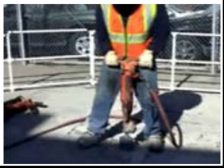


TABLE D - 2 PERMISSIBLE NOISE EXPOSURES

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

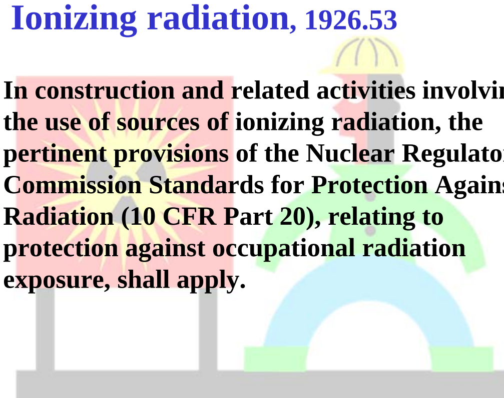
Noise Exposure

- When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each.

Noise Exposure

Decibel Level	Example
90	Truck traffic, lawn mower
100	Chain saw, pneumatic drill, excavator
120	Close thunder, rock concert
140	Jet plane, gunshot blast

Ionizing radiation, 1926.53



- In construction and related activities involving the use of sources of ionizing radiation, the pertinent provisions of the Nuclear Regulatory Commission Standards for Protection Against Radiation (10 CFR Part 20), relating to protection against occupational radiation exposure, shall apply.

Non-Ionizing Radiation,1926.54

- Only qualified and trained employees assigned to install, adjust, and operate laser equipment.
- Proof of qualification of the laser equipment operator available and in possession of the operator at all times.
- light greater than 0.005 watts (5 milliwatts) exists, shall be provided with anti-laser eye protection

Illumination, 1926.56

- General. Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table D-3 while any work is in progress:

Foot candles	Area of Operation
5............	General construction area lighting.
3............	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5............	Indoors: warehouses, corridors, hallways, and exitways.
5............	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading)
10..........	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls, and indoor toilets and workrooms.)
30..........	First aid stations, infirmaries, and offices.

Ventilation, 1926.57

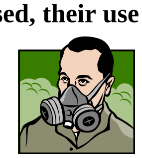
- "General." Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations *shall not exceed the limits specified in 1926.55(a).*
- When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.

Gases, Vapors, Fumes, Dusts, Fogs, Mists and Sprays, 1926.55

- Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, *shall be avoided.*
- See Appendix A to this section.

Gases, Vapors, Fumes, Dusts, Fogs, Mists and Sprays, 1926.55

- Engineering controls first
- PPE if engineering controls not feasible
- All equipment approved by CP in industrial hygiene
- Whenever respirators are used, their use shall comply with 1926.103.



Ventilation

- Exhaust systems designed that dusts, fumes, mists, vapors, or gases are not drawn through the work area of employees.

Ventilation

- Blasting operations produce reparable dust. Concentrations in levels above those specified in 1926.55 require controls

Ventilation

- Wherever dry grinding, dry polishing or buffing is performed, and employee exposure, without regard to the use of respirators, exceeds the permissible exposure limits prescribed in 1926.55 or other pertinent sections of this part, a local exhaust ventilation system shall be provided and used to maintain employee exposures within the prescribed limits.

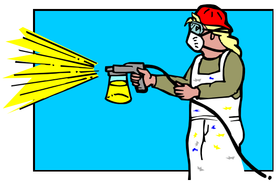
Figure 1. Grinder in use with the control in place.

Refer to tables D 57.2 - D 57.6

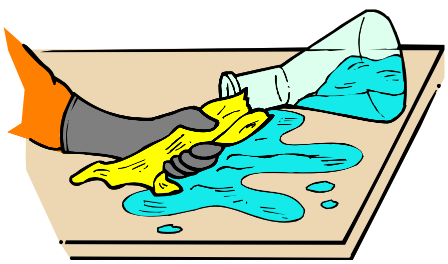
Ron.Hopkins@eku.edu
www.TRACEfireandsafety.com

Ventilation

- Spray booths or spray rooms are to be used to enclose or confine all operations.



Hazard Communication 1926.59 – 1910.1200



Hazard Communication

- Inventory
- Safety Data Sheets (SDS)
- Labels
- Written Program
- Training of Employees

Major Points

- Employees must know the hazards of chemicals such as toxicity, and carcinogenic
- Many employees use dangerous chemicals without personal protective equipment
- The contractor must have Safety data sheets of other employer's chemicals if their own employees are exposed

Purpose

- The purpose of the standard is to make sure that the hazards of chemicals are evaluated
- That information concerning their hazards is communicated to employers and employees

Employer Requirements: Written Program

Employers must develop a *written program* that covers at least:

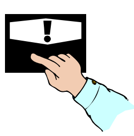
- Labels and other forms of warnings
- Safety Data Sheets
- Employee Information and Training

Multi-Employer Workplaces

- If employees of other employers could be exposed to hazardous chemicals, the program must include methods to provide contractor employees with on-site access to MSDS for each chemical those workers may be exposed to
- The methods used to inform other employers of any precautionary measures to be taken for normal and emergency situations
- The employers chemical labeling system

Labels, Tags and Markings

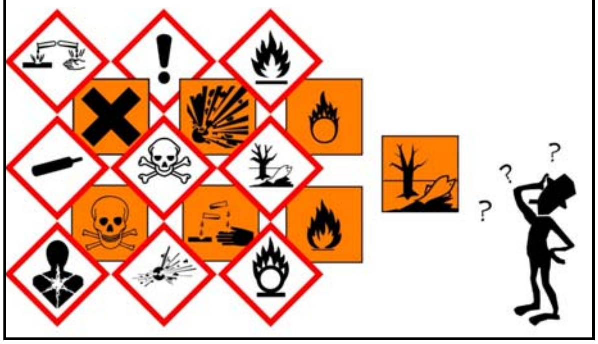
The employer must ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following:



- Identity of the hazardous chemical
- Appropriate hazard warnings

- This above labeling information is required of the manufacturer so the employer must ensure that the original labels from the manufacturer are on all containers and remain legible.

Global Harmonization System



How must chemicals be labeled?

1. Product Identifier
2. Signal Word
3. Hazard Statements
4. Precautionary Statements
5. Supplier Information
6. Pictographs

How must chemicals be labeled?

GHS Pictographs

Globally Harmonized System
Hazard Communication

Exclamation Mark

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non Mandatory)

Health Hazard!

Health Hazard

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Greater Health Hazard

Skull and Crossbones

Severe Health Hazard

- Acute Toxicity (fatal or toxic)

Flame

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

Flame Over Circle

- Oxidizers

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Corrosion

- Skin Corrosion/ burns
- Eye Damage
- Corrosive to Metals

Gas Cylinder

- Gases under Pressure

Environment,
(Non Mandatory)

- Aquatic Toxicity

Container Labeling in the Workplace

Container Labeling in the Workplace

Ron.Hopkins@eku.edu
www.TRACEfireandsafety.com

Labeling Exemptions

- Pesticides
- Chemicals covered under the Toxic Substance Control Act
- Foods or food additives
- Distilled Spirits, tobacco
- Consumer products, lumber, cosmetics
- Hazardous wastes

Container Labeling Exemption for Portable Containers

- The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the *immediate use by the employee who performs the transfer.*

The employer need not affix new labels to comply with the standard if existing labels already covey the required information

Safety Data Sheets*

Prepared by the chemical manufacturer or importer and describe:

- **Physical hazards, such as fire and explosion**
- **Health hazards, such as signs of exposure**
- **Routes of exposure**
- **Precautions for safe handling and use**
- **Emergency and first-aid procedures**
- **Control measures**

***(old Material Safety Data Sheets (MSDS))**

Safety Data Sheets (SDS)

- **English (or other Language)and include information regarding the specific chemical identity and common names**
- **Must provide information about the:**
  - **Physical and chemical characteristics**
  - **Health effects**
  - **Exposure limits**
  - **Carcinogenicity (cancer-causing)**
  - **Identification (name, address, and telephone number) of the organization responsible for preparing the sheet**

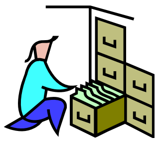
Safety Data Sheets (SDS)

Must be readily accessible to employees in their work area

SDS availability off-site

For employees who work off-site:

- SDS may be kept at the central location
- In an emergency, the employer must have provisions in place to ensure that employees can immediately obtain the required information



SDS kept in other forms

- SDS may be kept in any form
- Including operating procedures

Where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals

SDS Format

Safety Data Sheets (SDS) must follow a prescribed organizational format so all SDS information will be found in the same location.


CALPORTLAND
Safety Data Sheet
*** Section 1 - Product and Company Identification ***
*** Section 2 - Hazards Identification ***

Safety Data Sheets (SDS)

Mandatory Elements

Section 1. Identification
Section 2. Hazard(s) identification
Section 3. Composition/information on ingredients
Section 4. First-Aid measures
Section 5. Fire-fighting measures
Section 6. Accidental release measures
Section 7. Handling and storage
Section 8. Exposure controls/personal protection
Section 9. Physical and chemical properties
Section 10. Stability and reactivity
Section 11. Toxicological information
Section 16. Other information, including date of preparation or last revision

Safety Data Sheets (SDS)

Non-Mandatory Elements

Section 12. Ecological information

Section 13. Disposal considerations

Section 14. Transport information

Section 15. Regulatory information

New Hazard Information

- One important function of the individual(s) in charge of maintaining SDS for the employer is to replace current SDS with the revised version, when it is received.
- Companies can have copies in several locations, so updating all copies requires a conscientious effort by the individual(s) responsible for maintaining SDS.

Employee Information and Training

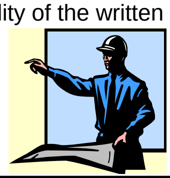
Employers must provide employees information and training on hazardous chemicals in their work area:

- **At the time of their initial assignment**
- **Whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area**

- **Training may cover categories of hazards**

Employee Information

- Employers must inform employees:
  - Of the training requirements of this section (1910.1200 (h) *Employee information and training.*);
  - Any operations in their work area where hazardous chemicals are present;
  - The location and availability of the written hazard communication program



Employee Information

Employers must inform employees:

- **The location and availability of the list of hazardous chemicals**
- **The location and availability of material safety data sheets**

Employee Training

Employee training shall include at least:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area
- The physical and health hazards of chemicals in the work area
- Measures employees can take to protect themselves
- Details of the employers specific program

Chemical Exposure:

Severity & Duration

- "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration.
- "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

Acute Effects

- Irritation
- Corrosives
- Sensitization
- Lethal Dose

Chronic Effects

- Carcinogenicity
- Teratogenicity
- Mutagenicity

Corrosive

- Visible destruction, or irreversible damage to body tissue
- Acids
- Caustics (or bases)

Acids | pH Scale | Caustics (or bases)

1 — 7 — 14

Toxic and Highly Toxic

- Can cause death or serious injury from a single exposure
- Ingestion
- Dermal contact
- Mists, Vapors

- Highly toxic, small dose; severe effects
- Toxic, larger dose; severe effects

Irritant

- Not a corrosive
- Causes reversible inflammatory effect

Lead, 1926.62

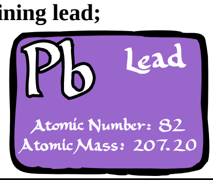
Applies to all construction work including:

Demolition or salvage operations;

- Removal or encapsulation of materials containing lead;

New construction;

- Installation of products containing lead;



Lead

- No employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m³) averaged over an 8-hour period.
- Determine if any employee may be exposed to lead at or above the action level.

Lead

- If lead is present employer required to make determination
- Determination based on exposure levels *without respiratory protection*

Lead

- Toxic effects on the nervous systems.
- The earliest stages of lead - induced central nervous system effects first manifest themselves in the form of behavioral disturbances and central nervous system symptoms including irritability, restlessness, insomnia and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy.
- With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions and coma.
- Damage is *irreversible*

Subpart D: Health Hazards

Occupational Health
and
Environmental Controls

Questions?

Ron Hopkins, CFPS, CFEI
Instructor, EKU OSHA Ed Center
Richmond, Kentucky