CONCEPT

High Pressure Water Jetting and Tank Cleaning Safety: De-Sludging and Vacuum Trucks

23 – 27 August 2027
Dubai - Five-star CBD venue



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Introduction:

High pressure water jetting and tank cleaning sit among the most injury-prone jobs of any shutdown: a jet that pierces skin, a hose whip, a sludge pocket releasing hydrogen sulphide or a scale deposit that ignites once air reaches it. Refineries, petrochemical plants, power stations and utilities hand much of this work to contractors, so controls depend on sound planning and supervision. This Core Concept course equips the people who plan, supervise and audit jetting, vacuum and de-sludging crews. Each participant produces a Cleaning Job Safety Plan for a case tank and heat exchanger.

Course Objectives:

- Classify high pressure water jetting equipment by pressure class, pump type and tool, and match each to the cleaning task
- Set exclusion zones, operator PPE and team roles for jetting crews working on bundles, pipes and vessels
- Inspect and test pumps, hoses, fittings, lances and dump controls before and during a jetting job
- Control tank cleaning and de-sludging hazards, including gas-freeing, pyrophoric iron sulphide, hydrogen sulphide, benzene and static discharge from vacuum trucks
- Organise first response for fluid injection injuries and other cleaning emergencies
- Prepare a Cleaning Job Safety Plan that links risk assessment, permits, equipment checks and waste routes for a tank and exchanger

Target Audience:

- HSE advisors who review cleaning method statements and audit jetting and vacuum crews in the field
- Cleaning supervisors who direct jetting, hydro-blasting and de-sludging teams on shift
- Contractor leads who plan crews, equipment and procedures for industrial cleaning contracts
- Turnaround and maintenance coordinators who schedule bundle, pipe and tank cleaning within shutdown windows
- Operations representatives who hand over tanks and exchangers for cleaning and accept them back

Course Outline:

Day 1: Industrial Cleaning Hazards and Incident Patterns

- Industrial Cleaning Methods Map: Jetting, Vacuum Recovery, Mechanical and Chemical Routes
- Jetting Incident Patterns: Fluid Injection, Hose Whip, Nozzle Failure and Rebound
- Tank and Vessel Cleaning Incident Review: Toxic Release, Flash Fire and Engulfment
- Contractor Cleaning Interfaces Between Owner, Contractor and Permit Holder
- Current Cleaning Practice Gap Assessment Using a Site Walk Checklist

Day 2: Water Jetting Equipment and Codes of Practice

- Waterjetting Codes of Practice: Pressure Classes, Operator Competence and Minimum Team Size
- High Pressure Pump Units: Plunger Pumps, Unloaders, Relief Devices and Dump Systems
- Hoses, Couplings and Fittings: Pressure Rating, Whip Checks and Retirement Criteria
- Lances, Rigid and Flexible Tools, Rotating Nozzles and Anti-Withdrawal Devices
- Automated and Remote Jetting Systems: Bundle Lancers, Tube Cleaners and Tank Cannons

Day 3: Running Safe Jetting and Tank Cleaning Jobs

- Exclusion Zone Set-Up, Barriers, Signage and Line-of-Fire Positioning
- Operator PPE Selection: Jetting Suits, Metatarsal Boots, Face Protection and Hearing Protection
- Pre-Use Equipment Inspection, Pressure Testing and Dead-Man Control Function Checks
- Heat Exchanger Bundle and Pipe Cleaning Sequence: Shell Side, Tube Side and Process Lines
- Tank De-Sludging Sequence: Isolation, Draining, Gas-Freeing and Sludge Recovery

Day 4: Toxic, Fire and Vacuum Hazards and Emergency Response

- Pyrophoric Iron Sulphide Control: Wetting, Chemical Treatment and Controlled Oxidation
- Hydrogen Sulphide and Benzene Exposure During Sludge Disturbance: Monitoring and Respiratory Protection
- Vacuum Truck Operations: Static Discharge, Bonding and Earthing, Vent Gas and Hose Hazards
- Chemical Cleaning Overview: Acid and Alkaline Circulation, Passivation and Neutralisation
- Fluid Injection Injury First Response, Medical Alert Cards and Emergency Drills

Day 5: Case Study: Cleaning Job Safety Plan for a Tank and Exchanger

- Case Data Pack Review: Crude Tank Sludge Profile and Fouled Exchanger History
- Task Risk Assessment and Job Safety Analysis for Jetting and De-Sludging Steps
- Permit and Isolation Interface Mapping for the Case Tank and Exchanger
- Waste Stream Classification, Sludge Handling and Wastewater Routing Plan
- Cleaning Job Safety Plan Drafting and Peer Challenge Panel

Skills You Will Gain:

- Water Jetting Hazard Control
- Exclusion Zone Management
- Jetting Equipment Inspection
- Tank De-Sludging Supervision
- Pyrophoric Scale Control
- Vacuum Truck Static Control
- Injection Injury First Response
- Cleaning Waste Management

Why Attend This Course:

- Leave with a Cleaning Job Safety Plan for a case tank and exchanger that can be adapted to your next shutdown
- Know which equipment defects, zone breaches or gas readings should stop a jetting or de-sludging job
- Challenge contractor method statements with specific questions on pressure class, tools and team roles
- Compare cleaning practice with HSE and contractor staff from refining, petrochemical, power and utility sites

Conclusion:

Industrial cleaning is routine work with non-routine consequences when a hose fails, a jet strikes a hand or a sludge bed releases gas. The course moves from incident patterns and cleaning methods, through jetting equipment and codes of practice, to running jetting, bundle and tank de-sludging jobs, and on to pyrophoric, toxic, vacuum and chemical hazards with first response. The final day applies this to a case tank and exchanger, producing a Cleaning Job Safety Plan that participants can carry into their next turnaround.