Operations in Oil Storage Depots & Chemical Terminals

5 days **DEPOTS-EN-P**

Overview

LEVEL

Skilled

PURPOSE

From the properties of the petroleum products, the storage equipment and associated hazards, this training course aims to meet the needs for safe operations in oil storage depots, chemical and petrochemical terminals.

LEARNING OBJECTIVES

Upon completion of the course, the participants will be able to:

list the main properties of petroleum products,

recognize the elements of atmospheric storage tanks, loading and unloading facilities,

identify the hazards and risks of the operations of storage, loading and unloading,

select the appropriate means to mitigate these risks.

WAYS AND MEANS

Case studies based on industrial situations.

LEARNING ASSESSMENT

Final quiz.

PREREQUISITES

In order to be able to follow this training, trainees are asked to fulfill at least one of the criteria below:

either proven operating experience in an oil depot of at least 1 year,

either evolving towards an operating position in an oil depot.

Agenda

PROPERTIES OF PETROLEUM PRODUCTS MANAGED IN OIL DEPOTS — 0.5 d

Detailed breakdown of petroleum products.
Properties related to their safe storage and handling.
Product specifications and blending activities.

STORAGE OF LIQUID PETROLEUM PRODUCTS & CHEMICALS — 1 d

Various types of atmospheric storage tanks (fixed roof, floating roof, floating screen) and operating facilities.
Heating and mixing systems.
Safety equipment (level switches…), firefighting facilities (sprinklers, foam, extinguishing gas…).
Fail safe equipment. Safe operation.
Measurement equipment: gauging well, level, temperature, sampling.

MEASUREMENT OF QUANTITIES: RECEIVED, STORED, DELIVERED — 0.75 d

Static measurement: level, temperature, density, volume.
Dynamic measurement: working conditions, sensors (flowmeter, density meter, viscosity meter, pressure meter, calculator) and their protection.

Metrology aspect: calibration methods.
Operating product losses: evaporation, overflow, leaks…
Origin and consequences of errors of measurement.
Mass balance.
Case study: unloading kerosene from a ship to a fixed roof tank.

LOADING & UNLOADING OPERATIONS

1.75 d

Equipment in connection with loading and unloading facilities. Corresponding safe operating conditions.
Marine bulk loading/unloading:
Loading station layout: various types of arms and adaptation to operating conditions, balancing, manual and hydraulic control, grounding.
Loading arms and safety accessories: quick coupling, movement detection, breakaway coupling, drainage systems.
Fixed firefighting equipment on board, on shore, safety checklist.
Rail and road bulk loading/unloading:
Safety and operating equipment on tank trucks and rail cars: breathing valves, Gestra type valves, hydraulic valves, and high level switch.
Truck and rail car loading stations: loading arms (top, bottom), quantity measurement and control systems.
Safety equipment: vacuum breaker, dead man valve, overflow protection, bonding.
Procedures.

PRODUCT HAZARDS & OPERATING PREVENTIVE MEASURES

1 d

Flammability:
Flammable products handling - Presence of ignition sources, oxygen and other oxidizers. Operating guidelines.
Product hazards for the human being:
Risks identification.
Main forms of intoxication. Mechanisms of body poisoning and effects on the metabolism.
Prevention. Personal and collective protection.
Product hazards for the environment:
Potential polluting sources from the storage depots, preventive actions.
Liquid products hazards:
Thermal expansion, storage under vacuum, water hammer. Operating guidelines.