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Compliance Assistance Guide Revised Requirements For Unloading Liquefied Compressed Gases from Cargo Tank Motor Vehicle (HM-225A)

BACKGROUND

New regulations [HM-225A](#) in effect July 1, 1999, impose new requirements on operators of cargo tanks used to transport liquefied compressed gases and new procedures for unloading liquefied compressed gases from cargo tanks. The new regulations will help prevent unintentional releases during unloading of liquefied compressed gases, assure prompt identification of unintentional releases, and reduce the consequences of unintentional releases. Specific provisions include:

- New inspection, maintenance, and testing requirements for cargo tank discharge systems.
- Revised unloading requirements for liquefied compressed gases, including revised attendance requirements.
- New requirements for emergency discharge control equipment, such as passive systems that will shut down unloading without human intervention and remote control devices that enable an attendant to stop the unloading process at a distance from the vehicle.

METERED DELIVERY SERVICE

The regulations define a new term - "metered delivery service" - to take account of the differences in the design and configuration of cargo tank motor vehicles

used to deliver different types of liquefied compressed gases. **"Metered delivery service" means an unloading operation conducted at a metered flow rate of 100 gallons per minute or less through an attached delivery hose with a nominal inside diameter of 1.25 inches or less.** The regulations for unloading liquefied compressed gases in metered delivery service differ in some respects from those for unloading liquefied compressed gases in other than metered delivery service.

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NEW UNLOADING PROCEDURES

If you are unloading liquefied compressed gas from a cargo tank, you must comply with the following procedures:

- Prior to unloading, you must check the cargo tank discharge system, including the delivery hose assembly and piping, to assure that it is of sound quality, without obvious defects, and that connections are secure. This check must be done after the pressure in the discharge system has reached equilibrium with the pressure in the cargo tank.
- After unloading, you must visually examine for defects that portion of the hose and hose assembly that was deployed for the delivery.

ATTENDANCE REQUIREMENTS

- If you are unloading liquefied compressed gas, other than liquefied petroleum gas (LPG) or anhydrous ammonia, from a cargo tank, you must remain within 25 feet of the cargo tank, and you must have an unobstructed view of the cargo tank and delivery hose to the maximum extent practicable during the unloading operation.
- If you are unloading LPG or anhydrous ammonia from a cargo tank in metered delivery service, and the cargo tank has a capacity of 3,500 water gallons or less, you must remain within 150 feet of the cargo tank and within 25 feet of the delivery hose during the

unloading operation. You must also observe both the cargo tank and the receiving container at least once every five minutes.

- If you are unloading LPG or anhydrous ammonia from a cargo tank in metered delivery service, and the cargo tank has a capacity greater than 3,500 water gallons, you must remain within 150 of the cargo tank and within 25 feet of the delivery hose during the unloading operation. You must also have an unobstructed view of the cargo tank and delivery hose to the maximum extent practicable. If your view of the cargo tank and delivery hose is obstructed, the cargo tank must be equipped with an emergency discharge control system that operates without human intervention or an off-truck remote control system with a query feature that will automatically shut down unloading unless prompted every five minutes.
- If you are unloading LPG or anhydrous ammonia from a cargo tank in other than metered delivery service, you must remain within 25 feet of the cargo tank, and you must have an unobstructed view of the cargo tank and delivery hose to the maximum extent practicable during the unloading operation.

NEW DISCHARGE SYSTEM INSPECTION, MAINTENANCE AND TESTING REQUIREMENTS

If you operate a cargo tank in liquefied compressed gas service, you must perform the following new discharge system inspections and tests each month the cargo tank is in service:

- You must visually inspect each delivery hose and delivery hose assembly.
- You must visually inspect each cargo tank's piping system, including fusible elements, bolts, connections, valves, and seals.
- You must test all emergency discharge control devices designed to close the internal self-closing stop valve to assure that all linkages to the valve operate as intended.
- You must check the internal self-closing stop valve for leakage.

Beginning July 1, 2000, if you operate a cargo tank in liquefied compressed gas service, you must perform the following inspection each year the cargo tank is in service:

- A Registered Inspector must visually inspect the delivery hose, delivery hose assembly, and piping system while the system is under leakage test pressure.

REJECTION CRITERIA

You must not unload liquefied compressed gas from a cargo tank if the delivery hose or delivery hose assembly has any of these defects:

- Damage to the hose cover that exposes the reinforcement.
- Wire braid reinforcement that has been kinked or flattened so as to permanently deform the wire braid.

- Soft spots when the hose is not under pressure or bulging when the hose is under pressure.
- Loose outer covering.
- Damaged, slipping, or excessively worn hose couplings.
- Loose or missing bolts or fastenings on bolted hose coupling assemblies.

You must not unload liquefied compressed gas from a cargo tank if the piping system has any of these defects:

- Any external leak identifiable without the use of instruments.
- Bolts that are loose, missing, or severely corroded.
- Manual stop valves that will not actuate.
- Rubber hose flexible connectors with any condition outlined above for hose assemblies.
- Stainless steel flexible connectors with damaged reinforcement braid.
- Internal self-closing stop valves that fail to close or that permit leakage through the valve detectable without the use of instruments.
- Pipes or joints that are severely corroded.

EMERGENCY DISCHARGE CONTROL EQUIPMENT

The new requirements for emergency discharge control equipment on cargo tanks used to transport liquefied compressed gases are keyed to the degree of risk associated with the transportation of specific liquefied compressed gases. The regulation specifies two types of emergency discharge control equipment -

- **Passive Shut-down Equipment**
Passive shut-down equipment must shut off the flow of product without human intervention within 20 seconds of an unintentional release caused by complete separation of a delivery hose.
 - **Certified Systems as of 9/1/10 – Global Passive Safety Systems Ltd.dba LifeGuard Technologies**

Off-truck Remote Control Shut-down Equipment

Off-truck remote control shut-down equipment must close the internal self-closing stop valve and shut off the engine and auxiliary power upon activation by the person attending the unloading operation.

Each MC 330, MC 331, and non-specification cargo tank transporting liquefied compressed gases must have emergency discharge control equipment as specified in the following chart:

	Material	Cargo Tank Capacity	Delivery Service	New Required Emergency Discharge Control Equipment
1	Compressed gases (Division 2.2 materials) with no subsidiary hazard, excluding anhydrous ammonia	All	All	None
2	Poison gases (Division 2.3 materials)	All	All	Passive shut-down equipment

3	Compressed gases (Division 2.2 materials) with a subsidiary hazard, flammable gases (Division 2.1 materials), and anhydrous ammonia	All	Other than metered delivery service	Passive shut-down equipment
4	Compressed gases (Division 2.2 materials) with a subsidiary hazard, flammable gases (Division 2.1 materials), and anhydrous ammonia	3,500 water gallons or less	Metered delivery service	Off-truck remote shut-down equipment
5	Compressed gases (Division 2.2 materials) with a subsidiary hazard, flammable gases (Division 2.1 materials), and anhydrous ammonia	Greater than 3,500 water gallons	Metered delivery service	Off-truck remote shut-down equipment and, for obstructed view deliveries where permitted by the regulations, an off-truck remote with a query feature or passive shut-down capability

COMPLIANCE DATES FOR NEW EMERGENCY DISCHARGE CONTROL EQUIPMENT

The new regulations allow a two-year period for development and testing of emergency discharge control technology.

- After July 1, 2001, newly manufactured MC 331 cargo tank motor vehicles must be equipped with emergency discharge control equipment as specified in the chart.
- MC 330, MC 331, and non-specification cargo tank motor vehicles that are already in service must be retrofitted with required emergency discharge control equipment at their first scheduled pressure test after July 1, 2001. All required retrofits must be complete by July 1, 2006.
- MC 330, MC 331, and non-specification cargo tank motor vehicles in metered delivery service with water capacities greater than 3,500 gallons and used to transport flammable gases (Division 2.1 materials), compressed gases (Division 2.2 materials) with a subsidiary hazard, and anhydrous ammonia must be retrofitted with required emergency discharge control equipment at their first scheduled pressure test after July 1, 2001, or by July 1, 2003, whichever comes first.

CERTIFICATION OF NEW EMERGENCY DISCHARGE CONTROL EQUIPMENT

The new regulations include specific requirements for certifying the design and installation of emergency discharge control equipment.

- **Passive Shut-down Equipment**
The design for each passive shut-down system must be certified by a Design Certifying Engineer (DCE). The certification must consider any manufacturing specifications for components used in the system, explain how the system operates, and outline the parameters (such as temperature, pressure, types of product) within which the system is designed to operate. Installation must be performed under the supervision of a Registered Inspector who must certify that the equipment is installed and tested according to the DCE's certification.

- **Off-truck Remote Control Shut-down Equipment** Off-truck remote control shut-down equipment must be installed under the supervision of a Registered Inspector, who must certify that the equipment is installed according to the original component manufacturer's specifications.

ADDITIONAL EMERGENCY DISCHARGE CONTROL EQUIPMENT

After July 1, 1999, all newly manufactured MC 331 cargo tanks used to transport liquefied compressed gases must be equipped with a thermal means of closure for each internal self-closing stop valve that will activate at a temperature of 250 F. All MC 330, MC 331, and non-specification cargo tanks already in service must be retrofitted at the date of their first scheduled leakage test after July 1, 1999.