Internal Transport of Chemicals

IAMC Toolkit

Innovative Approaches for the Sound Management of Chemicals and Chemical Waste

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Introduction

Correct transport and storage is often unknown or neglected in the chemical industry. Most accidents and spills derive from an incorrect transport and storage of substances.

This presentation introduces reader to the good practices of chemical transportation, in-company traffic routes and temporary storage establishment.

Hazard Management

1. Risk Identification and safety	2. Transport and storage	3. Fire and explosion protection	4. Emergency response
1.1 Chemical classification and labelling	**2.1 Internal transport of chemicals**	3.1 Fire protection	4.1 Emergency response plan
1.2 Risk assessment	2.2 Internal pedestrian routes	3.2 Fire protection in welding and cutting operations	
1.3 Safety rules	2.3 Storage	3.3 Explosion protection	
1.4 Personal protective equipment		3.4 Container cleaning	
1.5 Skin protection			
1.6 Emergency escape routes			
1.7 Solvents, acids, bases handling			
1.8 Safety in gas tank handling			

Checklists

Contents

Context

Context

- Dangers:
  - During internal transport, containers can be damaged by falling or being pierced.
  - Highly flammable liquids can be released and lead to health issues, fires and explosions.

Source: Suva

Recommendations

Containers and Handling Vehicles

- The activation of ignition sources by the equipment used (e.g. forklift trucks) or by the work environment has to be prevented.

Containers should be sealed, adapted to mechanical constraints and have substantial resistance to chemical substances.

Handling vehicles used to transport highly flammable liquids should be explosion-proof.

Explosion-proof vehicles need not be used when:

- The transport occurs outdoors
- Manual devices or pallet trucks are used
- The volume of the containers is lower than 30 litres and the total quantity per unit transport is below 100 litres

Source: Suva

Lifts

- Highly flammable liquids should be transported in explosion-proof lifts.
- Explosion-proof lifts do not have to be used if:
  - Small quantities are transported (less than 30 litres)
  - Larger quantities are rarely transported (more than 30 litres, no more than once a week) and if they are manually loaded and unloaded
  - The lift is equipped with a gas detector in the cabin and the cage is sufficiently ventilated
- In case of an alarm, the lift should be brought to a safe position and then the power supply should be turned off.

Traffic Routes and Temporary Storage

- All **traffic routes** should be classified as zones exposed to an explosion risk unless:
  - They are located outdoors
  - Measures have been taken and documented to remove any source of ignition along the traffic routes

- **Temporary storage zones** should be classified as zones exposed to an explosion risk unless the highly flammable substances are stored for no longer than eight hours.

Source: Suva

Emergency Plan

- An **emergency plan** should be drawn up including:
  - Training and documented instructions to ensure that workers adopt the right behaviour
  - Written guidelines on possible scenarios (e.g. alarm, elimination of other ignition sources, personal protective equipment, relief measures)
  - Preparation of auxiliary means (e.g. absorbents) to manage an emergency situation

Internal Transport of Chemicals – Exercise

I need to transport four fifty-litre containers of methanol  from the delivery truck to the storage premises. How should I proceed?

Key messages

- Dangers need to be identified in the whole route and in the actions occurring while transporting substances.
- Recommendations need to be based on substances specific proprieties.
- Emergency plan should be established

Sources

Sources

- CSD Engineers, Switzerland/ISSPPRO, Germany, 2015
- Suva: Transport de liquides facilement inflammables au sein de l'entreprise, Switzerland, 2011

Images

- Suva: Transport de liquides facilement inflammables au sein de l'entreprise, Switzerland, 2011

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