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|  | Job Safety Analysis |

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| **ID No:** |  | **Status:** | Closed | **Original Date:** | 2/16/12 |
| **Last Review Date:** | | | | | 12/7/12 |

**Organization:**

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| **SBU:** |  |
| **BU:** |  |
| **Work Type: Heavy Equipment** |  |
| **Title (Work Activity): Vacuum Truck Operations** |  |

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| **Personal Protective Equipment (PPE)** | **Selected** | **Comments** |
| Safety Shoes/ Rubber Boots | Y |  |
| Hard Hat | Y |  |
| Safety Glasses or Goggles | Y |  |
| Face Shields | Y |  |
| Hearing Protection | Y |  |
| Gloves | Y | T |
| Other | Y | Rain gear (slicker suits) or appropriate protective/chemical resistant suit |
| Respiratory Protection | Y | As needed when required |
| Personal Floatation Device | Y | As needed when required |
| Safety Cones | Y | Cones to be used when traffic concerns are present |
| Barricades | Y | Barricades to be used where hose breaks occur and at the end of the vent hose |
| Gas Meter |  | Four Gas Meter (Oxygen, LEL, H2S, CO) |

**Reviewers**

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| **Reviewers Name** | **Position** | **Date Approved** |
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**Development Team**

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| **Development Team Member Name** | **Primary Contact** | **Position** |
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**Job Steps**

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| **No** | **Job Steps** | **Potential Hazard** | **Critical Actions** |
| 1 | Before heading out to the field, pre-truck inspection. | 1. Equipment failure / damage 2. Potential pressure hazard 3. Static Hazard | 1. Perform pre-task equipment checklist of the equipment to be used. 2. Inspect and gather all safety devices required for the job 3. Make sure the tank body is completely down in the horizontal position. 4. Make sure the rear door is latched and secure. 5. Make sure the truck hydraulic system is disengaged prior to moving vehicle. 6. Ensure truck has been properly emptied and cleaned or that prior cargo is compatible 7. Visually inspect hoses for cuts and worn or broken couplings or other defects that would make the hose unsafe for use. 8. Ensure hose inspections are current and that hose type is correct for requested service 9. Make sure that the truck is equipped with all required equipement for bonding, grounding and conductivity verification 10. Make sure truck is DOT 412 certified (or equivalent) if material to be handled is flammable, combustible or corrosive |
| 2 | Arriving at the job site, checking in with operations | 1. Unknown personnel in the area 2. Verify material properties 3. Fire/explosion hazards 4. Equipment damage 5. Motion hazard moving vehicles 6. Tripping hazards | 1. Sign in at the Operations Control Center and review the emergency evacuation routes. 2. Perform task analysis and risk assessment with Operations to discuss the job scope and potential hazards  * Verify that equipment selection is appropriate for task * Determine type of material is being vacuumed and the potential hazards (flammabe, toxic, corrosive) associated.  1. Obtain proper work permit required for the job.  * Ensure any necessary air testing and material analysis is done. Results are shared and understood.  1. Ensure vehicle is positioned correctly in location appropriate for job  * Check the work area for potential hazards  1. Ensure wheels are chocked and emergency brake in place prior to performing vacuum operations. 2. Ensure walking/working surfaces are free of debris, spills, and tripping hazards. 3. Ensure lighting in area is adequate for task |
| 3 | Job Site Preparation / Equipment Setup | 1. Personnel exposure 2. Static charges 3. Spill hazard 4. Tripping hazards 5. Personal injury 6. Fire/explosion hazards | 1. Conduct a pre-job meeting with all parties (possible labor assistance) to designate roles each will assume during the vacuum truck operation.  * Identify communication methods, i.e. radio, hand signals, etc * Setup barricades, traffic cones, warning signs required to control unauthorized access to work area  1. Make sure the truck and hose are properly grounded and bonded..  * Conduct a continuity test to confirm there is <10,000ohms of resistance from hose length to hose length and less <10 ohms at bond locations. * Utilize ground verificatiion device for continouos monitoring of grounding/bonding integrity  1. Ensure hoses are connected to correct load/discharge points. Confirm with Operations. 2. Ensure vessel being vacuumed is properly vented. Confirm with Operations. 3. Ensure vessel being vacuumed is properly isolated from pressurized processes. Confirm with Operations. 4. Ensure proper grounding of any secondary containment needed for spill prevention. 5. Position and secure hoses to minimize tripping hazards and hose movement 6. Use proper lifting techniques when handling the hoses. 7. Ensure that all required safety equipment is setup and functional (e.g. fire extinguishers, eye wash stations, safety shower, etc) 8. Ensure proper grounding of any secondary containment needed for spill prevention. 9. When transferring hazardous material, ensure the vent hose is to a safe environement and a barricade is place around the exhaust point to keep unauthorized personnel and vehicles away from a potential exposure. If exhaust vent routing is not a viable alternative to mitigate hazards, a vapor scrubber or recovery system will be required on the tank exhaust to control vapor release.  * Ensure vapor scrubber is properly setup if required. * Hazardous material is considered flammable, toxic or corrosive |
| 4 | Vacuum truck loading/unloading operations | 1. Pressure hazard 2. Personal Injury 3. Line of fire hazard 4. Personal exposure 5. Spill hazard | 1. Ensure the hose end “camlock ears” are locked down and wired (through rings), pinned or taped secure before the operation begins. 2. Keep hands / body away from pinch points 3. Make sure your body position is out of the line of fire. 4. Ensure proper PPE is worn at all times 5. Make sure the driver is located within 25 feet of the truck with no obstructions in the way to ensure he/she can shut the truck down in the event of an emergency. 6. Ensure that vacuum truck tank is not overfilled (90% capacity maximum) 7. Discharge method for all hazardous materials should be gravity flow only unless specifically permitted for pressure-off or pump-off operations |
| 5 | Verify task is complete, job clean up. | 1. Equipment damage 2. Spills / Personal Injury 3. Housekeeping | 1. Allow at least 3-5 minutes for any static build-up to dissipate before proceding with disconnect. 2. Clear all lines prior to breaking down the job to avoid any spills or exposure. 3. Remove and secure grounding cables. 4. Return all hoses to rack and put away all fittings used for the job.  * Remove barricade tape. * Clean up any spill containment used for the job. |
| 6 | Checking out with operations | 1. Unknown personnel in the area | 1. Sign out and communicate to operations job is complete. |