



OPENCOURSEWARE

CONSTRUCTION SAFETY: 8


SAFETY MANAGEMENT SYSTEM

SBC 3363

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Contents

1. Organisation structure and roles
2. Implementation of safety management, audit and review
3. Monitoring
4. OSH policy - important & development
5. Safety training programme
6. Performance measurement and monitoring

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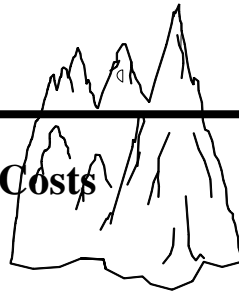
1. **Organisation structure and roles**
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Direct Vs. Indirect Incident Cost Iceberg

It is estimated that for every \$1 in direct incident costs, there are anywhere from \$4 to \$11 in indirect or "hidden" costs.

**Direct
Costs**

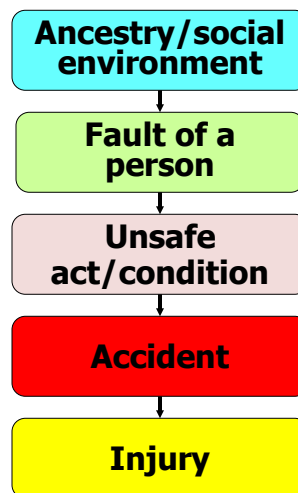
Indirect Costs

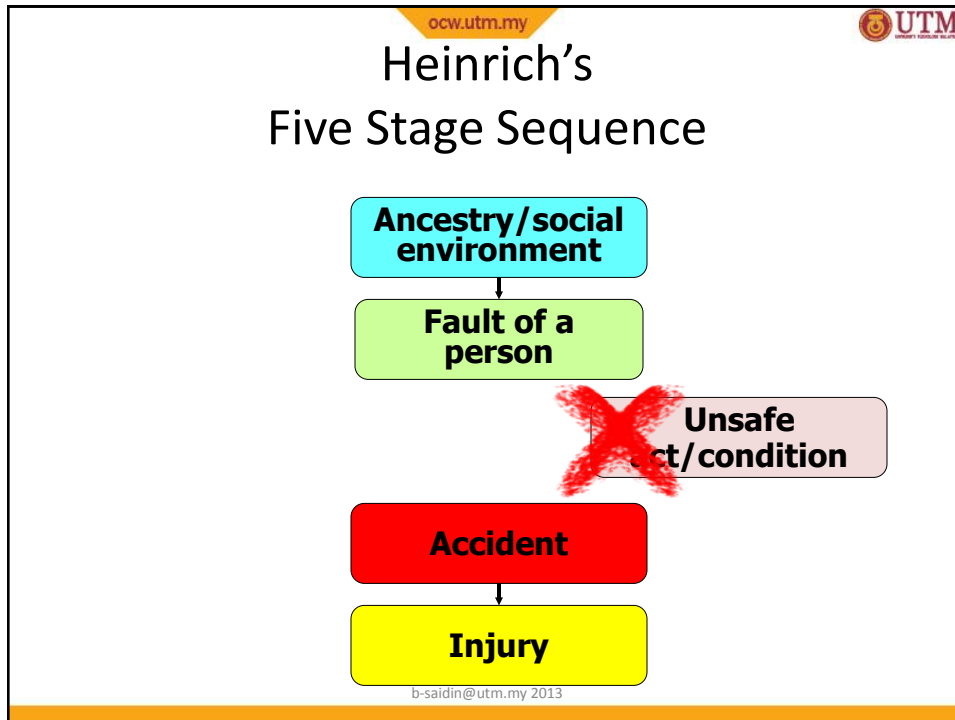



Emergence Of Safety Management

- Role of Herbert W. Heinrich (1930's),
 - Developed **Domino Theory** and **promoted control of workers behaviour**.
- Problem:
 - Focused on **worker behaviour** and not management
 - Caused people to think that **safety is about policing worker**

Early Theory Of Accidents (Heinrich (1930's))



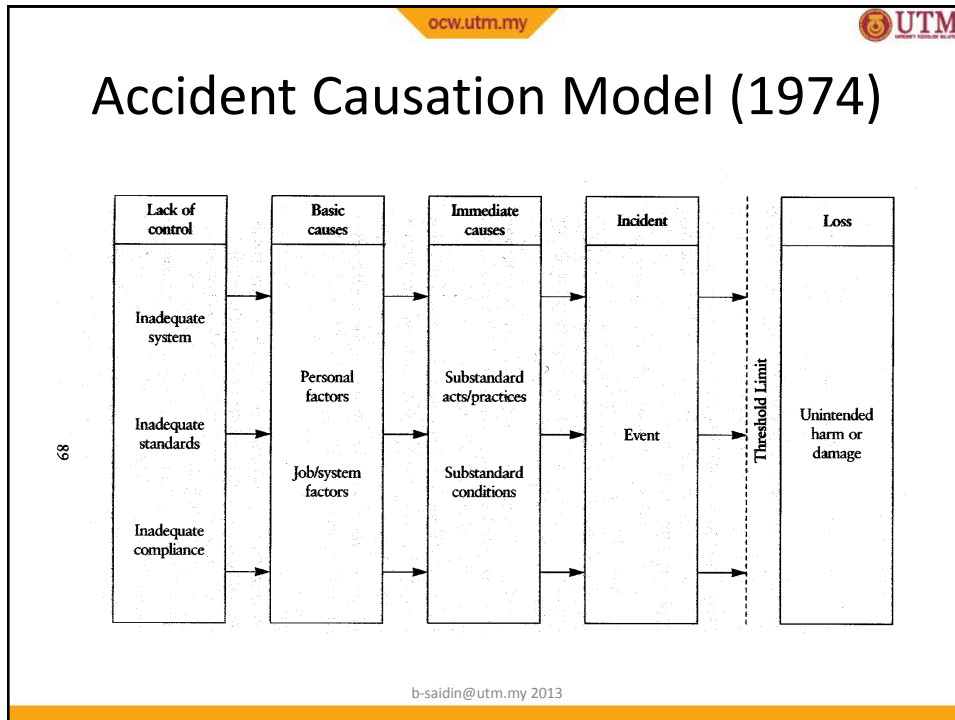


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Emergence Of Safety Management

- Frank Bird (1970) developed Loss Control Theory.
- Suggested that underlying cause of accidents are lack of management controls and poor management decisions.
- Problem:
 - Not so popular: blames management (responsibility and control).

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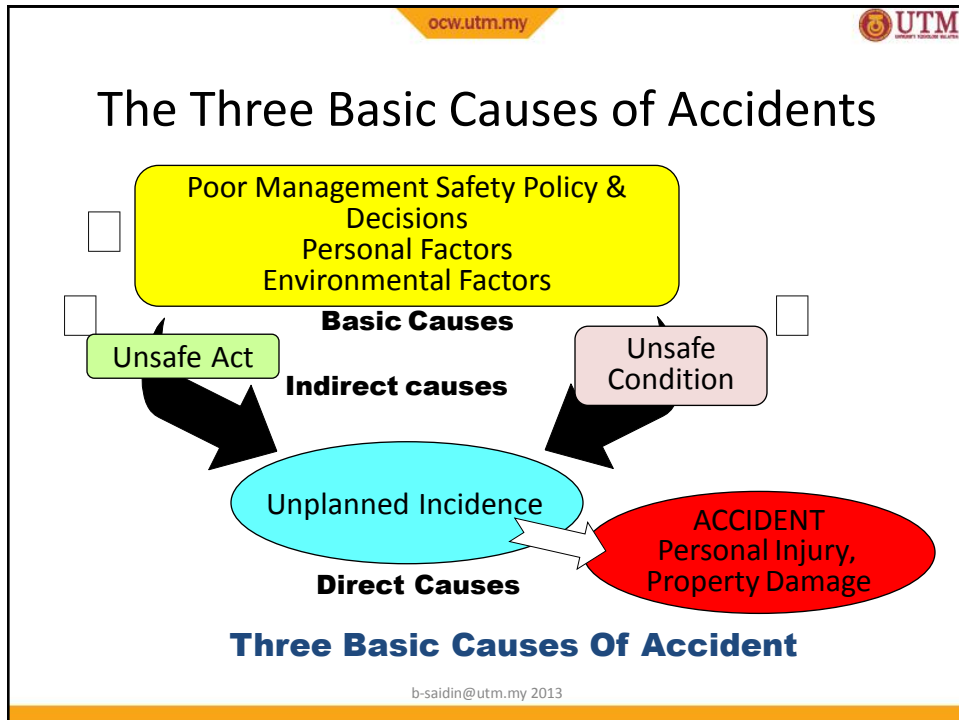
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Emergence Of Safety Management

- In 1980's, **Behavioural Based Safety (BBS)** was introduced;
- Based on Heinrich's findings.
- Work by recognizing safe work habits and offering rewards and punishment.
- Problem:
 - Focuses on **workers** and not on hazard or management
 - **Reward and punishment system have flaws**

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Lack of Management Control

Management responsible for:

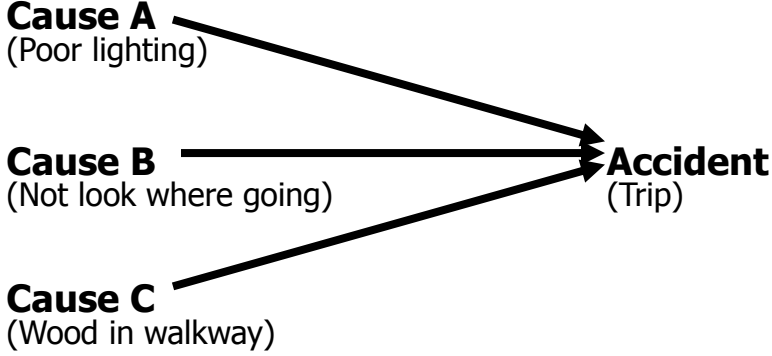
- Selection of workers
- Machinery and equipment
- System of work
- Information and training
- Supervision, etc

The accident prone worker is a false approach. It is like blaming the victim instead of the perpetrator.

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Multiple Cause Of Accidents



Cause A
(Poor lighting)

Cause B
(Not look where going)

Cause C
(Wood in walkway)

Accident
(Trip)

Compatible with Loss Causation Theory.

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Emergence Of Safety Management System

- Current development of Occupational Safety And Health management system was driven by **two parallel forces**:
 - A. **Self-regulatory legislation** in the United Kingdom (1974),
 - B. **Quality management movement**

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A Self-Regulation Legislation

- **Lord Robens**, Chairman of a Royal Safety Commission Report noted that:
 - there was too many OSH legislation,
 - was fragmented,
 - limited in coverage (specific hazards & workplace),
 - out of date and difficult to update,
 - inflexible (prescriptive),
 - people thought that safety was what government inspectors enforced.

A Self-Regulation Legislation

- Lord Robens recommended
 - **Self regulation**
- Report resulted in the Health and Safety of Workers At Work Act in the UK in 1974

A Self-Regulation Legislation

- Similar legislation was enacted in Australia in 1984
- Enacted in Malaysia in 1994 after the 1992 **Bright Sparkler accident** in Sungai Buloh

A Self-Regulation Legislation

Legislation follow major accidents and reinforce need for management system

ACCIDENT	REGULATION/PROGRAMME
Flixborough (1974)	CIMAH regulations 1996
Bhopal (1984)	“Responsible Care” / Process safety
Piper Alpha (1988)	Risk Assessment / Management system

Quality Management Approach to Occupational Safety and Health Management

- There are similar issues in safety management as in quality management
- Example:
 - Productivity
 - Worker involvement
 - Proactive approach
 - Scientific approach
 - Customer and human rights

Quality Management Approach to Occupational Safety and Health Management

- Management system standards:
 - ISO 9000 QMS was proven successful and ISO 14000 EMS was introduced in 1996
 - UK published BS 8800 and Australia AS8401 OSH management systems in 1996

Quality Management Approach to Occupational Safety and Health Management

- International and auditable OHSAS 18001 OSH Management System published in 1999
- ILO approved an OSH management system for governments to adopt during 2000

Safety Management System

- Key driver for Safety system is the legislative requirements of Malaysia which are taken into account before work commences for each designated work activity and work area with identified permitting system and pre-start inspections.

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**BAHAGIAN IV: KEWAJIPAN AM MAJIKAN
DAN ORANG YANG BEKERJA SENDIRI
(GENERAL DUTIES OF EMPLOYERS AND
SELF-EMPLOYED PERSONS)**

Seksyen 15(2) Setakat yang Praktik

- Mengadakan maklumat, arahan, latihan dan penyeliaan;
- Mengada dan menyenggara tempat kerja dan laluan keluar / masuk ke / dari sebarang tempat kerja;
- Mengada dan menyenggara persekitaran kerja dan dengan kemudahan kebajikan yang mencukupi;

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**BAHAGIAN IV: KEWAJIPAN AM MAJIKAN
DAN ORANG YANG BEKERJA SENDIRI
(GENERAL DUTIES OF EMPLOYERS AND
SELF-EMPLOYED PERSONS)**

Kewajipan Lain

- Merangka kenyataan bertulis tentang dasar Keselamatan dan kesihatan; (Seksyen 16)
- Menjalankan pengusahaan tanpa menjejaskan keselamatan orang lain yang bukan pekerjanya; [Seksyen 17(1)]
- Mengadakan maklumat kepada orang lain berkenaan pengusahaannya; [Seksyen 17(2)]

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What is Risk?

- Definitions
 - Hazard is anything that can cause harm
 - The danger is the exposure to harm
 - The risk is the likelihood (chance / probability) of harm being done
- Risk is estimated by calculation
$$\text{Risk} = \text{Severity (consequence)} \times \text{Likelihood of harm}$$

Definitions

- **Hazard**: A **source or a situation with a potential for harm** in terms of human injury or ill health, damage to property, damage to the environment or a combination of these.
- **Danger**: **Relative exposure to hazard**

Definitions

- **Risk:** A **combination of the likelihood** of an occurrence of a hazardous event with specified period or in specified circumstances **and the severity** of injury or damage to the health of people, property, environment or any combination of these caused by the event.

CAUSES OF ACCIDENT

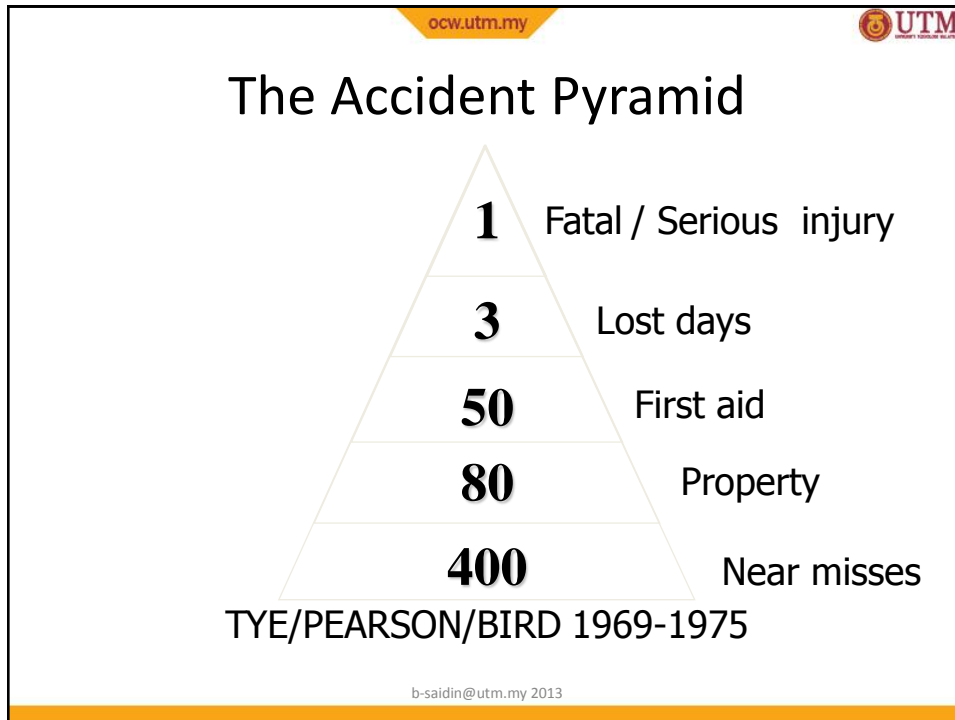
1. BASIC CAUSE


- Unsafe Act
- Unsafe Conditions

2. IMMEDIATE CAUSE

- Job Factor
- Personal/Human Factor

3. ROOT CAUSE

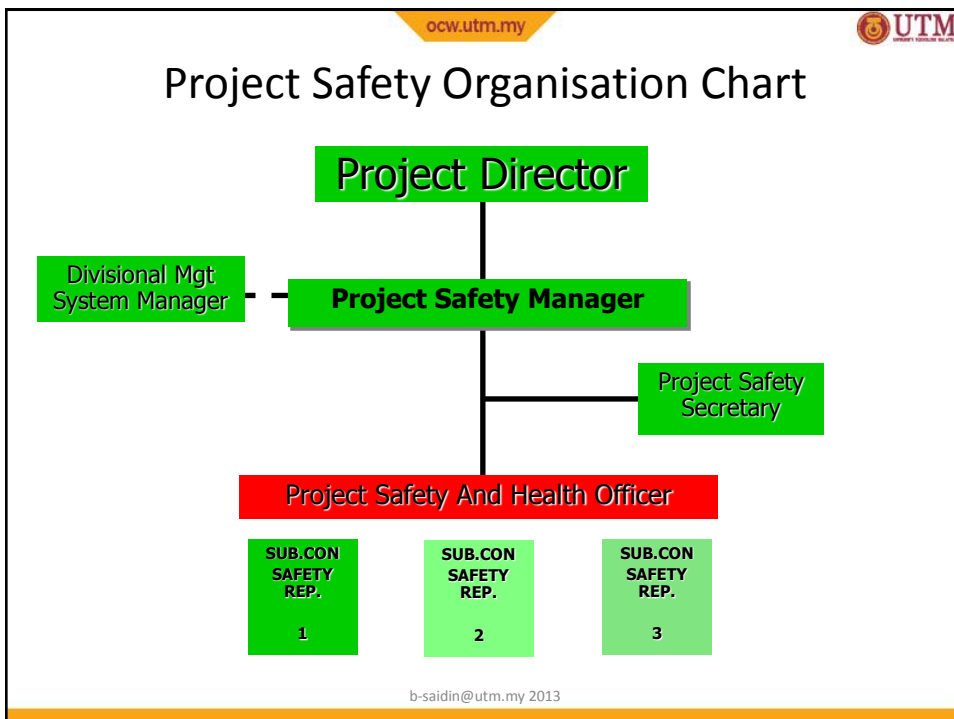
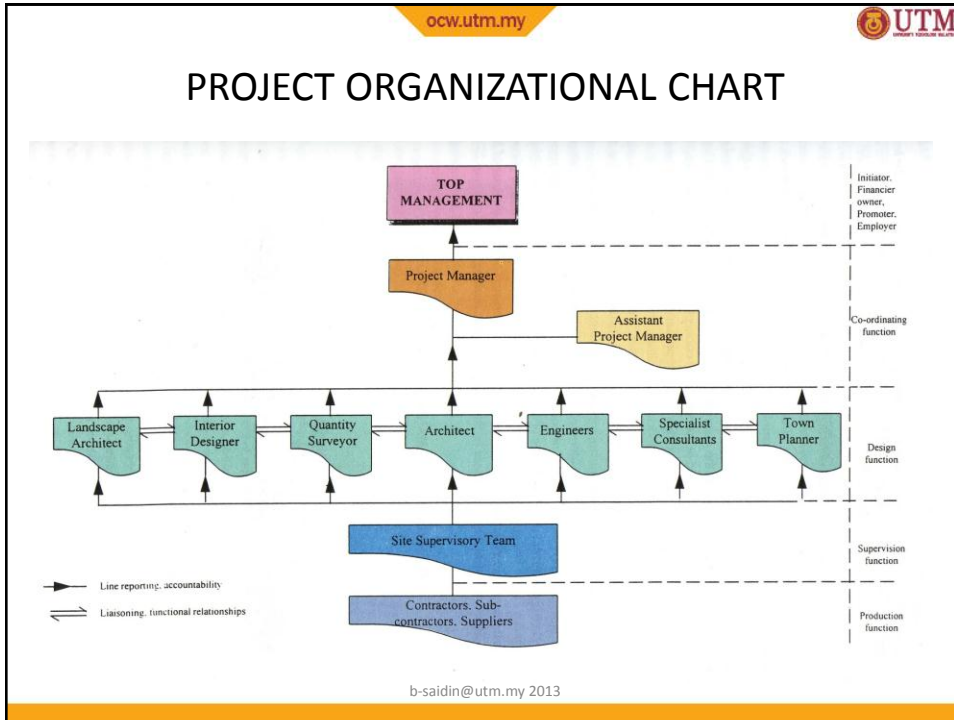


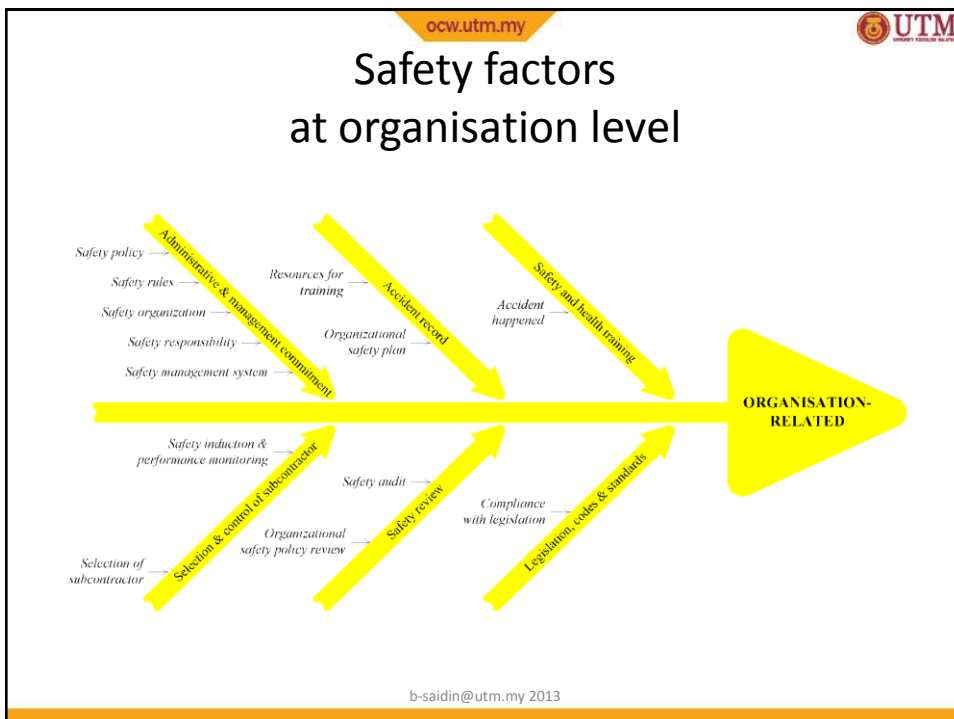
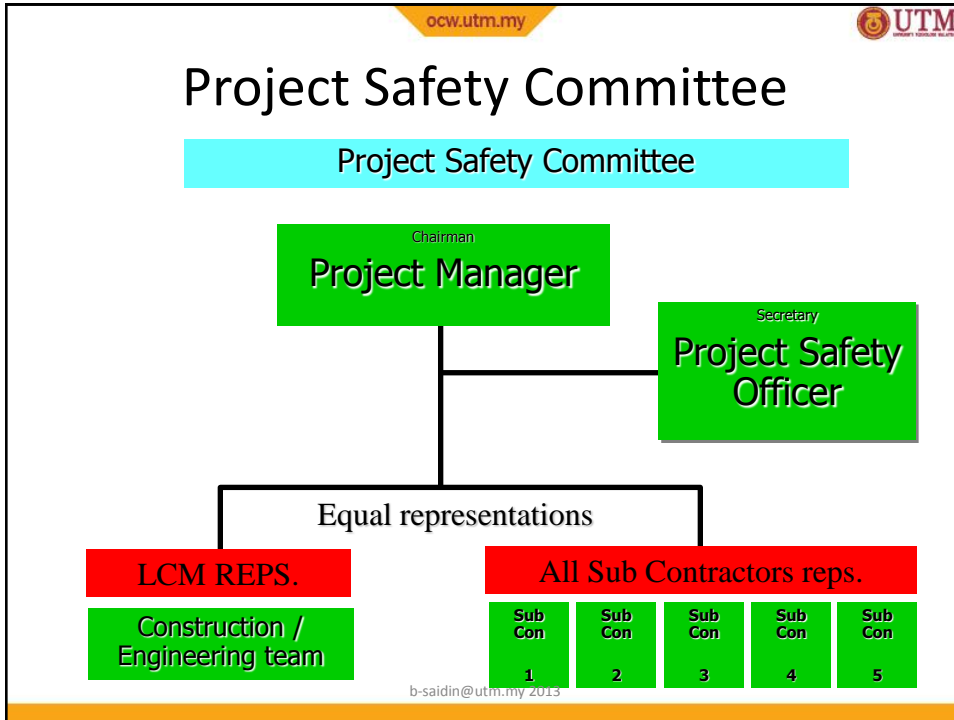
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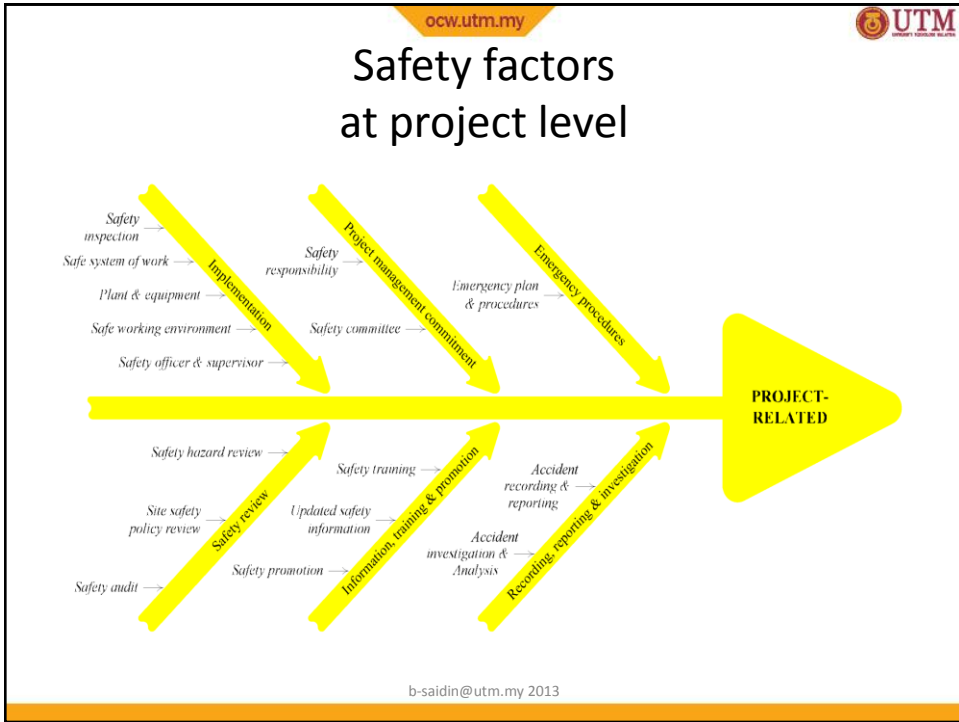
Accepted Accident Theory

- Multiple Causation Theory
 - A single unsafe act or condition may or may not cause an accident but both are caused by lack of management control.
- Bird Loss Causation Model
 - In line with Schewhart(1930's) theory of quality control.
- Heinrich's theory is weak and negative
 - Blaming victim and lack system thinking, continual improvements, upstream control and worker participation.

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THANK YOU

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