

# IENG509 Occupational Safety and Health Engineering

## **Legislation: OSH ACT, Standards and Liability**

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# The OSH Act

- Occupational safety & health Act (OSH Act) of 1970 is the most significant legislation concerning workplace safety and health.
- Prospective and practicing safety & health professionals must be knowledgeable about the OSH Act and the agency (OSHA) established by it
  - The Occupational safety & health Administration (OSHA).

# RATIONALE FOR THE OSH ACT

- Laws governing workplace safety were very limited until 1970, when Congress passed the OSH Act with the following stated purpose:
  - *“To assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources.”*
- In developing this legislation, Congress considered the following yearly statistics on workplace accidents:
  - Workplace accidents caused an average of 14,000 deaths.
  - 2.5 million workers were disabled in workplace accidents.
  - Approximately 300,000 new cases of occupational diseases were reported.

# OSHA'S MISSION AND PURPOSE

- According to the U.S. Department of Labor, OSHA's mission and purpose can be summarized as follows:
  - Encourage employers & employees to reduce workplace hazards.
  - Implement new & improve existing, safety/health programs.
  - Encourage research that will lead to innovative ways of dealing with workplace safety & health problems.
  - Establish the rights of employers and of employees regarding the improvement of workplace safety & health.
  - Monitor job-related illnesses and injuries through a system of reporting and record keeping.

# OSHA'S MISSION AND PURPOSE

Continued..

- Establish training programs to increase the number of safety & health professionals and to improve their competence continually.
- Establish mandatory workplace safety & health standards and enforce those standards.
- Provide for the development and approval of state-level workplace safety & health programs.
- Monitor, analyze, and evaluate state-level safety & health programs.

# OSHA STANDARDS

- The general duty clause of the OSH Act requires that employers provide a workplace free from hazards that are likely to harm employees.
  - Important because the general duty clause applies when there is no specific OSHA standard for a given situation.
    - Where OSHA standards do exist, employers are required to comply with them as written.

# How Standards Are Developed

- OSHA develops standards based on its perception of need, and by request of other federal agencies, state & local governments, other standards-setting agencies, labor organizations, or even individual private citizens.
- OSHA uses the committee approach for developing standards.
  - Ad hoc committees are appointed to deal with issues that are beyond the scope of the standing committees.

## How Standards Are Developed

- The National Advisory Committee on Occupational safety & health (NACOSH) makes recommendations on standards to the secretary of health and human services and to the secretary of labor.
- The Advisory Committee on Construction safety & health advises the secretary of labor on standards and regulations relating specifically to the construction industry.
- The National Institute for Occupational safety & health (NIOSH) was established by the OSH Act.
  - Part of the Department of Health and Human Services, NIOSH has an education and research orientation.

# OSHA Standards versus OSHA Regulations

- OSHA issues both standards and regulations.
  - OSHA standards address specific hazards such as working in confined spaces, handling hazardous waste, or working with dangerous chemicals.
  - Regulations are more generic than standards.
    - Regulations do not apply to specific hazards, and do not require the rigorous review process standards go through.

# How to Read an OSHA Standard

- OSHA standards are typically long and complex.
  - Written in the language of lawyers and bureaucrats.
- OSHA standards are part of the code of federal regulations (CFR), published by the Office of the Federal Register.
  - Title 29 contains all the standards assigned to OSHA.
- Title 29 is divided into several parts, each carrying a four-number designator (Part 1901, Part 1910, etc.)
  - Parts are divided in sections, with numerical designations.
- For example, 29 CFR 1910.1 means:
  - Title 29, Part 1910, Section 1, Code of Federal Regulations.

# How to Read an OSHA Standard

- The sections are divided into four different levels of subsections, each with a particular designator:
  - First Level: Alphabetically, using lowercase letters in parentheses: (a) (b) (c) (d).
  - Second Level: Numerically, using numerals in parentheses: (1) (2) (3) (4).
  - Third Level: Numerically, using roman numerals in parentheses: (i) (ii) (iii) (iv).
  - Fourth Level: Alphabetically, using uppercase letters in parentheses: (A) (B) (C) (D).
- Standards beyond the fourth level of subsection use the same sequence, with the designator shown in parentheses underlined.

# RECORD KEEPING AND REPORTING REQUIREMENTS

- All occupational illnesses/injuries must be reported if they result in one or more of the following:
  - Death of one or more workers
  - One or more days away from work
  - Restricted motion or restrictions to the work that an employee can do
  - Loss of consciousness of one or more workers
  - Transfer of an employee to another job
  - Medical treatment beyond in-house first aid (if it is not on the first-aid list, it is considered medical treatment)
  - Any other condition listed in Appendix B of the rule.

# Record-Keeping Requirements

- Employers are required to keep injury and illness records for each location where they do business.
- Records must be maintained on an annual basis using special forms (will be introduced later) prescribed by OSHA.
  - Computer or electronic copies can replace paper copies.
- Records are not sent to OSHA—they must be maintained locally for a minimum of three years.
  - Available for inspection by OSHA at any time.

# Reporting Requirement

Changes to reporting requirements: What needs to be reported to OSHA?  
OSHA's updated recordkeeping rule expands the list of severe injuries and illnesses that employers must report to OSHA.

As of January 1, 2015, all employers must report:

- All work-related fatalities within 8 hours.
- All work-related inpatient hospitalizations, all amputations and all losses of an eye within 24 hours.

You can report to OSHA by: { Calling OSHA's free and confidential number at 1-800-321-OSHA (6742) { Calling your closest OSHA Area Office during normal business hours { Using the new online form that will soon be available.

Only fatalities occurring within 30 days of the work-related incident must be reported to OSHA.

Further, for an inpatient hospitalization, amputation or loss of an eye, these incidents must be reported to OSHA only if they occur within 24 hours of the work-related incident

Check the related standard 1904.39

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=12783](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12783)

# KEEPING EMPLOYEES INFORMED

- Employers are required to keep employees informed about safety & health issues that concern them.
  - OSHA regulation in this area concerns posting of material.
- In addition to the posting requirements, employers must also provide employees who request them with copies of the OSH Act and any OSHA rules that may concern them.
- Employees must be given access to records of exposure to hazardous materials and medical surveillance that has been conducted.

# WORKPLACE INSPECTIONS & ENFORCEMENT

- OSHA may conduct inspections unannounced, and except under special circumstances, prior notice is a crime punishable by fine, imprisonment, or both.
- OSHA compliance officers are required to present their credentials to the person in charge.
  - Having done so, they are authorized to enter any site, location, or facility where work is taking place.
  - They may inspect, at reasonable times, any condition, facility, machine, equipment, materials, etc.
  - Finally, they may question, in private, any employee or other person formally associated with the company.

# WORKPLACE INSPECTIONS & ENFORCEMENT

## contd..

- Under special circumstances, employers may be given up to 24 hours' notice of an inspection.
  - When imminent danger conditions exist.
  - When special employer preparation is required.
  - When inspection must take place at times other than during regular business hours.
  - When it is necessary to ensure the employer, employee representative & other pertinent personnel will be present.
  - When the local OSHA director for OSHA advises it.

# CITATIONS AND PENALTIES

- Based on findings of workplace inspections, OSHA is empowered to issue citations and/or penalties.
  - A citation informs the employer of OSHA violations.
  - Penalties are typically fines assessed—result of citations.

## CITATIONS AND PENALTIES contd..

- Other-than-serious violation - a violation with a direct relationship to job safety & health, but probably would not cause death or serious physical harm.
- Serious violation - a violation in which there is a high probability that death or serious physical injury may result, and that the employer knew or should have known of the hazard.
- Willful violation - a violation that the employer intentionally and knowingly commits.
  - The employer either knows that what he/she is doing constitutes a violation, or is aware a hazardous condition exists and has made no reasonable effort to eliminate it.

## CITATIONS AND PENALTIES contd..

- Repeat violation - a violation where, on reinspection, a substantially similar violation is found.
- Failure to abate prior violation - a failure to correct a prior violation may bring a civil penalty for each day that the violation continues beyond the prescribed abatement date.

## CITATIONS AND PENALTIES contd..

- Employers may also be penalized by additional fines and/or prison if convicted of any of the following offenses:
  - Falsifying records or other information given to OSHA.
  - Failing to comply with posting requirements.
  - Interfering in any way with OSHA compliance officers in the performance of their duties.

# Consultation Services

- Consultation services provided by OSHA include:
  - Identifying hazardous conditions.
  - Correcting identified hazards.
  - Developing and implementing injury/illness prevention.
- Actual services are provided by professional safety & health consultants, who are not OSHA employees.
  - They typically work for state agencies or universities and provide consultation services on a contract basis

# EMPLOYER RESPONSIBILITIES

- Under the OSH Act, employers must:
  - Meet the responsibility to provide a workplace free from hazards causing, or likely to cause death or serious physical harm to employees
  - Be knowledgeable of, and comply with standards, rules, and regulations issued under the OSH Act, and make copies available to employees for review upon request
  - Keep employees informed about OSHA.
  - Continually examine workplace conditions to ensure they conform to standards.
  - Minimize or reduce hazards.
  - Ensure employees have, and use, safe tools & equipment that is properly maintained.

# EMPLOYER RESPONSIBILITIES

- Under the OSH Act, employers must (contd):
  - Use color codes, posters, labels, or signs as appropriate to warn employees of potential hazards Establish or update operating procedures and communicate them so that employees follow safety & health requirements.
  - Provide medical examinations when required by OSHA.
  - Provide the training required by OSHA standards.
  - Report to the nearest OSHA office within eight hours any fatal accident or one that results in the hospitalization of three or more employees.
  - Keep OSHA-required records of injuries and illnesses and post a copy of OSHA Form 300 from February 1 through April 30 each year (employers of 11 or more employees).

# EMPLOYER RESPONSIBILITIES

- Under the OSH Act, employers must (contd):
  - At a prominent location within the workplace, post OSHA Poster 2203 informing employees of their rights and responsibilities.
  - Provide employees, former employees & representatives access to the Log of Work-Related Injuries and Illnesses (OSHA Form 300) in a reasonable time and manner.
  - Give employees access to medical and exposure records.
  - Give the OSHA compliance officer names of authorized employee representatives who may be asked to accompany the compliance officer during an inspection.
  - Not discriminate against employees who properly exercise their rights under the act.

# EMPLOYER RESPONSIBILITIES

- Under the OSH Act, employers must (contd):
  - Post OSHA citations at or near the work site involved (each citation or copy must remain posted until the violation has been abated or for three working days, whichever is longer)
  - Abate cited violations within the prescribed period.

# Employee Responsibilities

- Employees have specific responsibilities, and must:
  - Read the OSHA poster at the job site and be familiar with its contents.
  - Comply with all applicable OSHA standards.
  - Follow safety & health rules and regulations prescribed by the employer, and properly use personal protective equipment while engaged in work.
  - Report hazardous conditions to the supervisor.
  - Report any job-related injury or illness to the employer, and seek treatment promptly.
  - Cooperate with the OSHA compliance officer conducting an inspection.
  - Exercise their OSH Act rights in a responsible manner.

Although OSHA is the most widely known safety & health organization in the federal government, it is not the only one.

- NIOSH - The National Institute for Occupational safety & health

# NIOSH

- NIOSH is part of the Department of Health and Human Services (HHS), with two broad functions:
  - Research and education, focused on toxicity levels and human tolerance levels of hazardous substances.
- NIOSH prepares recommendations for OSHA standards dealing with hazardous substances.
  - Studies are also published & made available to employers.
- Each year, NIOSH publishes updated lists of toxic materials and recommended tolerance levels.
- NIOSH has the authority to conduct research in the workplace, and respond to requests for assistance from employers and employees.

# OSHA'S GENERAL INDUSTRY STANDARDS

- The most widely applicable OSHA standards are the General Industry Standards, found in 29 CFR 1910.
  - Part 1910 consists of 21 subparts, each carrying an uppercase-letter designation.
  - Subparts A and B contain no compliance requirements.
  - The only compliance standard in Subpart C is Access to Employee Exposure and Medical Records.

## **Subpart C: General safety & health Provisions**

- The only compliance standard in Subpart C is Access to Employee Exposure and Medical Records.

## **Subpart D: Walking–Working Surfaces**

- Subpart D contains the standards for all surfaces on which employees walk or work.

## Subpart E: Means of Egress

- Subpart E requires employers to ensure that employees have a safe, accessible, and efficient means of escaping a building under emergency circumstances.

## Subpart F: Powered Platforms

- Subpart F applies to powered platforms, mechanical lifts, and vehicle-mounted work platforms.
  - The requirements of this subpart apply only to employers who use this type of equipment in facility maintenance operations.

## Subpart G: Health and Environmental Controls

- The most widely applicable standard in Subpart G is 1910.95 (occupational noise exposure).
  - Other standards in this subpart pertain to situations where ionizing and/or nonionizing radiation are present.

## Subpart H: Hazardous Materials

- Four standards in Subpart H are widely applicable:
  - Section 1901.106 is a standard covering the use, handling, and storage of flammable and combustible liquids.
  - Section 1910.107 applies to indoor spray-painting processes and processes in which paint (powder coating) is applied in powder form.
  - Section 1910.119 applies to management of processes involving specifically named chemicals and flammable liquids and gases.
  - Section 1910.120 contains requirements relating to emergency response operations and hazardous waste.

# Subpart I: Personal Protective Equipment

- Subpart I contains three of the most widely applicable standards:
  - 1910.132 General Requirements.
  - 1910.133 Eye and Face Protection.
  - 1910.134 Respiratory Protection.
- The most frequently cited OSHA violations relate to these and the other personal protective equipment standards.

## Subpart J: General Environment Controls

- Standards that are widely applicable because they pertain to general housekeeping requirements.
  - An especially important standard contained in this subpart is 1910.146: Permit-Required Confined Spaces.

## Subpart K: Medical and First Aid

- A short subpart, the most important section of which pertains to eye flushing.
  - If employees are exposed to injurious corrosive materials, equipment must be provided for quickly flushing the eyes and showering the body.
    - Also requires medical personnel to be readily available.

## Subpart L: Fire Protection

- The bulk of OSHA's fire protection standard, these detail the employer's responsibilities concerning fire brigades, portable fire-suppression equipment, fixed fire-suppression equipment, and fire-alarm systems.
  - Employers are not required to form fire brigades, but if they choose to, employers must adhere to the standard set forth in 1910.156.

## Subpart M: Compressed Gas/Air

- This subpart contains just three sections and only one standard, 1910.169.
  - This standard applies to compressed-air equipment that is used in drilling, cleaning, chipping, and hoisting.

## **Subpart N: Materials Handling and Storage**

- Subpart N is actually limited to the handling and storage of materials, changing rim wheels on large vehicles, and the proper use of specific equipment identified in the standards' titles.

## **Subpart O: Machinery and Machine Guarding**

- This subpart contains standards relating to specific types of machines.
  - The types of machines covered are identified in the titles of the standards contained in Subpart O.

## Subpart P: Hand Tools/Portable Power Tools

- Standards relating to the use of hand tools, portable power tools, and compressed-air-powered tools.
  - The types of tools covered in this subpart, in addition to typical hand tools, include jacks, saws, drills, sanders, grinders, planers, power lawnmowers, and other tools.

## Subpart Q: Welding, Cutting, and Brazing

- This subpart contains the standards relating to Welding, cutting, and brazing.
  - Primary safety & health concerns are fire protection, employee personal protection, and ventilation.

## Subpart R: Special Industries

- Subpart R deals with specific industries.
  - 1910.261 Pulp, paper, and paperboard mills.
  - 1910.262 Textiles.
  - 1910.263 Bakery equipment.
  - 1910.264 Laundry machinery and operations.
  - 1910.265 Sawmills.
  - 1910.266 Pulpwood logging.
  - 1910.268 Telecommunications.
  - 1910.272 Grain handling facilities.

## Subpart S: Electrical

- This subpart contains standards divided into:
  - Design of electrical systems.
  - Safety-related work practices.
- These standards are excerpted directly from the National Electrical Code.

## Subpart T: Commercial Diving Operations

- This applies only to commercial diving enterprises.
  - 1910.401 Scope and application.
  - 1910.410 Qualifications of dive teams
  - 1910.420 Safe practices manual.
  - 1910.421 Pre-dive procedures.
  - 1910.422 Procedures during dive.
  - 1910.423 Post-dive procedures.
  - 1910.424 SCUBA diving.
  - 1910.425 Surface-supplied-air diving.
  - 1910.426 Mixed-gas diving.
  - 1910.427 Live boating.
  - 1910.430 Equipment.

## Subpart Z: Toxic and Hazardous Substances

- An extensive subpart containing standards that establish permissible exposure limits (PELs) for selected toxic/hazardous substances.
  - The standards relating to specific toxic and hazardous substances are contained in 1910.1000 - 1910.1450.
- Occupational exposure to hazardous chemicals in laboratories OSHA's General Industry Standards were covered in some depth in this section because they have the broadest application for students of workplace safety.

# OSHA MARITIME STANDARDS

- OSHA Maritime Standards apply to shipbuilding, ship-repairing, and ship-breaking operations.
  - Not already covered by U.S. Coast Guard regulations.
- Coast Guard regulations take precedence over OSHA Maritime Standards and supersede those standards in cases of overlap or conflict.
  - Part 1915 of 29 CFR contains the standards relating to shipbuilding, ship repairing, and ship breaking.
  - Part 1917 contains the standards for marine terminals, and Part 1918 contains longshoring standards.
  - Part 1919 contains the gear-certification standards.

# OSHA'S CONSTRUCTION STANDARDS (1926)

- These standards apply to employers involved in construction, alteration, or repair activities.
  - OSHA took the terms construction, alteration, and repair directly from the Davis-Bacon Act.

# STANDARDS AND CODES

- Standards and codes play an important role in modern safety & health management and engineering.
  - A **standard** is an operational principle, criterion, or requirement—or a combination of these.
  - A **code** is a set of standards, rules, or regulations relating to a specific area.
- Written procedures detail the safe and healthy way to perform job tasks and, consequently, make the workplace safer and healthier.