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of areas that are inaccessible to personnel must not exceed one-half the projection of the hose at its rated discharge, or 10 m (32.8 ft.), whichever is less.

§154.1160 Monitor coverage of system.

The coverage of each dry chemical system monitor under §154.1150 must not exceed:

(a) 10 m (32.8 ft.) at 10 kg/sec (22 lb/sec);

(b) 30 m (98.4 ft.) at 25 kg/sec (55 lb/sec);

(c) 40 m (131.2 ft.) at 45 kg/sec (99 lb/sec);

(d) An interpolation between 10 m (32.8 ft.) at 10 kg/sec (22 lb/sec) and 30 m (98.4 ft.) at 25 kg/sec (55 lb/sec); or

(e) An interpolation between 30 m (98.4 ft.) at 25 kg/sec (55 lb/sec) and 40 m (131.2 ft.) at 45 kg/sec (99 lb/sec).

§154.1165 Controls.

(a) Each dry chemical hand hose line must be one that can be actuated at its hose reel or hose storage cabinet.

(b) Each dry chemical monitor must be one that can be actuated and controlled at the monitor.

(c) A dry chemical monitor for the cargo loading and discharging manifold areas must be one that can be:

(1) Actuated from a location other than the monitor and manifold area; and

(2) Except for pre-aimed monitors, controlled from a location other than the monitor and manifold area.

(d) Each dry chemical storage unit must have independent piping with a stop valve in the piping for each remote hand hose line and remote monitor where the piping connects to the storage container, if the unit has:

(1) More than one hand hose line;

(2) More than one monitor; or

(3) A combination of hand hose lines and monitors.

(e) Each stop valve under paragraph (d) of the section must be capable of:

(1) Manual operation; and

(2) Being opened from the hose reel or monitor to which it is connected.

(f) Damage to any dry chemical system hose, monitor, pipe or control circuits must not prevent the operation of other hoses, monitors, or control circuit that are connected to the same storage unit.

§154.1170 Hand hose line: General.

Each dry chemical hand hose line must:

(a) Not be longer than 33m (108 ft.);

(b) Be stored on a hose reel or in a hose cabinet and be one that is operable whether or not it is unwound from a hose reel or removed from a hose cabinet;

(c) Be non-kinkable;

(d) Have a nozzle with a valve to start and stop the flow of chemical;

(e) Have a capacity of at least 3.5 kg/sec (7.7 lb./sec); and

(f) Be one that can be operated by one person.

CARGO AREA: MECHANICAL VENTILATION SYSTEM

§154.1200 Mechanical ventilation system: General.

(a) Each cargo compressor room, pump room, gas-dangerous cargo control station, and space that contains cargo handling equipment must have a fixed, exhaust-type mechanical ventilation system.

(b) The following must have a supply-type mechanical ventilation system:

(1) Each space that contains electric motors for cargo handling equipment.

(2) Each gas-safe cargo control station in the cargo area.

(3) Each gas-safe space in the cargo area.

(4) Each space that contains inert gas generators, except main machinery spaces.

§154.1205 Mechanical ventilation system: Standards.

(a) Each exhaust type mechanical ventilation system required under §154.1200 (a) must have ducts for vapors from the following:

(1) The deck level.

(2) Bilges.

(3) If the vapors are lighter than air, the top of each space that personnel enter during cargo handling operations.

(b) The discharge end of each duct under paragraph (a) of this section must be at least 10 m (32.8 ft.) from

ventilation intakes and openings to accommodations, service, control station, and other gas-safe spaces.

(c) Each ventilation system under § 154.1200 (a) and (b)(1) must change the air in that space and its adjoining trunks at least 30 times each hour.

(d) Each ventilation system for a gas-safe cargo control station in the cargo area must change the air in that space at least eight times each hour.

(e) A ventilation system must not recycle vapor from ventilation discharges.

(f) Each mechanical ventilation system must have its operational controls outside the ventilated space.

(g) No ventilation duct for a gas-dangerous space may pass through any machinery, accommodation, service, or control space, except as allowed under § 154.703.

(h) Each electric motor that drives a ventilation fan must not be within the ducts for any space that may contain flammable cargo vapors.

(i) Ventilation impellers and the housing in way of those impellers on a flammable cargo carrier must meet one of the following:

(1) The impeller, housing, or both made of non-metallic material that does not generate static electricity.

(2) The impeller and housing made of non-ferrous material.

(3) The impeller and housing made of austenitic stainless steel.

(4) The impeller and housing made of ferrous material with at least 13mm (0.512 in.) tip clearance.

(j) No ventilation fan may have any combination of fixed or rotating components made of an aluminum or magnesium alloy and ferrous fixed or rotating components.

(k) Each ventilation intake and exhaust must have a protective metal screen of not more than 13mm (0.512 in.) square mesh.

§ 154.1210 Hold space, void space, cofferdam, and spaces containing cargo piping.

(a) Each hold space, void space, cofferdam, and spaces containing cargo piping must have:

(1) A fixed mechanical ventilation system; or

(2) A fixed ducting system that has a portable blower that meets § 154.1205(i) and (j).

(b) A portable blower in any personnel access opening must not reduce the area of that opening so that the opening does not meet § 154.340.

INSTRUMENTATION

§ 154.1300 Liquid level gauging system: General.

(a) If Table 4 lists a closed gauge for a cargo, the liquid level gauging system under § 154.1305 must be closed gauges that do not have any opening through which cargo liquid or vapor could escape, such as an ultrasonic device, float type device, electronic or magnetic probe, or bubble tube indicator.

(b) If Table 4 lists a restricted gauge for a cargo, the liquid level gauging system under § 154.1305 must be closed gauges that meet paragraph (a) of this section or restricted gauges that do not vent the cargo tank's vapor space, such as a fixed tube, slip tube, or rotary tube.

§ 154.1305 Liquid level gauging system: Standards.

(a) Each cargo tank must have at least one liquid level gauging system that is operable:

(1) At pressures up to, and including, the MARVS of the tank; and

(2) At temperatures that are within the cargo handling temperature range for all cargoes carried.

(b) Unless the cargo tank has one liquid gauging system that can be repaired and maintained when the tank contains cargo, each cargo tank must have at least two liquid level gauging systems that meet paragraph (a) of this section.

(c) Each liquid level gauging system must measure liquid levels from 400 mm (16 in.) or less from the lowest point in the cargo tank, except collection wells, to 100 percent full.

§ 154.1310 Closed gauge shut-off valve.

Each closed gauge that is not mounted directly on the cargo tank must have a shut-off valve that is as close to the tank as practical.