

### What is hazard?

#### 什么是危害？

Hazard is defined as any potential source of harm to people, environment, and assets.

危险：对人、环境和资产造成伤害的任何潜在来源。

It can be referred to an activity or state.

是一种危险活动或状态

In our workplace, hazards often lead to either Process Safety or Occupational (Personal) Safety incidents.

在工作场所，危害通常会导致过程安全或职业（个人）安全事故。



Unsafe state 不安全状态    Unsafe activity 不安全行为    Near miss 未遂事件    Accident 事故    Unsafe state 不安全状态    Unsafe activity 不安全行为    Near miss 未遂事件    Accident 事故

### Process Safety VS Occupational Safety

#### 过程安全和个人安全区别

##### Application 运用

##### Process Safety 过程安全

Mainly to process industries  
主要针对化工行业

- Petrochemical 化学
- Energy 能源

##### Occupational Safety 个人安全

Mainly to any industries  
主要针对任何行业

- Mining 采矿
- Food processing 食品加工

##### Process Safety 过程安全

Must start here  
必须从这里开始

Hazard controls are responsible by senior management and engineers.  
危害控制由高管和工程师负责。

#### Hazard Control 危害控制



##### Occupational Safety 个人安全

Should start here  
应从这里开始  
  
But frequently should start here  
但多数都在这里开始

Hazard controls are responsible by frontline workers and supervisors.  
危害控制由一线员工和主管负责。

#### Safety Culture 安全文化

##### Process Safety 过程安全

Must nurture with:  
主要参与人员

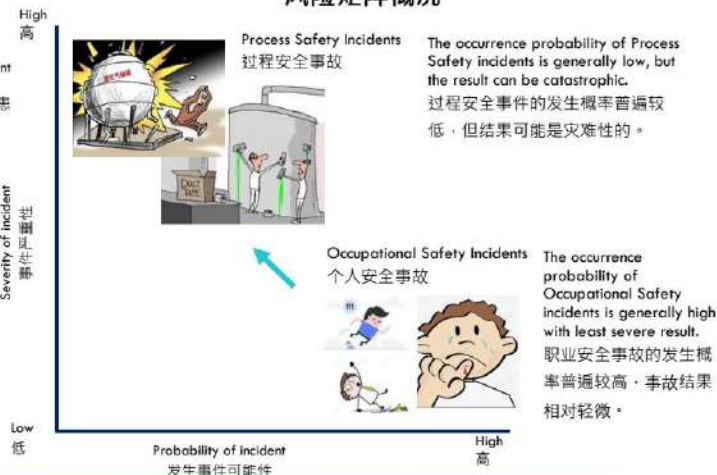
- Senior Executives 高层管理
- Senior Management 中层管理
- Other key decision-makers 其他关键决策者

##### Occupational Safety 个人安全

Must nurture with:  
主要参与人员

- Manager and Supervisor 一般管理人员
- Front line supervisor 基层管理人员
- Workers 员工

#### Risk Matrix Profile 风险矩阵概况



#### Some Associated Terms 相关术语

##### Process Safety 过程安全

- HAZOP 危险与可操作性分析
- Process Hazard Analysis (PHA) 工艺危害分析
- Management of Change (MOC) 变更管理
- LOPA 保护层分析
- As Low As Reasonable Practical (ALARP) 可接受原则
- Major Accident Hazard (MAH) 重大事故危害
- Asset Integrity 设备完整性

##### Occupational Safety 个人安全

- Job Hazard Analysis (JHA) 工作危害分析
- Slip, trip, and fall 滑倒、绊倒和跌倒
- Personal Protective Equipment (PPE) 个人劳动防护用品
- Lost Time Injury (LTI) 损失工时事件
- Near Miss 未遂事件
- Total Recordable Case Frequency (TRCF) 总可记录事故发生率
- Unsafe acts, unsafe conditions 不安全行为、不安全状态

### Process Safety Incidents in 21st century

#### 21 世纪过程安全事故



Warehouse explosion in Beirut, Lebanon on 4 Aug 2020 due to improper storage of Ammonium Nitrate.

由于硝酸铵储存不当，黎巴嫩贝鲁特的仓库于 2020 年 8 月 4 日发生爆炸。

Chemical tanker explosion in Incheon, Korea on 21 July 2020.

2020 年 7 月 21 日，韩国仁川的化学品船爆炸。

Chemical plant leak in Visakhapatnam, India on 7 May 2020 due to personnel negligence and lack of monitoring system.

由于人员疏忽和缺乏监控系统，2020 年 5 月 7 日印度维沙卡帕特南化工厂泄漏。

Oil refinery explosion in West Java, Indonesia on 29 Mar 2021.

2021 年 3 月 29 日，印度尼西亚西爪哇的炼油厂爆炸。

