



INCIDENT ALERT

General Information

Date of Incident	29/1/2016 (from Canada)
Type of Incident	Lost Time

About the Person

Occupation of Person	Vacuum loader operator
Experience of Person	Unknown
HPWJ Training Level	Nil
Other Training	Unknown
No. of Hours Completed	Unknown

About the Incident

Time of incident	Unknown
Result of Injury/Damage	Third degree burns to the operator. Vacuum loader destroyed.
Lost Days	Unknown

Description of Incident	A vacuum truck operator was in the process of unloading cold heavy crude when he noticed that the 6-inch rubber hose downstream of the blower was smouldering. The operator proceeded to discharge his fire extinguisher on the hose and then turned off the blower and closed the truck and tank valves. Shortly thereafter a loud popping sound was heard and then the operator was engulfed in flames. While the operator was running away from the area the rear door on the vacuum truck blew off hitting the production tank and platform. The vacuum truck was completely destroyed and some damage to the production platform was sustained. The operator was wearing fire retardant coveralls and a 4-head gas monitor and suffered third degree burns requiring a skin graft.
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What Equipment Category	Vacuum work
Equipment Used	Vacuum loader and 6' hose
What Was Person Doing	A vacuum truck operator was in the process of unloading cold heavy crude

What happened unexpectedly	The blower and associated rubber hose overheated igniting the residual hydrocarbons in the blower's associated hose and piping.
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What Caused the incident	<ul style="list-style-type: none"> • The blower and associated rubber hose overheated igniting the residual hydrocarbons in the blower's associated hose and piping. • An inspection revealed residual hydrocarbons were present in the blower's associated hose and piping on this vacuum truck as well as others. • The blower and associated hose and piping can overheat such as when the blower is operating at maximum for an extended time or when under a load. Testing conducted on other trucks identified temperatures beyond the manufacturer's maximum temperature for the rubber hose. • A review of the blower manufacturer's documentation revealed that the blower was not designed for use with flammable liquids despite the integrated presence of a diesel flush system on this truck and similar trucks in the upstream oil and gas industry.
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Contributing Factors	<ul style="list-style-type: none"> • A temperature gauge was present on piping downstream of the blower, but it did not have a red zone. Operators were not aware of
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	<p>what constituted an unacceptable temperature.</p> <ul style="list-style-type: none"> • There was no engineering control device to keep the blower from overheating or to warn of an overheating condition. • A build-up of flammable material was present in the blower's associated hose and piping. • The operator did not use the emergency shutdown device (ESD) on the truck.
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Corrective Action

What Immediate Action	Operator taken for medical treatment, investigation started.
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Preventative Action

Elimination	
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Substitution	
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Isolation or barriers	
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Engineering	A temperature sensor was installed on the hot side of the blower and the sensor was equipped with an audible and visual alarm.
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Administration	<ul style="list-style-type: none"> • Operators were equipped with and trained on the use of infrared temperature meters. • A procedure was instituted to cycle the blower on and off between 10 and 12 psi to reduce heating. • A procedure for the inspection of the diesel flush line was created. This was not a contributing factor, but it was felt that this warranted additional focus. • The inspection of internal piping and hoses for residual hydrocarbons was added to the regular maintenance schedule. • Refresher training was given to operators on emergency response procedures.
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PPE	
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LEARNINGS

Before using a vacuum loader to move flammable liquids check with the vacuum pump manufacturer's documentation to identify if that style of vacuum pump is suitable and the necessary precautions that need to be put in place before beginning the vacuuming task.

Photo on page 3.

Destroyed Vacuum Truck

Photo on page 4.

Vacuum Truck Lid Resting Against Production Tank

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