

## 10. Safety

Occupational Safety Engineering addresses the origins of workplace accidents, regulations, and management practices towards mitigating hazard exposures, preventing harm, and reducing liability. Safety engineering also addresses methods and measures for recognizing and controlling workplace physical hazards, as well as approaches for dealing with accidents and facilitating recovery.

### 10.1. Perspective and Overview

- 10.1.1. History of safety and health movement
- 10.1.2. Definition of hazards and accident statistics
- 10.1.3. Theories of accident causation
- 10.1.4. Effects on global competition on safety and health practice and regulations

### 10.2. USA Laws and Regulations

- 10.2.1. Product safety and liability (safety in the courtroom)
- 10.2.2. Consumer product safety commission
- 10.2.3. Workers' compensation
- 10.2.4. OSHA standards and liability
- 10.2.5. OSHA record keeping system
- 10.2.6. Hazard communication standard (DOT regulations)

### 10.3. Hazard Recognition, Evaluation, and Control

- 10.3.1. Mechanical hazards and machine safeguarding
- 10.3.2. Fall hazards, acceleration, and impacts
- 10.3.3. Thermal stress
- 10.3.4. Noise and vibration hazards
- 10.3.5. Electrical hazards
- 10.3.6. Fire hazards and protection
- 10.3.7. Industrial hygiene and confined spaces
- 10.3.8. Radiation hazards, bloodborne pathogens, and bacterial hazards
- 10.3.9. Nanotechnology

### 10.4. Safety and Health Management

- 10.4.1. Ethics and safety
- 10.4.2. Emergency planning
- 10.4.3. Accident investigation and reporting
- 10.4.4. Corporate safety culture and behavior-based safety programs
- 10.4.5. Risk assessment/hazard analysis
  - 10.4.5.1. Preliminary hazard analysis

## REFERENCES:

*Safety and Health for Engineers*. Brauer, R. L. Van Nostrand Reinhold. 1990.

*Occupational Safety and Health for Technologists, Engineers, and Managers.* Goetsch, D. Prentice-Hall, 8<sup>th</sup> Edition. 2015.

*System Safety Engineering and Risk Assessment.* Bahr, Nicholas J. Taylor and Francis. 1997.

*Engineering a Safer World – Systems Thinking Applied to Safety.* Leveson, Nancy. The MIT Press. 2011.

*Standard Practice for Systems Safety (MIL-STD-882D).* US DOD. 2000.