

Introduction to Occupational Safety and Health

Introduction to Occupational Safety and Health (OSH)

1. What Is OSH?

Term	Definition
Occupational Safety	Protection of workers from accidents and injuries that occur as a direct result of their job tasks (e.g., slips, falls, machinery hazards).
Occupational Health	Promotion and maintenance of the physical, mental, and social well-being of workers, focusing on prevention of work-related illnesses (e.g., exposure to chemicals, noise, ergonomic strain).
OSH	Integrated discipline that combines safety and health to create safe, healthy, and productive workplaces.

2. Core Principles of OSH

- Prevention First** – Identify hazards before they cause harm.
- Risk Management** – Evaluate risk (likelihood×severity) and apply appropriate controls.
- Continuous Improvement** – Use data, audits, and employee feedback to refine safety programs.
- Worker Participation** – Involve employees in hazard identification, risk assessment, and solution development.
- Legal Compliance** – Meet national regulations and international standards (e.g., ISO 45001).

3. Key Components of an OSH Management System

Component	Typical Activities
Policy & Commitment	Write a clear OSH policy; senior management sign-off; allocate resources.
Planning	Hazard identification, risk assessment, legal register, objectives & targets.

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Component	Typical Activities
Implementation & Operation	Training, communication, administrative controls, emergency preparedness, procurement of safe equipment.
Performance Evaluation	Monitoring (inspections, incident reporting), measurement (KPIs, leading/lagging indicators), internal audits.
Management Review	Top-level review of OSH performance, effectiveness of controls, and opportunities for improvement.

4. Hazard Types & Examples

Hazard Category	Typical Sources	Example Controls
Physical	Noise, vibration, radiation, temperature extremes	Engineering controls (silencers, shielding), PPE, administrative limits.
Chemical	Solvents, gases, dusts, fumes	Substitution, ventilation, safe storage, SDS access.
Biological	Bacteria, viruses, mold	Hygiene protocols, vaccination, PPE, containment.
Ergonomic	Repetitive motion, awkward postures, manual handling	Workstation redesign, mechanical assists, job rotation.
Psychosocial	Work overload, harassment, shift work	Work-life balance policies, counseling, clear reporting channels.
Safety (Mechanical)	Machinery, tools, moving vehicles	Guarding, lock-out/tag-out, safe work procedures.

5. Hierarchy of Controls (From Most to Least Effective)

1. **Elimination** – Remove the hazard entirely.
 2. **Substitution** – Replace with a less hazardous material or process.
 3. **Engineering Controls** – Isolate people from the hazard (e.g., guards, ventilation).
 4. **Administrative Controls** – Change how people work (e.g., training, job rotation, signage).
 5. **Personal Protective Equipment (PPE)** – Last line of defense (e.g., gloves, helmets, respirators).
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6. Legal & Standards Framework (Illustrative)

Level	Example (U.S.)	Example (EU)	Global Standard
Regulation	OSHA 29?CFR?1910 (General Industry)	EU?OSHA Directives (e.g.,	