

LECTURE 11

SAFETY AND EMERGENCY MANAGEMENT

OCCUPATIONAL SAFETY AND HEALTH

Modern port facilities involve extensive industrial activities that inherently carry risks such as injuries, fatalities, and property damage. For example, transferring containerized cargo between vessels and land-based transport can be hazardous due to factors like mishandling, insufficient training, defective equipment, and inadequate supervision or security practices.

To address workplace safety, the U.S. government enacted the **Occupational Safety and Health Act (OSHA)** in 1970, establishing the Occupational Safety and Health Administration under the Department of Labor in 1971. OSHA enforces safety standards, conducts research, and provides training to promote safe working conditions. In 2011 alone, private industry employers reported approximately 3 million nonfatal injuries and illnesses, with a fatality rate of 3.5 deaths per 100,000 employees.

Key priorities for OSHA inspections include:

- Imminent danger reports.
- Fatalities or accidents hospitalizing three or more employees.
- Employee complaints.
- Referrals from government agencies.
- Targeted inspections for high-risk employers.
- Special emphasis on hazardous work environments.
- Follow-up inspections.

Violations of OSHA standards can incur penalties up to \$70,000, depending on the severity of risk posed to employees.

SAFETY IN PORT FACILITIES

Port facilities present unique safety challenges due to the diverse activities involving vessels, cargo, and land operations. Safety concerns can arise in areas such as:

- Traffic control, fire prevention, and pedestrian safety.
- Cargo handling layouts, fencing, and life-saving equipment.
- Shore-side access to vessels via ramps, walkways, and ladders.
- Equipment operations, including cranes, forklifts, and other machinery.
- Proper maintenance and handling of hazardous materials.

In the UK, for example, port-related accident rates were estimated at 1,100 incidents per 100,000 employees annually.

Addressing safety concerns requires vigilance in equipment maintenance, hazard identification, and compliance with local and international safety regulations.

ROLE OF THE PORT SAFETY OFFICER

The port safety officer oversees industrial safety and risk management programs, including accident prevention and loss control initiatives. Their responsibilities include:

- Conducting inspections of facilities, cargo operations, and equipment.
- Investigating accidents and preparing safety reports.
- Providing safety training to employees and supervisors.
- Collaborating with port security and first responders to address potential hazards.

Safety officers must be well-versed in laws, risk prevention techniques, and accident analysis. They are critical in fostering a safety-first culture among port employees and management.

PORT SAFETY COMMITTEE

Establishing a safety committee is essential for effective communication and collaboration between management and employees on safety matters. Representatives from all port sectors should participate to ensure a comprehensive approach to health and safety. The committee's responsibilities include:

- Studying accident statistics and recommending corrective actions.
- Reviewing safety audits and inspection reports.
- Assisting with the development of job-site safety rules and training.

Regular committee meetings should result in actionable recommendations, with minutes and progress tracked for accountability.

EMERGENCY MANAGEMENT

KEY ELEMENTS OF AN EMERGENCY OPERATIONS PLAN

Effective emergency operations plans (EOPs) for port facilities should include the following elements:

- Authority to declare emergencies, order evacuations, and direct shutdowns.
- Clear emergency chains of command and reporting structures.
- Designation of command posts and emergency response teams.
- Procedures for asset protection, lifesaving, and inter-agency communication.
- Training programs for personnel and coordination with external agencies.
- Public relations strategies and communication protocols during emergencies.

ROLE OF THE PORT FACILITY SECURITY OFFICER (FSO)

Under the Maritime Transportation Security Act (MTSA), the port FSO is responsible for ensuring timely responses to security threats and reporting breaches to federal agencies. FSOs must collaborate with the USCG and the National Response Center (NRC) to report suspicious activities and transportation security incidents. Reports should include detailed information about the incident, its location, and the parties involved.

To address recurring security breaches, FSOs must analyze patterns, address underlying issues, and implement corrective measures, such as enhanced training or procedural adjustments. Incident reporting and monitoring are critical tools for identifying and mitigating risks.

The USCG provides guidelines for emergency planning, emphasizing the evaluation of security breaches, response procedures, and testing response capabilities. FSPs should outline measures to continue critical operations during emergencies, evacuation procedures, and staff training for recognizing and responding to potential threats.

HAZARDOUS MATERIALS INCIDENTS

Port facilities handling hazardous materials must develop contingency plans that address preparation, mitigation, and response to incidents, including oil spills and chemical leaks. These plans should complement existing laws and treaties while providing clear guidelines for port staff and external responders. Essential components include:

- Jurisdictional responsibilities and response procedures.
- Port facility and external agency coordination.
- Identification of equipment and resources for incident management.
- Contact information for relevant agencies and resources.

Specialized scenarios, such as hazardous material incidents aboard vessels, require plans for managing evacuations, contamination, and mitigation efforts. Exercises like California's "Operation Safe Port" demonstrate the importance of collaboration, specialized equipment, and alternative strategies for handling such emergencies. Each port must tailor its response plans to its specific operating conditions and capabilities, ensuring effective coordination with all relevant stakeholders.

PORT FACILITY EVACUATIONS AND EMERGENCY MANAGEMENT

» Planning and Execution

Effective evacuation plans for port facilities must be developed in advance to balance potential threats to human safety against business disruptions or economic losses. These plans should address foreseeable emergencies, outlining detailed policies and procedures. If no plan exists, it is the responsibility of the safety or security manager to ensure one is created. A well-crafted plan ensures personnel, equipment, and facilities are prepared for emergencies.

» Evacuation Scenarios

Common situations requiring partial or total evacuations include:

1. **Fires:** Affecting buildings, vessels, cargo, or equipment.
2. **Bomb Threats:** Credible threats, suspicious devices, or explosions.
3. **Hazardous Materials Incidents:** Spills or releases of toxic substances posing a risk to life.
4. **Vessel Emergencies:** Onboard accidents, leaks, or emergencies impacting the port or nearby waters.
5. **Severe Weather:** Events like hurricanes, tornadoes, or blizzards.
6. **Security Breaches:** Significant incidents as determined by port authorities.
7. **Terrorist Incidents:** Acts of violence or intimidation.
8. **Other Emergencies:** Including natural disasters, major accidents, or utility failures.

TRAINING AND PUBLIC AWARENESS

Employees and visitors must be prepared for emergencies through regular training, drills, and communication. Security managers should integrate orientation programs and tools like signage, maps, announcements, and pamphlets to educate staff and the public on evacuation procedures. Collaboration with internal and external stakeholders ensures plans are tailored to specific threats.

EMERGENCY INFORMATION MANAGEMENT

» Key Contacts

Critical contact information, such as emergency responders, law enforcement, port administrators, and other essential personnel, must be readily accessible. This includes maintaining up-to-date tenant and user emergency contact lists.

» Notification Systems

Automated systems are vital for notifying personnel during emergencies. These systems can send prerecorded or live messages to individuals via phones, text, or public address systems. Redundant communication protocols should be established to ensure functionality during power outages or technology failures.

» Records and Resources

Securely stored records should include:

- Emergency contact details for personnel and agencies.
- Lists of equipment and resources.
- Building plans and mutual aid agreements.

MARITIME SECURITY LEVELS (MARSEC)

When MARSEC levels increase due to heightened risks, access controls must be strengthened. Measures may include:

- Enhanced background checks and re-verification of credentials.
- Deployment of additional surveillance and screening tools.
- Restricting unauthorized access to secure areas.
- Briefing and retraining security staff on updated protocols.

CONTINUITY OF OPERATIONS PLANNING (COOP)

A COOP ensures port facilities can maintain or resume essential functions during and after emergencies. Key elements include:

1. **Plans and Procedures:** Guidelines for continuing critical operations.
2. **Essential Functions:** Identification of vital services.
3. **Delegated Authority:** Clear decision-making roles.
4. **Alternate Facilities:** Preparation for relocation.
5. **Interoperable Communications:** Reliable and redundant communication systems.
6. **Vital Records Access:** Ensuring access to essential data.
7. **Testing and Training:** Regular drills and evaluations to ensure plan effectiveness.
8. **Reconstitution:** Gradual recovery to full operations.

By proactively preparing for emergencies, port facilities can minimize disruptions, ensure safety, and maintain confidence in their ability to operate during crises.

// SUMMARY //

Managing safety in port operations is complex due to the diverse nature of vessel and cargo activities. A port safety officer collaborates with port security to oversee safety and risk management programs. Key responsibilities include:

- Conducting regular inspections of facilities, equipment, and cargo operations.
- Investigating industrial accidents and preparing reports with findings and recommendations.
- Providing training to prevent workplace injuries.

Effective safety management requires personnel with a solid educational foundation and relevant experience. Building strong relationships with port staff fosters a culture of safety.

» Regulations and Safety Committees

Federal regulations govern the handling of hazardous cargo on vessels and in port facilities. Port safety officers and Facility Security Officers (FSOs) must be well-versed in these laws. Establishing a port safety committee aids in addressing, communicating, and mitigating safety and health concerns.

The U.S. Department of Labor (USDOL) provides specific safety standards for marine terminals and longshore operations, ensuring compliance with federal regulations.

» Emergency Preparedness and Response Frameworks

Under Homeland Security Presidential Directive 8 (HSPD-8), a national policy for all-hazards preparedness was established, leading to the National Response Framework (NRF). This framework emphasizes principles such as partnerships, scalable response capabilities, unified command, and readiness to act.

Port Facility Security Plans (FSPs) must align with the NRF and the National Strategy for Maritime Security, which outlines measures to prevent and mitigate transportation security incidents. Additionally, each U.S. Coast Guard (USCG) Captain of the Port develops area-specific maritime security plans.

HSPD-5 introduced the National Incident Management System (NIMS) to streamline emergency response. While initial responsibility lies with state and local governments, federal assistance is provided when resources are insufficient or federal interests are involved. NIMS ensures a coordinated response structure using an Incident Command System (ICS) to manage emergencies effectively. Compliance with NIMS is required to maintain federal preparedness funding.

» Port Facility Operations and Emergency Planning

FSOs are responsible for:

- Acting as NIMS coordinators and liaising with emergency management agencies.
- Ensuring security personnel can respond to threats and maintain critical operations.
- Developing contingency plans for hazardous material incidents, such as oil spills, and coordinating with external agencies for mitigation and response.

Decisions regarding the handling of hazardous materials, whether onboard vessels or in port, must consider legal requirements, port capabilities, and collaboration with relevant stakeholders.

» Evacuation and Risk Management

Evacuation plans must balance risks to personnel with potential economic impacts and operational disruptions. Plans should address:

- Alternative escape routes and staging areas for responders.
- Public education strategies, especially in ports with large numbers of passengers and visitors.
- Continuity of operations during prolonged inaccessibility.

In emergencies, individuals typically follow training, conditioning, or guidance, emphasizing the need for effective public education and communication.

» Continuity of Operations (COOP)

A COOP ensures port facilities maintain critical functions during emergencies and gradually restore full operations. FSOs must work closely with stakeholders, including shipping and cargo entities, to synchronize continuity planning and facilitate equitable access for resuming normal activities.

// CONCLUSION //

Proactive planning, compliance with federal standards, and collaboration among port stakeholders are critical to maintaining safety, security, and operational continuity in port facilities.

