

#	Recommendation	Reference	<input checked="" type="checkbox"/>	Notes
1	Ensure that the purge valve at the bottom of the bulls-eye column on the high pressure receiver is guarded.	ANSI/IIAR 2-2014 §5.16.1		
2	Ensure that all drain and purge valves are plugged and capped.	ANSI/IIAR 2-2014 §13.3.6		
3	Ensure that all ammonia pipes are cleaned and painted to help arrest external corrosion.	IIAR Bulletin No. 109 §4.7.4		
4	Ensure that ammonia equipment is located in secured buildings and behind security fences to prevent unauthorized access.	ANSI/IIAR 2-2014 §6.3.4		
5	Ensure that electrical wiring is sealed off to protect against corrosion.	ANSI/IIAR 2-2014 §6.8		
6	Ensure that the machinery room is not used for the storage of flammable materials.	ANSI/IIAR 2-2014 §6.4		
7	Ensure that fall protection is installed on the roof to protect ammonia equipment that is nearby the roof edge.	2015 IMC §304.11		
8	Consider removing all abandoned refrigeration equipment.	ANSI/IIAR-8-2015		
9	Ensure that machinery room doors be provided with approved informative signs, emergency signs, charts and labels which include the following: Refrigeration Machinery Room (include a descriptive prefix if more than one machinery room), Authorized Personnel Only, Caution Ammonia R-717, Caution Eye and Ear Protection Required in this area, and NFPA diamond for ammonia (Indoors 3-3-0, Outdoors 3-1-0)	ANSI/IIAR 2-2014 §6.15		
10	Ensure that “ <i>Authorized Personnel Only</i> ” signage is posted near the outdoor machinery area.	ANSI/IIAR 2-2014 §6.15.3		
11	Ensure that a permanent sign inside the machinery room is installed containing at least the following information: 1) Name of contractor installing the equipment 2) Name and number designation of refrigerant in system 3) Pounds of refrigerant in system	ANSI/IIAR 2-2014 §15.15		

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12	Ensure that all piping mains, headers and branches are identified as to the physical state of the refrigerant, the relative pressure level of the refrigerant, and the direction of flow.	ANSI/IIAR 2-2014 §5.14.5		
13	Ensure that all components of the refrigeration system (e.g. receivers, heat exchangers, accumulators, etc.) are uniformly identified.	ANSI/IIAR 2-2014 §5.14.2		
14	Ensure that each stop valve, king valve, emergency control box valve, emergency pressure control system valve, ammonia pump liquid main shut-off valve, and hot gas defrost line main shut-off valve is identified by tagging in accordance with the reference standard (e.g. P&ID's) for identification.	ANSI/IIAR 2-2014 §5.14.3, ANSI/IIAR 2-2014 §13.3.7		
15	Ensure that each refrigerating machinery room contain a refrigerant detector that actuates an alarm and mechanical ventilation system.	ANSI/IIAR 2-2014 §6.13		
16	Ensure that each refrigerated room or space is equipped with a refrigerant vapor detection and alarm system.	ANSI/IIAR 2-2014 §7.2.3		
17	Ensure that calibration be performed on ammonia detection units with certified calibration gas every six months or after major exposure to a leak.	ANSI/IIAR 2-2014 §17.3		
18	Ensure that each refrigerating machinery room be vented to the outdoors by means of mechanical ventilation systems actuated automatically by refrigerant detectors, temperature sensors, and also operable manually.	ANSI/IIAR 2-2014 §6.14		
19	Ensure that the machinery room ventilation fan discharges vertically in a way that is unlikely to negatively impact facility personnel or the public at large.	ANSI/IIAR 2-2014 §6.14.3		
20	Ensure that remote emergency controls for the emergency mechanical ventilation systems be provided and be located immediately outside the designated principal exterior machinery room door.	ANSI/IIAR 2-2014 §6.12		

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21	Ensure that a remote emergency shutdown control for refrigerant compressors, refrigerant pumps, and normally closed automatic refrigerant valves within the machinery room, be provided immediately outside the designated principal exterior machinery room door.	ANSI/IIAR 2-2014 §6.12		
22	Ensure that pressure relief devices be replaced every five (5) years from the date of installation.	IIAR Bulletin No. 109 §4.9.7		
23	Ensure that all pressure relief valves for refrigerant-containing components be set and sealed by the manufacturer.	ANSI/IIAR 2-2014 §15.2.7.1		
24	Ensure that pressure vessels less than 10 ft ³ internal gross volume be protected by one or more pressure relief devices.	ANSI/IIAR 2-2014 §15.3.4		
25	Ensure that pressure vessels of 10 ft ³ or more internal gross volume be protected by one or more dual pressure relief devices.	ANSI/IIAR 2-2014 §15.3.5		
26	Ensure that discharge from all atmospheric pressure relief valves/piping be to the outdoors.	ANSI/IIAR 2-2014 §15.5.1		
27	Ensure that relief vent piping is terminated at a downward angle to prevent rainwater from entering piping.	ANSI/IIAR 2-2014 §15.5.1.5		
28	Ensure that the extremity of the pressure relief devices discharge piping relieved to atmosphere be 20 feet or more from any window, ventilation intake, or personnel exit, or as specified by the jurisdictional authority. The preferred direction of discharge is vertically upwards.	ANSI/IIAR 2-2014 §15.5.1.2		
29	Ensure that the discharge from pressure relief devices to the atmosphere be not less than 15 feet above the adjacent grade or roof level and be arranged to avoid spraying of refrigerant on persons in the vicinity.	ANSI/IIAR 2-2014 §15.5.1.2		

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30	Ensure that an eyewash and body shower unit be located external to the machinery room and readily accessible via an exit.	ANSI/IIAR 2-2014 §6.7.1		
31	Ensure that emergency eyewash facilities and deluge showers be in accessible locations that require no more than 10 seconds (55 feet) for the injured person to reach.	ANSI/IIAR 2-2014 §6.7.1		
32	Ensure that eyewash and shower equipment is activated at least monthly to flush the line and to verify proper operation.	Title 8 CCR §5162(d)		
33	Ensure that fixed stairs be provided for access from one structure level to another where operations necessitate regular travel between levels, and for access to operating platforms at any equipment which requires attention routinely during operations.	Title 8 CCR §3234(b)(1)		
34	Consider building a permanent platform around the evaporative condenser for routine maintenance activities.	ANSI/IIAR 2-2014 §5.12.1		
35	Ensure that a maintenance schedule to maintain the on-going integrity of process equipment is developed and implemented.	Title 19 CCR §2760.5(b)		
36	Ensure that inspections and tests be performed on process equipment (e.g. mechanical integrity inspection).	Title 19 CCR §2760.5(d)(1)		
37	Ensure that a daily refrigeration system inspection be developed. The system should be observed in normal operation and a full log taken of operating conditions. The se should be compared with seasonal design operating conditions and with the safe limits of operation.	IIAR Bulletin No. 110 §6.2		
38	Ensure that compressor safety cutouts be tested at least annually.	IIAR Bulletin No. 109 §4.1.7		
39	Ensure that the pipe insulation is repaired or replaced where damaged.	ANSI/IIAR 2-2014 §5.10.1		

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40	Ensure that manufacturer data reports (U-1 or U-1A Form) are gathered for each pressure vessel.	IIAR Bulletin No. 109 Pressure Vessel Checklist Item E		
41	Ensure that piping and instrumentation diagrams (P&IDs) are developed for each process.	Title 29 CFR §1910.119(d)(3)(i)(B), Title 40 CFR §68.65(d)(1)(ii), Title 8 CCR §5189(d)(3)(A)(2), Title 19 CCR §2760.1(d)(1)(B)		
42	Ensure that a written confined space program is developed and implemented.	Title 8 CCR §5157		
43	Ensure that a hazardous energy control procedure (lockout/tagout) be developed and utilized when employees are engaged in the cleaning, repairing, servicing, setting-up or adjusting of prime movers, machinery and equipment.	Title 8 CCR §3314(g)		
44	Ensure that a windsock is installed in the front and back of the building in order to assist employees during evacuation.	Clean Air Act §112(r)(1)		
45	Ensure that piping hangers and supports can carry the weight of the piping, as well as any other anticipated loads.	ANSI/IIAR 2-2014 §13.4.1		
46	Ensure that spring return valves are used when draining oil.	ANSI/IIAR 2-2014 §5.9.3		
47	Ensure to develop and implement an emergency response program for the purpose of protecting public health and the environment.	Title 19 CCR §2765.2(a)		
48	Ensure that all materials used in the construction of the equipment be suitable for ammonia refrigerant.	ANSI/IIAR 2-2014 §5.7.1.1		

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49	Ensure that at least every five years, uninsulated vessels and heat exchangers be given a thorough visual examination supplemented, if appropriate, by additional inspection techniques; these could include the detection of cracks and flaws and thickness determination by the use of dye penetrants, ultrasonic measurements or radiography.	IIAR Bulletin No. 110 §6.4.4		
50	Consider painting all ammonia pipes according to IIAR Bulletin No. 114 §7.3. High pressure liquid piping should be Orange (Pantone 152 C), high pressure vapor piping should be Yellow (Pantone 109 C), low pressure/high temperature liquid and vapor piping should be Light Blue (Pantone 298 C), low pressure/low temperature liquid and vapor piping should be Dark Blue (Pantone 3015 C), pressure relief vent piping should be Grey (Pantone 430 C), water and glycol piping should be Green (Pantone 3415 C), and fire sprinkler piping should be Red.	IIAR Bulletin No. 114 (3/14) §7.0		