BP OIL -- TOLEDO REFINERY

Document Type: Procedure	**Refinery Wide**	**Reference No.:** SAF 093
Effective Date: October 8, 2011	Safe Use of Vacuum and Pneumatic Trucks	**Revision No.:** 2
Owner: Todd Flippin	**Authorized By:** D. C. Durnwald (signature on file)	**Page** 1 of 15

SCOPE	This safety procedure applies to all employees and contractors who are involved in vacuum truck activity (generally, all Operations Employees and Supervision, Maintenance Supervisors, Contractor/Owner Operators of Vacuum Trucks).
HEALTH **Special PPE & Special Hazards**	• PPE that is appropriate for the material being handled • PPE will be documented on the Work Control Certificate and duplicated on the Vacuum Truck Permit
SAFETY	• Grounding and Bonding will conform to API 2219 Standard • Emergency Air Shut off is required for Diesel Engines • Fire extinguisher is required on all Vacuum and Pneumatic trucks
REFERENCE DOCUMENTS	• API 2219 Safe Operation of Vacuum Trucks in Petroleum Service Third Edition November 2005 • NFPA 77 Static Electricity • Toledo Control of Work Policy
SPECIAL MATERIALS & EQUIPMENT	PPE that is appropriate for the material being handled. PPE will be documented on the Work Control Certificate and reflected on the Vacuum Truck Permit
QUALITY	
ENVIRONMENTAL	• Vacuum and Pneumatic Trucks are not permitted to be driven if the contents of the tank are leaking • Material must be off loaded at an approved location

OVERVIEW

This procedure defines the methods and responsibilities for safe control of vacuum and pneumatic trucks when loading, unloading and transporting materials within the plant.

Vacuum trucks are widely used in refineries for recovering waste materials that cannot be completely purged or drained from process equipment and/or piping prior to maintenance, and for transporting these waste materials to a disposal site. They typically recover sludge or "bottoms" in tank cleaning, spill recovery and material transfers involving hydrocarbons, chemicals, water and mixtures of these chemicals. A vacuum truck is essentially a trailer or truck mounted tank equipped with a vacuum pump which is capable of "picking up" liquids or vapor into the tank or reversing its action to "pump out" the tanks contents. The pump on a vacuum truck is driven by either an auxiliary power unit or by a power takeoff from the truck engine which is typically a diesel one. Although the potential fire, explosion and chemical exposure hazards are recognized in the use of vacuum trucks, they can be controlled to insure their safe operation. Some of these hazards are:

1) The vacuum/pneumatic truck can serve as an ignition source.
2) Evolution or exhausting hazardous vapors.
3) Formation of flammable mixtures in the system or leaks of flammable mixtures due to hose failure.
4) Discharge of electrostatic sparks.
5) Reduction in the flash point of some liquids when placed under vacuum, from above to within ambient temperature range.
6) Releasing hydrogen sulfide from a sour liquid under vacuum.
7) Generating hydrogen sulfide by inadvertently mixing a sour liquid with an acid.

"Vac-All" (Vactors, Super-Suckers) vacuum trucks, sometimes referred to as pneumatic conveyors should not be confused with vacuum trucks. A Vac-All type truck conveys material in a high velocity air stream into a receiving tank. The turbulence created by the high velocity air stream can generate potential ignitable hydrocarbon mists and sprays through the system. Therefore, Vac-Alls should only be used to pick up solid wastes, oily water, and sewer solids and non-hazardous materials, and are prohibited for picking up liquid hydrocarbons or other flammable and/or combustible liquids.

The purpose of this procedure is to assure the safe operation of vacuum trucks and pneumatic trucks.

Definitions	
	API **– American Petroleum Institute** Pneumatic Truck **- a truck which conveys material, using a high velocity air stream, into a receiving tank. Common names for pneumatic trucks are "air machine", "supersucker", "guzzler", and "vac all". Pneumatic trucks may not be used to pick up liquid hydrocarbons or hydrocarbon contaminated sludges.** **Reid Vapor Pressure (RVP) – a measure of volatility of a fuel, as measured at 100 deg F in the lab.** True Vapor Pressure (TVP) **- a measure of the volatility of a fuel (i.e., its ability to vaporize) at its actual temperature.** Vacuum Truck **- a trailer or truck mounted tank equipped with a vacuum pump which is capable of "picking up" liquid and liquid slurries into the tank** Bill of Lading **- form required by DOT for over the road hauling of material** DOT**- Department of Transportation** **Combustible Dust – Any combustible material (and some materials normally considered noncombustible) can burn rapidly when in a finely divided form. If such a dust is suspended in air in the right concentration, it can become explosive. The known combustible dusts in the Toledo**

	Refinery are Coke, Petroleum; Sulfur; Charcoal, Activated; Magnesium; Zink; and Coconut Shell Dust (used during grit blasting work). For the full Combustible Dust list go to the OSHA website or contact your Area Safety Advisor.

Non Permitted Work: Vacuum activities at Toledo Refinery that does not require Vacuum/Pneumatic Truck Permit.	
	1. Hauling Coker Slurry from 687 tank to Coker Baker Tank. 2. WWTU - Separator Rounds - All the following material is off loaded in 2A box at the separator. 3. Abatement Pump Area - Skim surface of water where floating material builds up at booms 4. Effluent Channel - Skim surface of water where floating material builds up at booms 5. AFU Channel - Skim surface of water near east pump house 6. Clarifier - Skim floating material off outer and inner ring 7. 90 day drum pad - vacuum water from sump and pad 8. Vacuum rain water off roll off boxes 9. Water draws per Toledo Refinery direction. 10. Sanitary vacuum services All other Vacuum/Pneumatic truck work requires a Wet Vac and Pneumatic Truck Permit (Attachment 1)

Responsibilities	
The originating area • **Asset Supervisor** • **Maintenance Coordinator** • **Maintenance Supervisor** • **Operator** **Before Loading**	1. Verifying that the vacuum truck has been water washed prior to being used in the plant (vac truck log provided by the vac truck operator may be used to meet this requirement) 2. Determining the content/characteristics of the material to be picked up 3. Determining the appropriate location for off-loading prior to loading the Vac Truck. This person is responsible to contact the receiving area supervisor (typically OM&S but not always) to determine the appropriate unloading site. The receiving area will need to know what the material to be off loaded is, the quantity of the material, and when it is to be off loaded. 4. Informing truck operator of properties and hazards of material to be picked up 5. Communicating and monitoring safety requirements 6. Completing and authorizing the Vacuum/Pneumatic Truck permit 7. Initiating a Straight Bill of Lading for refinery products transported over the road via Vac Truck. 8. Ensuring that, for all over-the-road transport of materials via vac truck, the all applicable DOT requirements are met before truck departure (e.g. driver qualifications, placards, MSDS, manifest).

• **The receiving-area Asset Supervisor** • **Maintenance Coordinator** • **Maintenance Supervisor** • **Operator** **Before Unloading**	1. Verifying that the vacuum/pneumatic truck is in the correct unloading location. 2. Verifying that a Vacuum/Pneumatic Truck Permit form has been completed. 3. Communicating and monitoring safety requirements. 4. Authorize (by signing) the Vacuum/Pneumatic Truck Permit. 5. Completing the BOL for refinery products and transmix transported over the road via vac truck. BOL (receiver copy) to be sent to Commercial team. 6. Receiving and signing manifest for loads delivered. Send receiver copy to Environmental team. Contact Environmental team if manifest is for "Hazardous Waste". Do not permit unloading of hazardous waste materials without Environmental team approval.
• **The Vacuum/Pneumatic Truck Operator/Owner**	1. Follow all applicable BP and Contractors procedures, federal and state regulations. 2. Keeping and maintaining a Truck Log that contains the following information; a. Date and time the tank was washed and neutralized. This must be verified by use of pH paper or better test. b. All Loads i. Record date and time ii. Description of material iii. Quantity of material iv. Destination of off loaded v. Driver/Operators name vi. Truck Number 3. **Monthly**- Submit the Wet Vac and Pneumatic Activity Log to the OM&S Asset Coordinator A. Attachment 2 (Wet Vac and Pneumatic Activity Log) is the preferred log sheet to be used at the Toledo Refinery. 4. **Weekly** – Complete and submit Vacuum/Pneumatic Truck Permit forms to the Safety Department. 5. Verify only conductive hoses and fittings are being used in hydrocarbon service. (See Grounding and Bonding) 6. Verify proper grounding of Truck. (See Grounding and Bonding) Vacuum trucks and pneumatic trucks must be attended by the Vac truck operator at all times during loading and unloading operations. 7. Verifying that the truck has been water washed prior to being used at Toledo Refinery 8. Completing pre-use truck inspection. Form to be supplied by the Contractor owner of the vehicle. 9. Verify that hose whip checks are used anytime pressure off unloading is being performed. 10. Ensuring that the materials of construction of the truck tank, fittings and hoses are suitable for the material to be loaded, transported and unloaded. 11. Displaying any DOT required placarding, Bill of Lading, MSDS, when transporting over public roads. (Example between marine dock and refinery.) 12. Communicate to the crew, including third party workers, the most current JHA/JSA (Job Hazard Analysis/Job Safety Analysis.

General Requirements	
Unapproved Materials for Vacuum Trucks:	1. LPG and some other light hydrocarbons are not suitable to be vacuumed due to high vapor pressure. 2. Hydrocarbons with true vapor pressure >11 psia will require a Level 2 Risk Assessment before any vacuum operation can begin. NOTE: A list of Toledo Refinery hydrocarbon streams with a potential TVP greater than 11 psia is provided with the Vacuum/Pneumatic Truck Permit. Attachment 1 to this procedure. Refer to the temperature adjustment charts (Attachment 4) to determine suitability of material. 2. Pyrophoric and oxidizing materials may not be loaded. 3. Mixing of Materials: - Material types such as chemicals, acids, caustics, and hydrocarbons, shall not be mixed in vacuum trucks. - Vacuum trucks must be water washed after each load prior to collecting a dissimilar material (e.g., loading caustic into a vacuum truck that previously hauled either chemicals, acids or hydrocarbons). - Vacuum trucks must be neutralized to a pH between 6 and 9 after each wash. 4. Any material at a temperature greater than 120 degrees Fahrenheit cannot be vacuumed into or transported by a Vac Truck. 5. Any deviation to requirements listed above requires a Level 2 Risk Assessment.
Approved Materials for Vacuum Trucks:	1 Hydrocarbons with a true vapor pressure below 11 psia. Including unit rundown, tank bottoms, spills, water draws of gasoline range stocks, and any season RVP blender production. (EPA regulation allows hydrocarbon liquid up to 11 psia vapor pressure to be stored in atmospheric floating roof tanks) 3. Corrosive liquids (acids and caustics) 4. Water and mixtures of water and hydrocarbons 5. Most other Refinery wastes **NOTE: Proper Risk Assessments must be conducted prior to any vacuum operation. The Work Control Certificate and the Vacuum/Pneumatic Truck Permit are valuable tools to use for Risk assessment.**
Unapproved Materials for Pneumatic Trucks	1. Pneumatic trucks may not be used to pickup liquid hydrocarbons. 2. Hydrocarbon sludges > 10% LEL cannot be loaded. 3. Pyrophoric and oxidizing materials cannot be loaded. 4. Acids and caustics cannot be loaded. 5. Material at a temperature greater than 120 deg F cannot be loaded. 6. Any deviation to requirements listed above requires a Level 2 Risk Assessment.
Approved Materials for Pneumatic Trucks	1. Solid wastes and non hazardous material may be loaded provided the guide-lines of this procedure are followed. 2. Refinery sewer and WWTU API bottoms. **NOTE: A Level 2 Risk assessment must be performed prior to using pneumatic trucks to do Refinery Sewer cleaning.**

	3. Hydrocarbon contaminated solids may be loaded only if the LEL is <10%. The LEL reading shall be taken from just above the surface of the solid Immediately after agitation to simulate loading conditions. NOTE: Proper Risk Assessments must be conducted prior to any vacuum operation. The Work Control Certificate (WCC) and the Vacuum/Pneumatic Truck Permit are valuable tools to use for Risk assessment
Depending on the type of work, additional permits or certificates may be required, such as Hot Work Spark Potential WCC-Permit, Hot Work WCC-Permit, or a Confined Space Permit.	
Grounding and Bonding:	1. Trucks shall be grounded when they are being loaded or unloaded (reference API 2219). The grounding shall be done by the Truck operator. Connectors for bonding and grounding such as copper wire and clamps must provide a good conductive path. To insure this, dirt, rust, paint, and corrosion must be removed. Connections must be metal to metal. Typical cables are woven or braided copper strands. Special purpose clamps (typically with pointed contacts and heavy duty springs) shall be used for temporary bonding and grounding. The Vacuum Truck should be grounded to same vessel or piping that is being vacuumed. 2. When a temporary grounding rod is used, it must be made of copper and must be driven at least 2 feet into the ground. Rebar is not acceptable. Grounding clamps must also be made of copper. 3. Suction hose and fittings shall be conductive throughout; if not, any isolated conductive areas shall be bonded. (Bonding is connecting each individually grounded part in a system together to ensure that the system has the same ground potential.) To bond isolated conductive areas together, a low resistance ground wire/cable shall be connected from the truck, around the hoses, across the hose fittings to the vessel or tank being emptied or filled. WARNING No aluminum fittings or hoses are allowed to be used in hydrocarbon service due to aluminum's high arcing potential 4. All components (funnels, collection pans, etc.) used in the collection of hydrocarbon-material during vacuum truck operations must be made of metal and be properly grounded. Collection funnels used to guide flowing liquids into a pan should extend to the bottom of the pan to help prevent an electrostatic discharge.
Truck Location	1. Vacuum trucks shall be operated upwind and outside of gaseous areas. 2. The vacuum truck pump exhaust shall be discharged downwind of the vehicle by using a length of hose to permit venting to an area free from a source of ignition and to insure it does not present a hazard to personnel. Periodically confirm that personnel in adjacent areas are not affected by this exhaust. A vertical exhaust that extends 12 feet above the truck may be used as long as it does not present danger to personnel working in the area.

Vehicle Operation	1. Trucks and all related equipment (i.e. hoses, fittings, collection pans, etc.) must be maintained and meet all federal, state, local, and industry (API) regulations and guidelines 2. Established vehicle entry procedures and all other safety policies concerning the use of motor-driven equipment on site must be observed (refer to SAF-082) 3. Truck Owner/Operator must ensure that the truck has been water washed prior to being used in the plant (verify with vac truck operators log book). 4. Trucks shall not be driven if they are leaking or dripping material. 5. Truck connections must be secured before the vehicle moves. 6. When transferring flammable liquids or hazardous materials, the vacuum truck operator will remain positioned between the truck and the source or receiving tank, vessel, or container and within 25 ft. of the truck. The truck operator 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 7. Truck operators will not be allowed to sit in the cab of the truck while loading or unloading. Precautions must be taken to remain away from the engine exhaust system. 8. Diesel Trucks must be equipped with an emergency (air) engine shutdown device that closes the air intake. The starter fluid port must be fitted with a cover in good condition. 9. Truck operator must chock wheels before connecting grounding cables or hoses, loading, or unloading. 10. All trucks must use placards in accordance with Toledo Refinery requirements. One of the following will apply on the site: flammable, combustible or corrosive. Non-hazardous contents do not require a placard. Slop typically Vacuumed at the Marine Dock and transported to the Refinery would have a DOT placard (1993) 11. Trucks must be equipped with at least one 20 lb.(or two 10 lb.) dry chemical fire extinguisher or provide one on standby during operation 12. Vacuum truck hoses that are connected to a closed system must have a drain/vent connection. Before disconnecting a hose from a closed system, the truck operator shall open the drain/vent connection to confirm that the hose is empty and depressured. 13. When vacuum trucks are connected directly to a vessel, Operations shall assure proper venting to atmosphere to prevent damage to the vessel due to vacuum. 14. Truck engines must be shut off while gravity unloading hydro- carbon products. 15. All off loading to Station-2, Sump-6, Sump-1, Sump-2, Tanks 14 or 15, must be off loaded through a strainer. 16. Off loading methods • *Gravity Method* Gravity off-loading is safer, easier and less expensive and therefore used more frequently than pump off or pressure off- unloading. The gravity method is preferred for off-loading flammable liquids and hazardous materials, as well as for non-flammable and combustible material • *Pressure Method (hose whip checks must be used)* - Pressure off-loading with air is accomplished by reversing the vacuum pump on the truck. Pressure off-loading with air is typically used only when products are not considered to be flammable, hazardous, or toxic. • *Pump-off Method* Auxiliary (external) gear or rotary transfer pumps may

	be used to off-load heavy, viscous products which are difficult to remove by pressure or gravity.
Personal Protective Equipment	1. PPE that is appropriate for the material being handled must be worn when there is potential for exposure (e.g., near the spill, handling hoses). Proper PPE will be documented on the Work Control Certificate that governs the work. PPE requirements will also be documented on the Vac Truck Permit. 2. Face shields will be used during connecting and disconnecting of vacuum hoses 3. Chemical suits, respiratory protection, and impervious gloves and boots may be required.
Vacuum/Pneumatic Truck Permit	**The Vacuum/Pneumatic Truck Permit will be generated & authorized by the originating area** The Vacuum/Pneumatic Truck Permit includes the following information 1. Type of truck to be used, Vacuum or Pneumatic 2. Contractor Owner of the truck 3. Link to the WCC that authorizes the work 4. Check for Placards Required (Yes or No) 5. Check for Bill of Lading required (Yes or No) 6. Check for Truck Washed (Yes or No) 7. Job Description 8. Material description 9. Estimated quantity of material 10. Material Maximum Temperature 11. Actual TVP for unknown material 12. Personal Protective Equipment Required 13. All required Authorizing Signatures **Contractor Vacuum/Pneumatic Truck Driver (Operator) will:** 1. Receive the authorized Vacuum/Pneumatic Truck Permit from the Originating responsible person prior to loading any material 2. Keep the Permit in his/her possession. 3. Give the Permit to the Receiving Area responsible person to have them authorize the Permit prior to off loading any material. 4. Driver/Operator will keep the Permit until the completion of the job 5. Upon completion of the job the Permit will be given to the Safety Department 6. The Safety Department will keep the completed Permit for at least 30 days **The receiving area will authorize the permit upon receiving the material to be off loaded** Copies of the Vacuum/Pneumatic Truck Permit can be copied from the HSSE web page [Contractor Truck drivers (Operators) may have a supply of blank Permits also]
Attachments	1. Vacuum/Pneumatic Truck Permit. 2. Wet Vac and Pneumatic Truck Activity log. 3. Material destination table. 4. True Vapor Pressure Temperature Adjustments 5. Straight Bill of Lading

Revision History

Revision history

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
8/24/11	**N. Weber / M. Hasbrouck**	Update language to reflect current COW process (for example: Level 2 risk assessment, WCC). Added reference to combustible dust. Added WTP clarifier mud to material destination table. MOC# M20114983-001

Attachment 1 SAF 093: Wet Vac and Pneumatic Truck Permit

Toledo BP Refinery

Type of Truck: Pneumatic_____ Vacuum_____ Vacuum Truck Company _____
Date: _____WCC Number:_____ Time:_____

Driver/Operator Name:_____ Placards Required: Yes____ No_____
Bill of Lading Required Yes_____No_____
Truck Water Washed Yes_____No_____
Combustible Dust Haz Yes_____No_____

Job Description: _____

Job Location:_____

Material/Product/Waste Description:_____ Estimated Amount:_____

Maximum Material/Product Temperature:_____ *No Material >120 degrees F may be loaded without a High Hazard Review*

If Material Description is Unknown, the Tests Results are: Actual TVP: _____

Destination/Disposal Site: (Determined by Originating Responsible Person and The Receiving Area Responsible Person)

Station No.2:____ Sump 1:____ Sump 2:____ Sump 6:____ Man Hole 1:____ North Wash Pad:_____

Personal Protective Equipment (PPE) [check the appropriate items]:

Yes	No		Yes	No	
☐	☐	Respirator: Type_____Cartridge Color_____	☐	☐	Chemical Goggles
☐	☐	Supplied Breathing Air	☐	☐	Chemical Resistant Suit
☐	☐	Face shield	☐	☐	Chemical Resistant Boots
☐	☐	Chemical Resistant Gloves			
☐	☐	Other:_____			

Originating-Area Asset Supervisor, Maint. Coordinator, Maint. Supervisor, or Operator

Signature:_____ Date:_____

Receiving-Area Asset Supervisor, Maint. Coordinator, Maint. Supervisor, or Operator

Signature:_____ Date:_____

Truck Operator Signature:_____ Date:_____ Truck Number:_____

Loading pyrophoric, oxidizing materials, materials with an actual TVP above the maximum allowable TVP, or at a temperature above 120 degrees F Requires a Level 2 Risk Assessment.

Level 2 Risk Assessment Required: Yes_____ No_____ Date:_____

Emergency: Notify Operations immediately of all emergency situations
Fire/Spill/Medical Emergency contact ext. **5300, Main Gate** contact **(419-698-6451)**

Vacuum/Pneumatic Truck Permit

1. The Vacuum/Pneumatic Truck Permit will be generated and authorized by the originating area.
2. The Permit includes the following information:
   a. Type of truck to be used Vacuum or Pneumatic
   b. Contractor Owner of the Truck
   c. Link to the Work Control Certificate (WCC) that authorizes the work
   d. Check for Placards Required (Yes or No)
   e. Check for Truck Washed (Yes or No)
   f. Job Description
   g. Material description
   h. Estimated quantity of material
   i. Material Maximum Temperature
   j. Actual TVP for unknown material
   k. Personal Protective Equipment Required
   l. All required Authorizing Signatures
3. Contractor Vacuum/Pneumatic Truck Driver (operator) will:
   a. Receive the authorized Vacuum/Pneumatic Truck Permit from the Originating responsible person prior to loading any material
   b. Keep the Permit in his/her possession
   c. Give the Permit to the Receiving Area responsible person to have them authorize the Permit prior to off loading any material
   d. Driver/Operator will keep the Permit until the completion of the job
   e. Upon completion of the job the Permit will be given to the Safety Department.
   f. The Safety department will keep the completed Permit for at least 30 days.
4. The receiving area will authorize the permit upon receiving the material to be off loaded.
5. Copies of the Vacuum/Pneumatic Truck Permit can be copied from the HSSE web page (Contractor Truck drivers (operators) may have a supply of blank Permits also.

Materials Known to Have High Vapor Pressure and are NOT Suitable for Vacuuming

Alky 1: Iso O/H, DeC4 O/H
Alky 2: Iso O/H, DeC4 O/H, DeC3 O/H, DeC3 Bottoms
Alky 3: Alky 3 Iso O/H, Alky 3 DIB Spent C4, Dec3 Bottoms, DeC3 O/H
DHT B: Wild Naptha, Combined wet Gas, Make Up Gas, Recycle Gas, Wet Gas, CLPS Off Gas
UNSAT: Unsat Dry Gas, Unsat DeC3 #2 Bottoms, High Purity UC3 Prod., Propylene Splitter Bottoms, Low Purity UC3 Product
Naptha TR /Sat Gas: Naptha Spliter O/H, Naptha TR Feed, Sat DeC3 Bottoms, Sat DeC3 O/H, Sat DIB 1 O/H, Sat DIB 1 Bottoms, DIB 2 O/H, DIB 2 Bottoms
Poly Plant: LPG Product R/D, Poly DeC3 Bottoms
Reformer 2: Total feed, DeC3 DeC4 Product, Recycle Gas
LPG Products such as Propane, Butane, Pentane and Propylene

Attachment 2 SAF 093: Wet Vac and Pneumatic Truck Activity Log

	Date	Time	Driver Name	Source Location or Unit	Activity Requester	Truck Washed Y/N	Material Name/Desc	Quantity	Delivery Location
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									

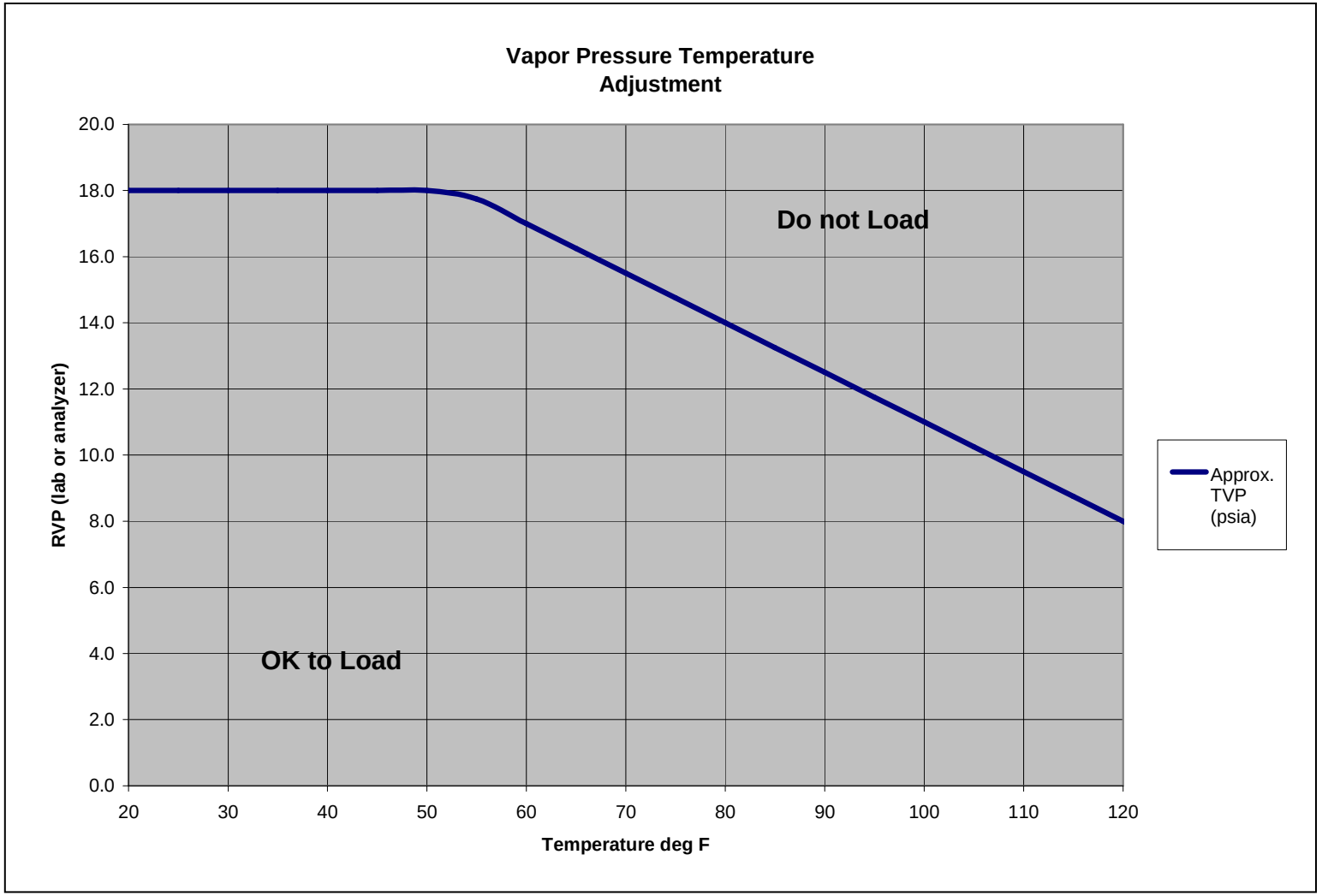
Attachment 3 SAF 093: Safe Use of Vacuum and Pneumatic Trucks

Material Destination Table

Material	Principal exposure hazards	deliver to	Asset
amine	H2S, chemical burn	EPA amine sump	West
sulfidic caustic	H2S, chemical burn	Portable tank	Varies by job
tank waterdraws	total HC, Benzene	Sump-6	OM&S
hydrocarbon, gasoline range and heavier	total HC, Benzene	Station-2	OM&S
foul water	H2S, ammonia	Station-2	OM&S
blender lead room basement	total HC, Benzene	Manhole-1	OM&S
Water from Storm sewer backups	total HC, Benzene	Manhole-1	OM&S
Water from NESHAP sewer backups	total HC, Benzene	Sump-6	OM&S
Oily water from any sewer backups	total HC, Benzene	Manhole-1	OM&S
Oily water from skimming lift stations	total HC, Benzene	Manhole-1	OM&S
Oily water from leaks or spills on ground (without stone & dirt)	total HC, Benzene	Manhole-1	OM&S
Oil from leaks or spills on ground (with stone & dirt)	total HC, Benzene	Dewatering box at cleanout pad	OM&S
Marine dock dikes and face storm water		Manhole-1	OM&S
Marine dock manifold sumps	total HC, Benzene	Station-2	OM&S
Third street separator hydrocarbon	H2S, total HC, Benzene	Station-2	OM&S
polysulfide	ammonia, chemical irritation	Station-2	OM&S
low pH	acid burns	Manhole-1	OM&S
high pH	caustic burns	Manhole-1	OM&S
high COD & high benzene	total HC, Benzene	Sump-6	OM&S
high COD & low benzene	total HC	Sump-2	OM&S
neutral pH (Good storm/sewer water)		Diversion chamber	OM&S
sanitary sewer backups	biological	Manhole-1	OM&S
sewer solids	HC, Benzene, H2S, pH	Belt Press dewatering area	OM&S
Wtp clarifier mud		North Wash Pad De-watering box	South

Attachment 4: SAF 093 Vacuum and Pneumatic Trucks

Vapor Pressure Temperature Adjustment Table



ATTACHMENT 5 Straight Bill of Lading (BOL)

STRAIGHT BILL OF LADING – SHORT FORM – Original – Not Negotiable Shipper's No. _____

(Name of Carrier) _____ SCAC. _____ Carrier's No. _____
Received, subject to the classifications and tariffs in effect on the date of this Bill of Lading:

at _____ date _____ from _____
the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, (as specified in Appendix B to Part 1035) which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to (Mail or street address of consignee – For purposes of notification only.)

Destination **State** **County** **Zip** **Delivery Address***

Route (*To be filled in only when shipper desires and governing tariffs provide for delivery thereat.)

Delivering Carrier _____ **Car or Vehicle Initials** _____ **No.** _____

Number of Packages	Description of articles, special marks, and exceptions	*Weight (Sub. to correction)	Class or rate	Check column

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid".

Received $ _____ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(The signature here acknowledges only the amount prepaid.)

Charges Advanced:
$ _____

Collect On Delivery $ **and remit to**

C.O.D. Charge to be paid by **Shipper** ☐ **Consignee** ☐

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight".
Note. – where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby
specifically stated by the shipper to be not exceeding _____ per _____

HM EMERGENCY RESPONSE TELEPHONE NUMBER (§172.604)

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

Shipper: _____ Agent: _____
Per: _____ Date: _____ Per: _____ Date: _____

Permanent post-office address of shipper
FORM NO. 21 BLS-A3 (Rev. 8/95)