CHEMICAL ACCIDENTS PREVENTION, PREPAREDNESS AND RESPONSE

RESENTED
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December , 2023

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INTRODUCTION

Growth in the industrial sector has been a valuable element of economic development strategies in many developing countries worldwide.

However, many of the chemicals used in industrial operations present a risk of chemical accidents that can cause extensive harm to:

- people,
- the environment, and
- local or even national economies.

Chemical Accidents can also lead to huge loss of property.

- source of energy, water, treatment plants or communication.

INTRODUCTION …

chemical accident: any unplanned event involving hazardous substance(s) (chemicals) – such as a spill, release, fire, or explosion that causes, or is liable to cause, harm to health, the environment, or property.

- Accidents are the result of the failure of people, equipment, materials, or environment to react as expected

- All accidents have consequences or outcomes

- This excludes any long-term events (such as chronic pollution).

Occurrence of Chemical Accidents

Almost every country experiences chemical accidents each year.

These occur at small facilities such as pesticide warehouses and large installations such as:

- refineries,
- at public facilities eg water treatment,

  plants using chlorine or

  private manufacturing facilities for the chemical,

Most accidents are not well-publicised and may not be known beyond their borders.

Occurrence……..

Chemical accidents , instances where they occur

- a fire in a pesticide warehouse,
- leaks from a container being loaded off a ship,
- Track or fuel tanker,
- an explosion at a refinery,
- a spill from a vandalized pipeline,
- production industry,
- a break in mine tailings storage,
- a vapour cloud resulting from a process problem during maintenance or production processes,
- a dust explosion in a grain silo, or
- rupture of a gas or oil pipeline.

Consequences of Chemical Accidents

Accidents often have serious, even devastating consequences:

- Injuries or fatalities among workers or the public in the vicinity
- Exposures to chemicals or fires resulting in immediate injury or long-term health impacts,
- Environmental pollution: of rivers and underground water, where sources of water for drinking, industries and others relying on the source water including fishing and agriculture are impacted.

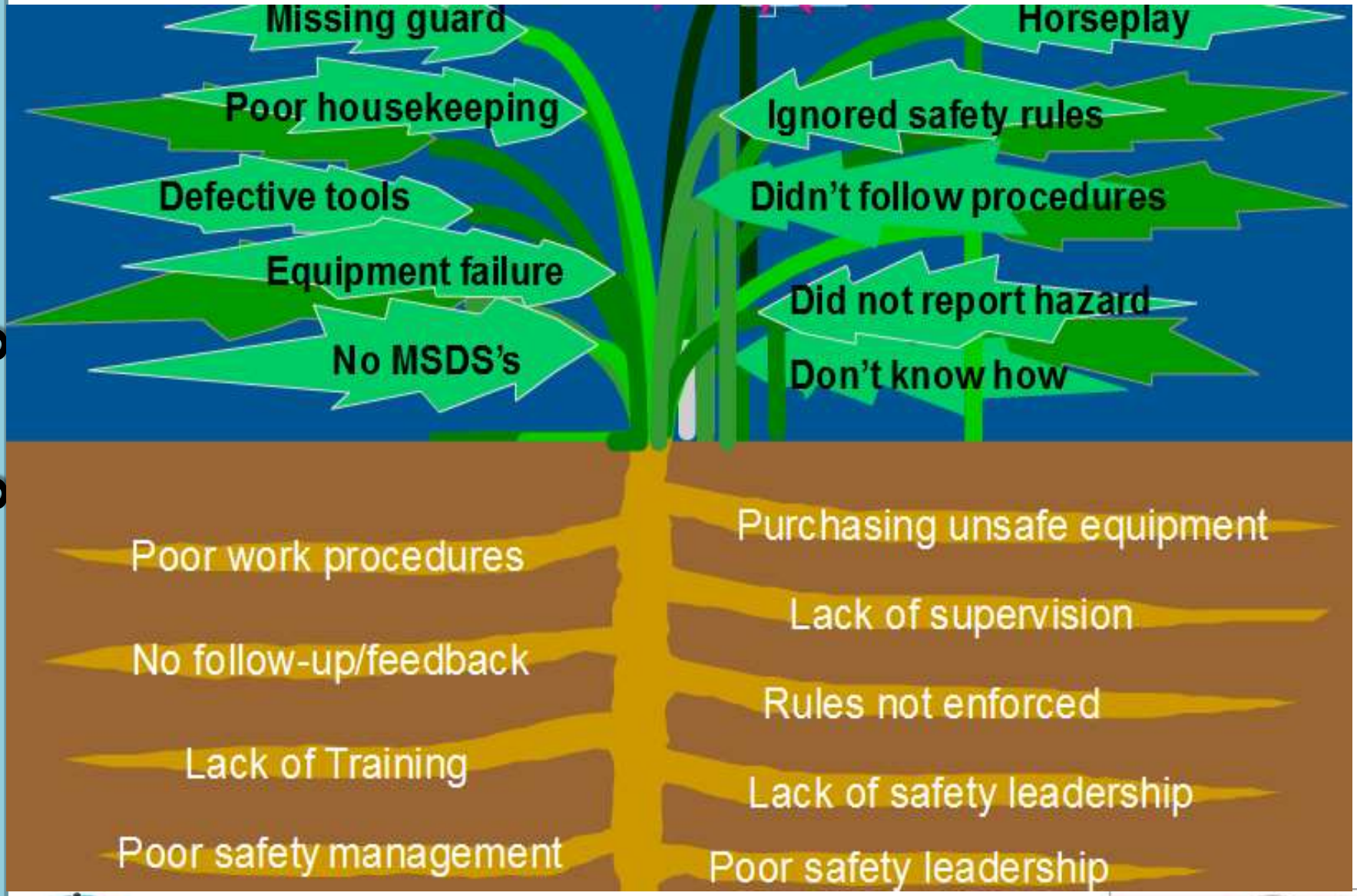
Consequences ...

- facilities and nearby developments suffer significant damage sometimes resulting in closure or temporary shutting down operations.
- other adverse effects to health, the environment, and property.
- They can also result in major economic losses for the enterprise involved and for the entire community.

Despite of good safety record, a stakeholder in chemicals management have, chemical accidents will happen.

- Almost all the chemical accidents that occur need not have occurred.
- Each chemical accident has its own lessons for the key players

Causes of accidents – roots and branches



Root Cause Analysis for Chemical Accidents

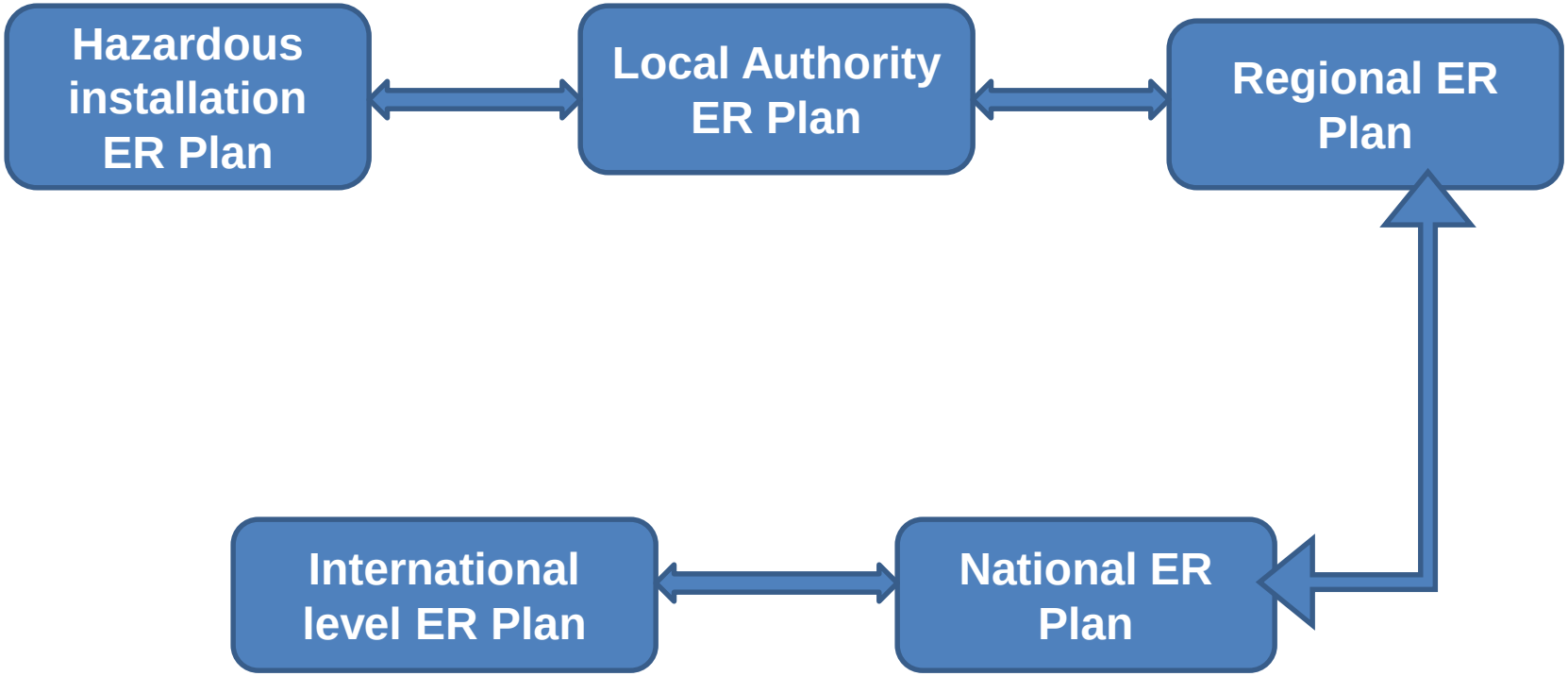
- Root cause analysis is a systems technique that focuses on finding the real cause of a problem and dealing with that, rather than just dealing with its symptoms

- A root cause is the cause that, if corrected, would prevent recurrence of this and similar occurrences

- A root cause of consequence is any basic underlying cause that was not in turn caused by more important underlying causes

EMERGENCY RESPONSE PLANNING

Levels of Emergency Response Planning



TYPES OF PLANS AND ER

The types of plan might be on:

- Oil spill contingency plans
- Gas processing and distribution plans
- Community emergency plans
- Disaster management plans
- Environmental Management plans

Emergency response plans

- Pre response – Prevention and Preparedness
- Response – Activation of the plan
- Post response – lessons leant and improvement made

PLANNING PROCESSES

- Planning – Mutual/joint responsibilities
  - Understanding what to plan for
  - ID Role players
  - Communicate
  - Compile plan
  - Test plan - evaluation
  - Apply corrective action
  - Re- evaluate

PLANNING PROCESSES ...

- Develop clearly defined operational procedures
  - ✓ Pre- Response
  - ✓ Response and
  - ✓ Post Response plans

- Consider possible scenarios
- Integrate different response resources
- Incorporate lessons learned
- Include subject matter experts

- Emergency control centre
  - ✓ Roles and responsibilities
  - ✓ Communication processes

Content of the plan

- The following should be included but not limited too:
  - Introduction
    - Key telephone numbers
    - Distribution lists
  - Information
    - Storage areas
    - Marine charts
    - Harbour details
    - Gas plant s charts
    - LPG retails maps in your area
  - Process and Materials
    - Hazard / Risk assessments
    - Details of emergency equipment
    - Drainage systems

Content …

- Onsite/off site ER organizations
  - Mutual aid agreements
  - GO and NGO's
- Integration with neighboring facilities
- ER plans
  - Spill plans, Fire plans or Security
  - Medical
  - Industrial considerations
  - Community ER plans
  - Training program
  - Alarms – Evacuation vs. sheltering
  - Waste removal
  - Recovery plans
  - Management and control

Multi Stakeholder Engagement

- Alignment with other stakeholders:
  - Environmental Organizations
  - Industry
  - Local, Provincial and National Authorities
  - Disaster management
  - Fire
  - Police
  - Defense
  - Private spill response
  - Marine Authorities, etc
- client.

Conclusion

- Accidents do happen without any formal prior preparation.
- When they happen might lead to minor or major loss in terms of life and property
- The nature of loss depend on the source of the materials caused,
- Natural gas and LPG used in Tanzania is likely to cause massive loss in case an accidents happen.
- Having in place chemical accidents, prevention, preparedness and response in the key factor for protection ealth and the environment.