UTM OPENCOURSEWARE

CONSTRUCTION SAFETY: 11

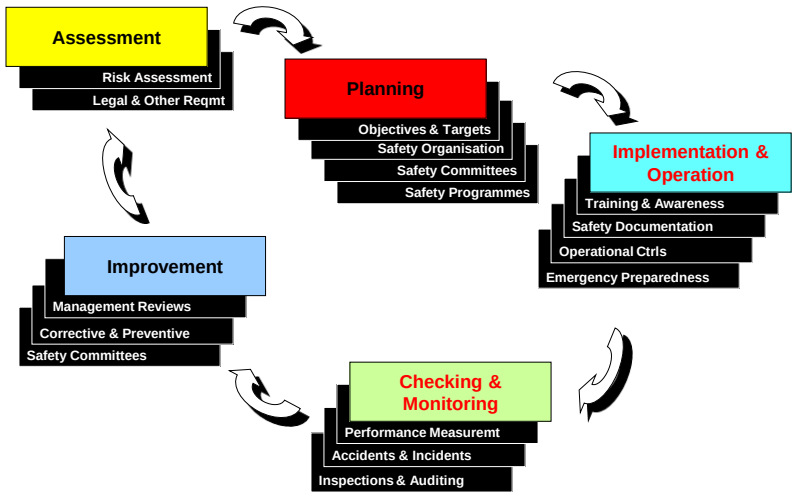
SAFETY MANAGEMENT- MONITORING

SBC 3363

Sr Dr. Mohd Saidin Misnan
UNIVERSITI TEKNOLOGI MALAYSIA
81310 UTM Skudai, Johor, Malaysia

Contents

Safety Management System



What is an OSH Management System

- An OSH management system
  - Components:
    - Arrangements (plans, implementation), etc.
  - Purpose:
    - To ensure safety, health and welfare of workers
    - To comply with regulation

Why Do You Need a System

- A system is useful when there are:
  - Many activities have to be managed together
  - Complex information that are changing have to be taken into account at all times

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Why Do You Need a System

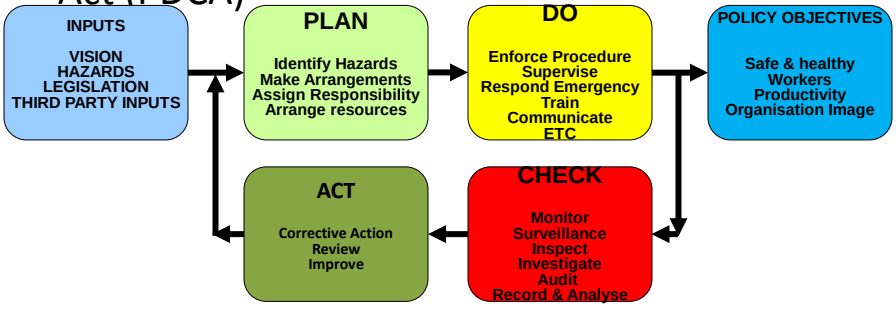
- A system **organises and simplifies complexity**
- A system provides **order, structure, and focuses on the purpose and objective of activities**

Typical OSH-MS "Components"

1. **Policy**
2. **Plan** - System planning, OSH objectives, development and implementation
3. **Do** - Responsibility and accountability; Competence and training, Hazard control system
4. **Check** -Performance measurement; Accident / incident investigation; Auditing
5. **Act** - Preventive and corrective action, Continual improvement

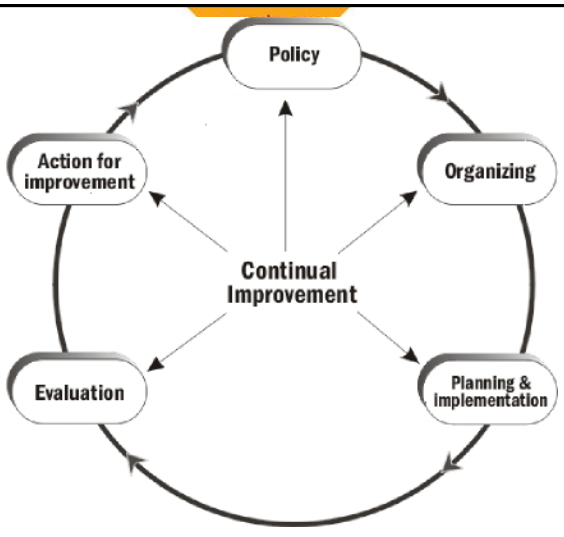
An OHS-MS System Model

OHS-MS such as MS1722:2003 & OHSAS 18001 are based on the Quality Management System components of Plan, Do, Check and Act (PDCA)

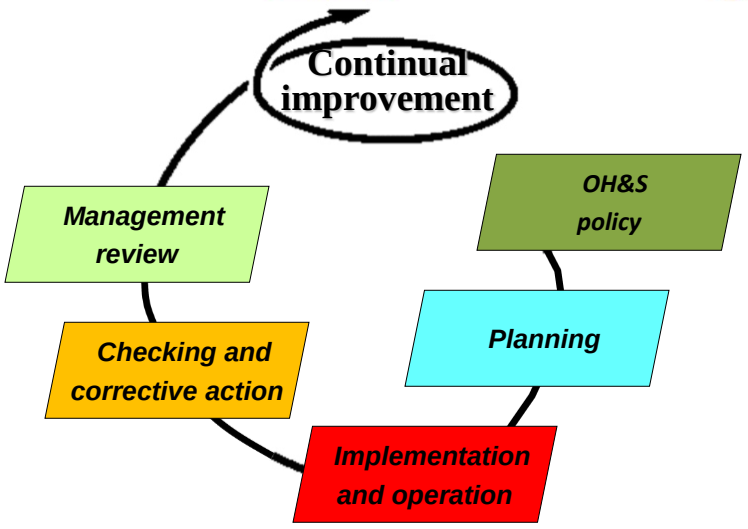


Existing OSH Management System

- There are two occupational safety and health management system standards:
  - OHSAS 18001 Occupational Health & Safety Management System standard
    - This standard was established in 1999
    - Widely used and certifiable
  - MS1722:2003 management system standard
    - This standard was published in 2003
    - This is a guidance standard



MS1722:2003 Management System Model



OHSAS 18001 Occupational Health & Safety Management System Model

Policy

- Promoting health and preventing accidents, diseases and other work-related health effects
- Complying with OSH legal requirements and other requirements
- Recognizing OSH performance is an integral part of business performance

Policy

- Workers and their representatives are consulted
- Ensuring that management and workers are competent and understand their rights
- Allocating the necessary resources
- Continual improvement

Initial Review

Compare what you have with:

a) Requirements of relevant legislation dealing with OH&S management issues

b) Best practice and performance in your industry sector and other appropriate sections

c) Efficiency and effectiveness of existing resources devoted to OH&S management

OSH Objectives

- Based on the initial review and consistent with the OSH policy set **measurable** and **quantifiable** objectives to implement the policy.
- Communicate objectives to all relevant functions and levels of the organization.

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Organising

- Responsibility and accountability for OSH performance for managers & supervisors.
- Competence and training of employees.
- Management System documentation should be established and maintained.

Organising

- Procedures should be established and maintained for communications externally, internally.
- Cooperation on OSH aspects between the employer, management and workers.

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Implementing

- Ongoing hazards identification and assessment
- Preventive, protective measures implemented in order of priority
- Procedures must be relevant to identified risk

Implementing

- Before any changes assess risk, take steps and inform, train employees before implementing.
- Have an emergency preparedness and response arrangements.
- Procedures for purchasing and contracting.

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Monitoring And Measurement

- Performance measurement.
- Accident, disease and incident investigation.
- Auditing.
- Management review.

Action Elements

- **Preventive and corrective action**
- **Continual improvement**

MS1722:2003 Standard Requirements

The MS 1722:2003 standard contains the following components:

1. Policy
2. Organizing
3. Planning and Implementation
4. Evaluation
5. Management Review

OSH Policy

- Management must have **a written OSH policy**
- **Management must commit** themselves to:

1. Promoting health and preventing accidents, diseases and other work-related health effects in the workplace.

2. Complying with OSH legal requirements and other requirements.

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…OSH Policy

3. Workers and their representatives are consulted when making workplace rules and regulations

4. Providing the necessary resources to ensure that work and the workplace is safe

Organizing

- **Management as a whole is responsible for OSH**
- Ensuring that management and workers are competent to carry out their tasks, especially the hazardous ones

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..Organizing

- **Employees are informed of hazards** they are working in and **procedures** are established to ensure their safety and health
- **Management must promote safety and health**

Safety Training Programme

Accident Prevention Program

- Written
- Tailored to particular hazards for a particular plant or operation

- Safety Orientation Program
- Safety and Health Committee

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Safety Training Programme

Accident Prevention Program

- Description of Total Safety Program
- Safe Practices for Initial Job Assignment
- How and When to Report Injuries
- Location of First Aid Facilities in Workplace
- How to Report Unsafe Conditions & Practices
- Use and Care of PPE
- Emergency Actions
- Identification of hazardous materials

Safety Training Programme

Accident Prevention Program

- Management Representatives
- Employee Elected Representatives

- Elected Chairperson
- Self-determine frequency of meetings

- Minutes

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Safety Training Programme

Accident Prevention Program

- If less than 11 employees

- Meet at least once/month
- 1 Management Representative

Safety Training Programme

Accident Prevention Program

Safety Meeting

- Review inspection reports
- Evaluate accident investigations
- Evaluate APP and discuss recommendations
- Document attendance and topics

Safety Committees

Proactive Safety

- They should meet as often as necessary
- This will depend on volume of production and conditions such as
  - Number of employees
  - Size of workplace covered
  - Nature of work undertaken on site
  - Type of hazards and degree of risk
- Meetings should not be cancelled

Safety Committees

The Goal of the committee is to facilitate a safe workplace

Objectives that guide a committee towards the goal include:

- Motivate, educate and train at all levels to ID, Reduce, & Avoid Hazards
- Incorporate safety into every aspect of the organization
- Create a culture where each person is responsible for safety of self and others
- Encourage and utilize ideas from all sources

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Four points to Remember:

Must be a loop system

From everyone

Between Management and Employees

An important part of team working.

How effective can a Committee be?

Safety Committee Policy Statement

A written and publicized statement is an effective means of providing guidance and demonstrating commitment

Safety Committee Focus

– Objectives to Achieve
– Time Frame

– Assignments between Meetings
– Work toward achieving Long-Term Plan

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Planning the Safety Meeting

- Select topics
- Set & post the agenda
- Schedule safety meeting
- Prepare meeting site
- Encourage participation

Conducting A Safety Meeting

Provide an attendance list or sign in sheet

Provide a meeting agenda

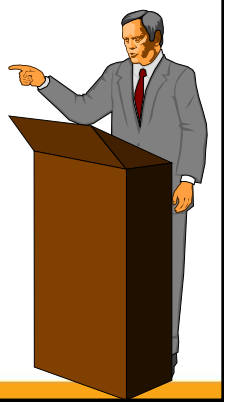
Call meeting to order and review meeting topics

Cover any old business

Primary meeting topic

Future agendas

Close meeting and document



Components of an Agenda

- Opening statement including reason for attendance, objective, and time commitment
- Items to be discussed
- Generate alternative solutions
- Decide among the alternatives
- Develop a plan to solve the problem
- Assign task to carry out plan
- Establish follow-up procedures
- Summarize and adjourn

Regular Agenda Item

- **Hazard Communication Program**
- **Personal Protective Equipment**
- **Respiratory Protection**
- **Housekeeping**
- **Machine Safeguarding**
- **Safety Audits**
- **Record Keeping**
- **Emergency Response Plans**

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Planning and Implementation

- **Hazards identification and assessment** is made the basis of OSH management
- Preventive, protective measures must be implemented
- Have an **emergency preparedness and response arrangements**

..Planning and Implementation

- There must be **procedures for purchasing and contracting** to ensure safety and health requirements are incorporated in purchased materials and equipment as well as in contracting activities
- **OSH management activities must be planned and performance targets set**

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Evaluation

- **OSH management programmes** must be **monitored**
- **Investigate** work-related injuries, ill health, diseases and incidents, and their impact of OSH performance

..Evaluation

- Carry out **regular audits**
- Management must review its activities to ensure OSH risks in the workplace are **ALARP**, that the OSH programme is efficient and that its OSH performance targets are met and improved upon

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Performance Measurement and Monitoring

- Why bother with performance monitoring and measurement:
  - Good management practices
  - Under Acts and Regulations : FMA 1967, FMA (Noise Exposure) Regulation 1989, Osh (Use and Standard of Exposure of Chemical Hazardous to Health) Regulation 2000 and OSH (CIMAH) Regulation 1996.
- **OSH performance and monitoring must be planned and performance targets set**

Performance Measurement and Monitoring

- Information from performance can used for:
  - Developing strategies in preventing accidents.
  - Provide broad picture of events, can be taken to improve OSH
  - Management review.
- Programme:
  - Compliance with OSH
  - Numbe rof accidents, ill health, near misses
  - Environment standard (noise, fumes, etc)

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Performance Measurement and Monitoring

- Proactive measures:
  - These measure activities or performance that could prevent an incident or accident from happening in the future.
  - Training
  - Recognise hazards
- Inactive measures:
  - Measures past events. Useful for measuring deficiencies and deviations.
  - Corrective action can be taken

Reactive Performance Measures

- Number of accidents
  - This is stated as Lost Time injury (LTI) for workers away from work for 1 day or more. A better measure is to include near-misses.
  - No. of accidents + No. of 9incidents or near-misses)
- Incident Rate:
  - Measures past events. Useful for measuring deficiencies and deviations.
  - Corrective action can be taken

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FORMULAS for CALCULATING RATES

- OSHA RECORDABLE INCIDENT RATE - a mathematical calculation that describes the number of employees per 100 full-time employees that have been involved in a recordable injury or illness.
- TOTAL INCIDENT RATE - a mathematical calculation that describes the number of recordable incident per 100 full-time employees in any given time frame.
- LOST TIME CASE RATE - a mathematical calculation that describes the number of lost time cases per 100 full-time employees in any given time frame.

FORMULAS for CALCULATING RATES

- LOST WORKDAY RATE – a mathematical calculation that describes the number of lost workdays per 100 full-time employees in any given time frame.
- SEVERITY RATE – a mathematical calculation that describes the number of lost days experienced as compared to the number of incidents experienced.
- DART RATE - a mathematical calculation that describes the number of recordable incidents per 100 full time employees that resulted in lost or restricted days or job transfer due to work related injuries or illnesses.

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FORMULAS for CALCULATING RATES

INCIDENT RATE(S) USES

- Incident rates, of various types, are used throughout industry. Rates are indications only of past performance (lagging indicators) and are not indications of what will happen in the future performance of the company (leading indicators).
- Incident rates have been standardized, so that OSHA and other regulatory agencies can compare statistically significant data, and determine where industries may need additional program assistance.

FORMULAS for CALCULATING RATES

INCIDENT RATE(S) USES

- OSHA uses the recordable incident rates to determine where different classifications of companies (manufacturing, food processing, textiles, machine shops, etc.) compare to each other with regard to past safety performance.
- Although OSHA could potentially use this data for enforcement action, unless incident rates are consistently high for a small company over a number of years, they will not normally target particular industries or companies for enforcement action.

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FORMULAS for CALCULATING RATES

INCIDENT RATE(S) USES

- OSHA has established specific mathematic calculations that enable any company to report their recordable incident rates, lost time rates, and severity rates, so that they are comparable across any industry or group. The standard base rate for the calculations is based on a rate of 200,000 labor hours.
- This number (200,000) equates to 100 employees, who work 40 hours per week, and who work 50 weeks per year. Using this standardized base rate, any company can calculate their rate(s) and get a percentage per 100 employees.

CALCULATIONS

1. OSHA Recordable Incident Rate

- The OSHA Recordable Incident Rate (or Incident Rate) is calculated by multiplying the number of recordable cases by 200,000, and then dividing that number by the number of labor hours at the company.

$$IR = \frac{\text{Number of OSHA Recordable Cases} \times 200{,}000}{\text{Number of Employee labor hours worked}}$$

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CALCULATIONS

1. OSHA Recordable Incident Rate

- Rate Calculation Example - a company has 17 full-time employees and 3 part-time employees that each work 20 hours per week. This equates to 28,400 labor hours each year. If the company experienced 2 recordable injuries, then the formula works like this:

$$IR = \frac{2 \times 200{,}000}{28{,}400}, \quad IR = \frac{400{,}000}{28{,}400}, \quad IR = 14.08$$

FORMULAS for CALCULATING RATES

1. OSHA Recordable Incident Rate

- What is now known is that for every 100 employees, 14.08 employees have been involved in a recordable injury or illness. Please note that smaller companies that experience recordable incidents will most likely have high incident rates, or the incident rates will fluctuate significantly from year to year.

- This is because of the small number of employees (and hence the lower number of labor hours worked) at the company. Calculations are more meaningful at larger companies that have a higher labor hour count.

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FORMULAS for CALCULATING RATES

2. Lost Time Case Rate (LTC)

- The Lost Time Case Rate is a similar calculation, only it uses the number of cases that contained lost work days. The calculation is made by multiplying the number of incidents that were lost time cases by 200,000 and then dividing that by the employee labor hours at the company.

- LTC Rate = $\dfrac{\text{Number of Lost Time Cases x 200,000}}{\text{Number of Employee Labor Hours Worked}}$

FORMULAS for CALCULATING RATES

2. Lost Time Case Rate (LTC)

- Rate Calculation Example - assume that one of two recordable cases had lost work days associated with the incident. The calculations would look like this:

$$\text{LTC Rate} = \frac{1 \times 200{,}000}{28{,}400} \qquad \text{LTC Rate} = \frac{200{,}000}{28{,}400} \qquad \text{LTC Rate} = 7.04$$

- What is now known is that for every 100 employees, 7.04 employees have suffered lost time because of a work related injury or illness.

FORMULAS for CALCULATING RATES

3. DART Rate (Days Away/Restricted or Job Transfer Rate)

- The DART rate is relatively new to industry. This rate is calculated by adding up the number of incidents that had one or more Lost Days, one or more Restricted Days or that resulted in an employee transferring to a different job within the company, and multiplying that number by 200,000, then dividing that number by the number of employee labor hours at the company.

$$\text{DART Rate} = \frac{\text{Total Number of DART incidents} \times 200{,}000}{\text{Number of Employee Labor Hours Worked}}$$

FORMULAS for CALCULATING RATES

3. DART Rate (Days Away/Restricted or Job Transfer Rate)

- Rate Calculation Example - assume that one of two recordable incidents resulted in limited or restricted work activity that necessitated a job transfer to a different position in the company. The first was a broken leg that had only lost time associated with it (no restriction or transfer). The calculations would look like this:

$$\text{DART Rate} = \frac{2 \times 200{,}000}{28{,}400} \qquad \text{DART Rate} = \frac{400{,}000}{28{,}400}$$

- DART Rate = 14.08

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FORMULAS for CALCULATING RATES

3. DART Rate (Days Away/Restricted or Job Transfer Rate)

- What is now known is that for every 100 employees, 14.08 incidents resulted in lost or restricted days or job transfer due to work related injuries or illnesses.

FORMULAS for CALCULATING RATES

4. Severity Rate (SR)

- The severity rate is a calculation that gives a company an average of the number of lost days per recordable incident. Please note, that very few companies use the severity rate as a calculation, as it only provides an average.
- The calculation is made by dividing the total number of lost workdays by the total number of recordable incidents.

$$\text{SR} = \frac{\text{Total number lost workdays}}{\text{Total number of recordable incidents}}$$

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FORMULAS for CALCULATING RATES

4. Severity Rate (SR)

- Rate Calculation Example – assume there were 5 lost workdays and two recordable incidents. The severity rate calculation would look like this:

$$\text{SR} = \frac{5}{2} \quad \text{SR} = 2.5$$

- What is now known is that for every recordable incident at the company, an average of 2.5 days will be lost due to those work related injuries and illnesses.

THANK YOU