



Idaho State
University

ESET 1162:Industrial Safety and Regulations

Introductions



Objectives of this Class

In actively participating and completing the assignments throughout this course, you will be able to:

- Summarize Industrial Safety Regulations
- Identify the regulatory bodies that govern industrial safety
- Apply best practices while working in an industrial environment
- Identify how to mitigate and avoid hazards in the workplace
- Receive an OSHA 10 hour certification (online)



Organizations/ Documentation that we will reference

- **NIOSH** (National Institute for Occupational Safety and Health)
- **OSHA** (Occupational Safety and Health Administration)
- **NEC** (National Electric Code)
- **ANSI** (American National Standards Institute)
- **ASTM** (American Society for Testing and Materials)
- **CDC** (Center for Disease Control)
- **NFPA** (National Fire Protection Association)
- **ISO** (International Organization for Standardization)



Vocabulary

- **Hazard** – A danger or risk of something negative occurring
- **Safety Hazards** – Unsafe conditions that could cause injury, illness and death
- **Biological Hazards** – Associated with working with a biological agent such as people, animals, or infectious or hazardous plant material (mold, rodents, bacteria, blood or other bodily fluids)
- **Physical Hazards** – Factors within the environment that can cause hazards with/ or without touching the body
- **Ergonomic Hazards** – Occurs when the type of work, body positions, and working conditions put strain on your body (bending over for long periods of time, improper/ frequent lifting)
- **Chemical Hazards** – When a worker is exposed to any chemical that could have an adverse health effect both immediate and non-immediate
- **Work Organization Hazard** – Hazards that cause mental stress over time, such as workload demands, workplace violence, sexual harassment



Vocabulary

- **Hazardous Material** - A substance or chemicals that pose a health hazard, physical hazard or harm to the environment
- **Toxic Substance** - A substance that has a negative effect on the health of a person or animal
- **Toxicity**- The quality of being poisonous, harmful to humans or animals
- **Chronic** - An illness or injury that occurs slowly over time and may worsen over time, may last for many years
- **Acute** - An illness or injury that occurs suddenly and will last a short time
- **Permissible Exposure Limit** - a legal limit in the United States for exposure of an employee to a chemical substance or physical agent



Hazard Severity Level

- **Near Miss** - Incident that does not result to harm to a worker and causes no impact to work time
- **Low Severity** – Incident that results in pain, discomfort, or requires first aid treatment. Workers can return to work within a day (minor injuries that may cause discomfort for longer periods but does not affect work fall into this category)
- **Medium Severity** – Incident that results in lost work time or hospitalized injury. Worker does not return to work within a day and results in lost work time
- **High Severity** – Incident that results in permanent disablement or death. Worker does not return to work at all



Where to find documentation

- These organizations have their own websites dedicated to documentation
- Most of the documentation is free to access online
- Your safety representative in your place of employment should have copies of this documentation
- For this class, we will primarily reference OSHA documentation



Keep in Mind

Employers might have their own written safety plans. Often they are more stringent than the OSHA requirements but must never be less than the OSHA requirements

They are required to provide a safe workplace. If you feel like your workplace is not safe, bring it up to your supervisor or management first and as a last resort, violations can be reported (anonymous if you choose) to OSHA where they may follow up with an onsite inspection

Small businesses have different guidelines than larger businesses as well. Check OSHA's guidelines for small businesses



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Knowledge Check 1

Match the Safety Organization with its acronym



The What, When and Why of Industrial Safety

- Industrial Safety Programs has been developed over many years starting in the early 1800's
 - Industrial accidents were very common
 - In 1912 it is estimated that 21,000 workers died from work related injury
 - In 2021, the number was 5,190 work related fatalities (Bureau of Labor Statistics)





The What, When and Why of Industrial Safety

- The safety movement began after the civil war in the United States
 - Massachusetts lead the charge with mandatory factory inspections and machine safeguarding in the late 1800s
 - Pennsylvania passed mine safety laws
 - The first official recorded safety program was established in 1892





Case Study: The Triangle Shirtwaist Factory Fire

- March 25, 1911 – Deadliest Industrial Disaster in the history of New York
- 146 people died in the fire mostly women and girls aged 14 to 23
- The fire started in a heap of scrap fabric, possibly by one of the engines running the sewing machine
- There were no alarms, or ways of notifying people of fire
- Only two escape routes were available to the workers (the 3rd being locked by management) An indoor staircase and flimsy fire escape that soon collapsed under the weight of the workers
- The incident resulted in multiple new inspection laws and new laws regarding fire egress





Workers Compensation

- The first Employers Liability Laws were enacted in 1877 where employers could be held liable for workplace injury and accidents
- In 1908, an early draft of workers compensation was established to allow employees to receive compensation from their employers when injured without having to go to court



The US started to realize two things:

- As the government encouraged companies to create a safe work environment, and accidents kept occurring, legislature realized
 1. There is a connection between quality and safety
 2. Accidents have a negative impact on productivity



The OSH Act

OSH – Occupational Safety and Health (Act)

- Passed in 1970
- “To assure safe and healthful working conditions for working men and women; by authorizing the enforcement of the standards developed under the Act. By assisting and encouraging the States in their effort to assure safe and healthful working conditions. By providing for research, information, education, and training in the field of occupational safety and health and for other purposes”
- Established OSHA – Occupational Safety and Health Administration

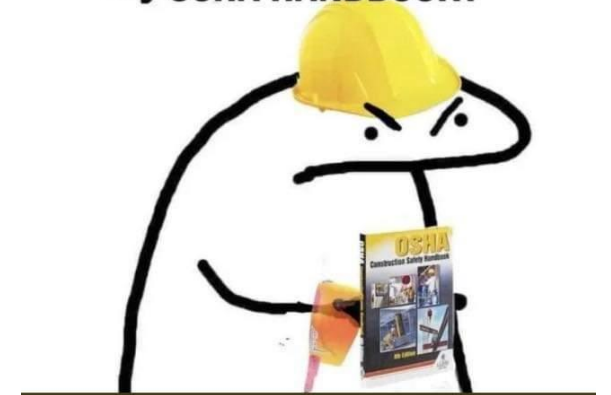


OSHA



- OSHA (Occupational Safety and Health Administration) is part of the US Department of Labor and is the predominant resource for safety in the United States. They set the precedent for workers' safety
- It covers most private sector employers and even some federal agencies

Really? Right in front of
my OSHA HANDBOOK?



1867 Massachusetts introduces factory inspection.

1868 Patent is awarded for first barrier safeguard.

1869 Pennsylvania passes law requiring two exits from all mines, and the Bureau of Labor Statistics is formed.

1877 Massachusetts passes law requiring safeguards on hazardous machines, and the Employer's Liability Law is passed.

1892 First recorded safety program is established.

1900 Frederick Taylor conducts first systematic studies of efficiency in manufacturing. Followed by the motion studies of Frank Gilbreth.

1907 Bureau of Mines is created by U.S. Department of the Interior.

1908 Concept of workers' compensation is introduced in the United States.

1911 Wisconsin passes the first effective workers' compensation law in the United States, and New Jersey becomes the first state to uphold a workers' compensation law.

1912 First Cooperative Safety Congress meets in Milwaukee.

1913 National Council of Industrial Safety is formed.

1915 National Council of Industrial Safety changes its name to National Safety Council.

1916 Concept of negligent manufacture is established (product liability).

1924 Hawthorne Light Experiments.

1936 National Silicosis Conference convened by the U.S. Secretary of Labor.

1970 Occupational Safety and Health Act passes.

1977 Federal Mine Safety Act passes.

1978 OSHA offers education and training grants.

1980 OSHA coverage extended to federal employees.

1986 Superfund Amendments and Reauthorization Act pass.

1990 Amended Clean Air Act of 1970 passes. Also, safety professionals begin to apply the principles of ergonomics.

1996 Total safety management (TSM) concept is introduced.

2000 U.S. firms begin to pursue ISO 14000 registration for environmental safety management.

2003 Workplace violence and terrorism are an ongoing concern of safety and health professionals.

2007 Safety of older people reentering the workplace becomes an issue.

2009 Global Harmonization System for chemicals established.

2010 Off-the-job safety becomes an issue.

2017 Pressure on foreign companies that produce goods sold in the United States to improve their safety standards.





What Industrial Health and Safety Looks Like Today

- We have numerous health and safety programs that have dramatically reduced the amount of workplace injury and fatality
- Our safety efforts are not finished though! It is important to hold employers accountable for occupational safety and verify they are following requirements
- There are multiple different positions that involve safety and keep the workplace safe for employees
 - Safety and Health Manager/ Officer
 - Safety Engineer
 - Environmental Engineer
 - Industrial Hygienist
 - Health Physicist
 - Occupational Health nurse
 - Occupational Physician



Employer Responsibilities

- Provide a workplace free from serious recognized hazards and comply with standards, rules and regulations issued under the OSH act
- Examine workplace conditions to make sure they conform to applicable OSHA standards
- Make sure employees have and use safe tools and equipment and properly maintain this equipment
- Use color codes, posters, labels, or signs to warn employees of potential hazards
- Establish or update operating procedures and communicate them so that employees follow safety and health requirements
- Employers must provide safety training in a language and vocabulary workers can understand
- Keep records of work-related injuries illnesses
- For additional information and a complete list on Employer Responsibilities check out the OSHA webpage <https://www.osha.gov/workers/employer-responsibilities>



Employee Responsibility

- There's a lot of things for an employer to do to keep workers safe, but there are some employee responsibilities as well
 - Comply with all safety and health rules, regulations, policies of their employers
 - Using all equipment, tools and devices related to their work safely and properly
 - Ensuring that all procedures and processes pertaining to work are followed
 - Properly wearing and using required personal protective equipment (PPE)
 - Refusing to take short cuts or cut corners when it comes to safety
 - Reporting unsafe or unhealthy conditions to management as soon as possible
 - Encouraging fellow employees to work safely
 - Participating in all provided training for health and safety



Knowledge Check 2

- True or False: It is both the employee's and employer's responsibility to ensure safety in the workplace



Knowledge Check 2

- True! It is the responsibility for both employees and employers to understand and abide by the safety protocols in the workplace

End of Show