

OSHA Regulations for Natural Refrigerants

ATMOsphere – America
2013

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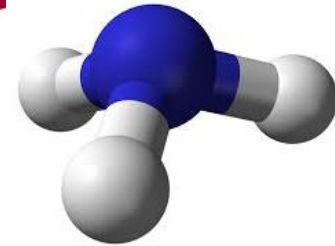
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Natural Refrigerants – OSHA Regulations

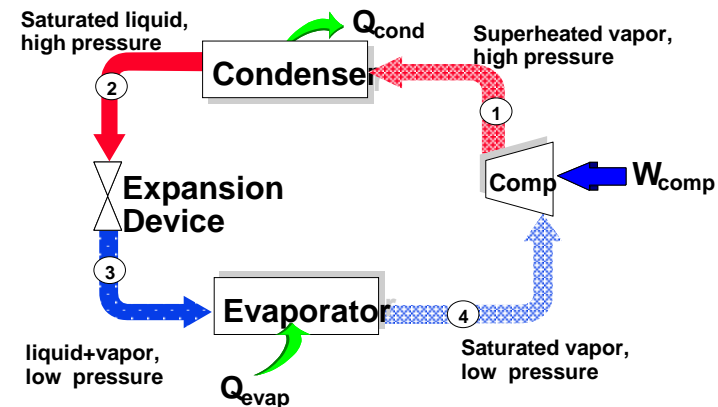
- OSHA General Industry Standards apply
 - 29 CFR 1910
 - Process safety – PSM (29 CFR 1910.119)
 - Other OSHA standards including:
 - [1910 Subpart D - Walking-Working Surfaces](#)
 - [1910 Subpart E - Means of Egress](#)
 - [1910.94 - Ventilation.](#)
 - [1910.146 - Permit-required confined spaces](#)
 - [1910.147 - The control of hazardous energy \(lockout/tagout\).](#)
 - [1910 Subpart O - Machinery and Machine Guarding](#)
 - [1910 Subpart S - Electrical](#)

Natural Refrigerants – OSHA Regulations



- U.S. largest industrial natural refrigerant – ammonia (NH₃)
- OSHA's PSM standard applies to lifecycle of process
 - Design, installation, start-up, operation, maintenance, inspection, testing, modification

- RAGAGEP



OSHA PSM Enforcement

- Unprogrammed Inspections
 - Incidents, referrals, worker complaints
- Programmed Inspections
 - CHEM NEP
 - Target 25% NH₃ refrigeration facilities
 - Site Specific Targeting

OSHA Enforcement at NH3 Refrigeration Facilities

- CHEM NEP enforcement data for NH3 refrigeration facilities
(Dec 1, 2011 to current)
 - ~ 140 inspections
 - ~ Issued 525 violations
 - ~ Issued \$3 million penalties



Most Frequently Cited CHEM NEP Standards

Standard - PSM	Description
1910.119(d)(3)(ii)	Equipment did not comply RAGAGEP
1910.119(j)(2)	Develop and implement MI procedures
1910.119(e)(5)	PHA recommendation resolution
1910.119(d)(3)(i)(B)	P&IDs
1910.119(j)(4)(ii)	Inspect/Test per RAGAGEP

Most Frequently Cited CHEM NEP Standards (cont.)

1910.119(o)(1)	Compliance Audit evaluation and cert.
1910.119(e)(3)(i)	PHA ID hazards
1910.119(l)(1)	Develop/implement MOC
1910.119(e)(3)(v)	PHA facility siting
1910.119(j)(4)(i)	Did not inspect/test
1910.119(j)(5)	Equipment deficiencies

Natural Refrigerants – OSHA Regulations

- Other important OSHA requirements
 - General Duty Clause
 - Section 5(a)(1) of OSH Act
 - Each employer shall have a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm (paraphrased)
 - Design, installation, operation, maintenance, and modification of systems not covered by a specific, e.g. PSM, standard
 - » NH₃ ammonia refrigeration systems < 10K lbs.
 - » CO₂, hydrocarbon, etc. systems
 - Much like EPA's GDC
 - 1910 Subpart Z - Toxic and Hazardous Substances
 - 1910.1000 - Air contaminants.
 - Listings for NH₃, CO₂, flammable gasses, others

Questions & Contact Information

Questions

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