

Great Western Painting

Vacuum Trucks

Safety and Health Information Bulletin

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Potential Flammability Hazard Associated with Bulk Transportation of Oilfield Exploration and Production (E&P) Waste Liquids

VACUUM TRUCKS

The operation of vacuum trucks in and around petrochemical facilities is extremely hazardous and requires **constant vigilance and safety awareness**.

Almost every aspect of safety preparedness is put to the test when dealing with vacuum truck operations from the routine (proper training and licensure) to common job site hazards (slips, trips & falls) to very dangerous hazards (explosive and poisonous atmospheres & electrical sparks) to unique hazards with potentially catastrophic results (i.e., the inability to shut off a diesel engine because the air intake is taking in flammable vapors).

All of our vacuum truck operators will be trained and properly licensed in accordance with applicable regulations. Vacuum trucks will be inspected in accordance with the manufacturer's owner/operator manuals by the operator before use and all safety deficiencies corrected before movement.

All vacuum trucks will be maintained in accordance with the manufacturer's owner/operator manuals which will be kept with the vehicles.

Prior to operation in or around a petrochemical facility, vacuum truck personnel will be trained in the safe operation of the vacuum equipment; be familiar with the hazards of the petroleum products, by-products, wastes and materials being transferred; be aware of relevant governmental and facility safety procedures and emergency response requirements.

Also before beginning operations, in addition to inspecting the vacuum truck, itself, the operator will obtain any required permits **including MSDS for all chemical products** and thoroughly inspect all equipment as well as loading and offloading sites to assure safe operation.

Operators will have received training in appropriate PPE and use PPE as required.

During loading and off loading, operators will leave the vacuum truck cab. When transferring flammable liquids or hazards materials, operators will remain positioned between the vacuum truck and the source or receiving tank, vessel, or container and within 25 feet of the vacuum truck throughout the duration. Vacuum truck operators will monitor the transfer operation

and be ready to quickly close the product valve and stop the pump in the event of a blocked line or release of material through a broken hose or connection. Smoking, or any other source of ignition, is not permitted within at least 100 feet (depending on local procedures and atmospheric conditions) of the truck, the discharge of the vacuum pump, or any other vapor source.

Prior to using a vacuum truck in or around a petrochemical facility, the operator will, in conjunction with the contractor for whom we are working, have a clear understanding of the various hazards associated with each operation. These hazards include, but are not limited to: what specific product (chemical mixture) is being loaded, hauled, and unloaded; sources of ignition; flammable atmospheres; potential hazards associated with the surrounding area; toxic vapors and the PEL's and STEL's; as well as prevention of additional hazards such as slips and falls, spills and releases, fires and explosions, and accidents with the facility or on the highway.

Our vacuum truck operators will follow the contractors SOP for handling and mishaps, incidents, or accidents.

Vacuum trucks will not enter into tank dike areas until areas have been checked/monitored and rendered safe. Cargo tanks will be depressurized and operators will be aware of the effect of speeds, turns, and changing center of gravity. Vacuum truck operators will maintain proper distances when operating inside facility with restricted clearances.

Atmospheric testing:

The areas where vacuum trucks will operate must be free of hydrocarbon vapors in the flammable range. The areas where the vacuum truck operator and others work without respirators must also be at or below air-contaminated PEL's/STEL's.

If there is any question whether the area is vapor or toxic gas free, atmospheric testing will be performed by a qualified person using properly calibrated and adjusted detectors. Testing will be conducted prior to starting any operations, and, if necessary, during operations, including, but not limited to, the following:

1. When operations in the area are subject to change such as automatic pump start-up or product receipt into, or transfer out of, a tank located in the vicinity of the transfer operations.
2. When off-loading.
3. When atmospheric conditions change such as wind direction.
4. When an emergency situation occurs such as product release within the facility that may affect atmospheric conditions in the transfer area.

Vacuum Hoses When Transferring Flammable and Combustible liquids:

Vacuum hoses will be constructed of conductive material or thick walled hose with imbedded conductive wiring when the potential for a flammable atmosphere exists in the area of operations.

Conductive hose will provide suitable electrical conductance less than or equal to 1 mega ohm per 100 feet (as determined by the hose manufacturer). **Thin walled metallic spiral-would conductive hoses will not be used.**

Bonding and Grounding:

The complete vacuum transfer system must be bonded so that there is a continuous conductive path from the vacuum truck through the hose and nozzle to the tank or source container and grounded to dissipate stray currents to earth (ground).

Prior to starting transfer operations, the vacuum truck needs to be grounded directly to the earth or bonded to another object that is inherently grounded (due to proper contact with the earth) such as large storage tank or underground piping.

A safe and proper ground to earth may be achieved by connecting to any properly grounded object including by not limited to any one of more of the following examples:

1. a metal frame of a building, tank, or equipment that is grounded.
2. an existing facility grounding system such as that installed at a loading rack.
3. fire hydrants metal light posts or underground metal piping with at least 10 feet of contact with the earth.
4. a corrosion free metal ground rod of suitable length and diameter (approximately 9 feet long and 5/8 inch diameter), driven 8 feet in to the earth (or to the water table, if less).

Pump and Lobe Blower High Speed Hazards:

All vacuum truck operators and personnel are cautioned that, while under normal conditions, the absence of oxygen minimizes the risk of ignition in a vacuum truck, when operating rotary lobe blowers and vacuum pumps at high speeds, high air movement and high vacuum levels are created which could result in high discharge air temperatures and discharge vapor concentrations that can present a potentially ignitable conditions.

Vacuum Exhaust Venting:

Methods to safely vent vacuum pump exhaust vapors by vacuum truck operators include, but are not limited to:

1. locating the vacuum truck upwind of vapor sources and by extending the vacuum pump discharge away from the diesel engine air intake, unwanted dieseling can be prevented.
2. having vapors returned to the source container using conductive and closed connections.
3. venting vapors into the atmosphere to a safe locations using a safety venturi.
4. providing a vertical exhaust stack extending approximately 12 feet above the vacuum truck (or high if necessary) to dissipate the vapors before they reach ignition sources or other potential hazards and personnel.
5. attaching a length of exhaust hose to the vacuum exhaust that is long enough to reach an area that is free form potential hazards, source of ignition, an personnel. The hose should preferably be extended 50 feet downwind of the truck and away from the source of the liquids.