



ATMO  
sphere

business case

natural refrigerants

June 16 & 17, 2016 – Chicago





June 16 & 17, 2016 – Chicago



**International Institute of Ammonia Refrigeration**

For the Safe and Efficient Use of Natural Refrigerants

*Regulations & Standards Session*

*Tony Lundell*

*IIAR Director of Standards and Safety*

# Who We are and What We Do



Advocacy



Education



Standards

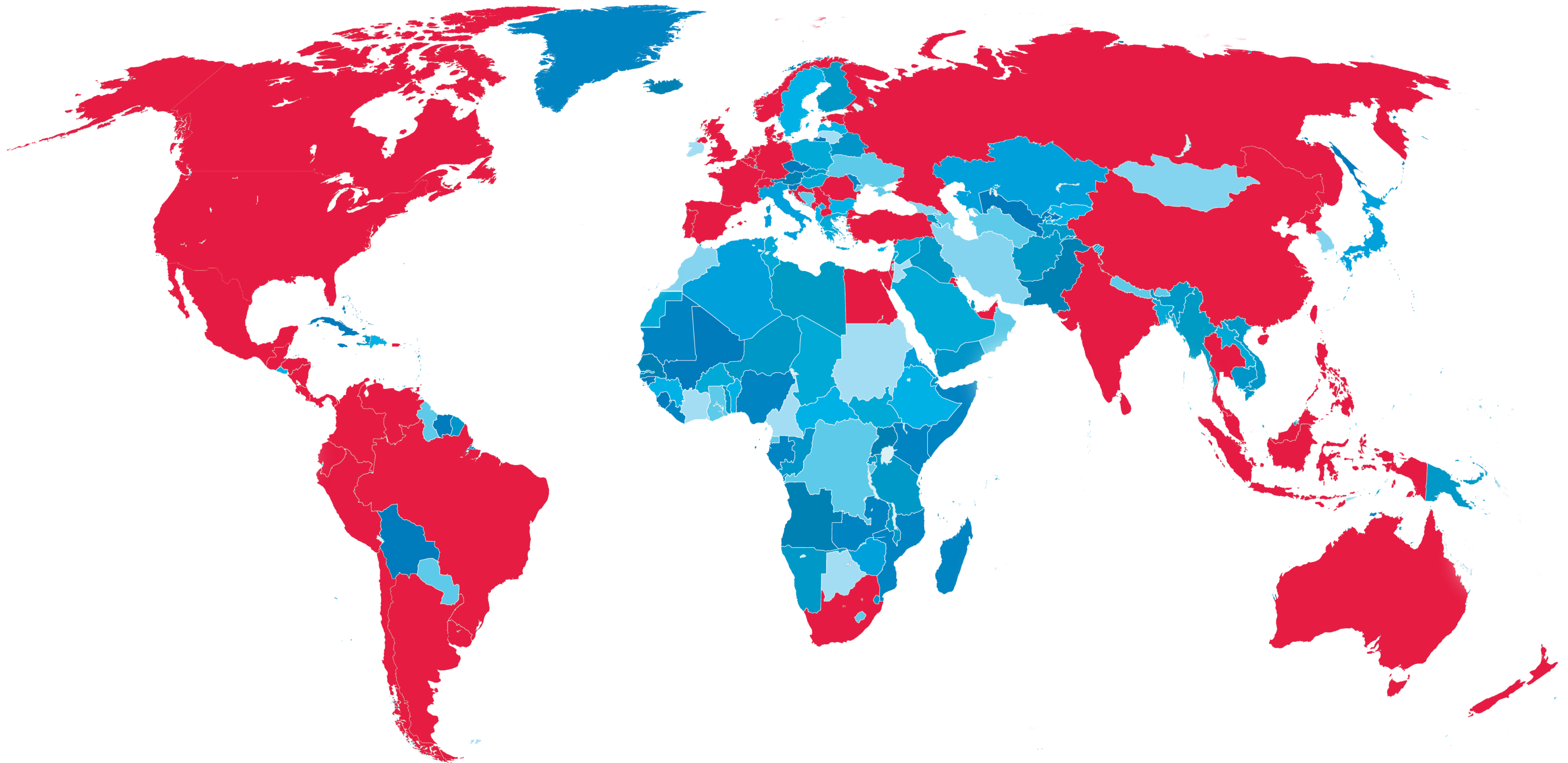


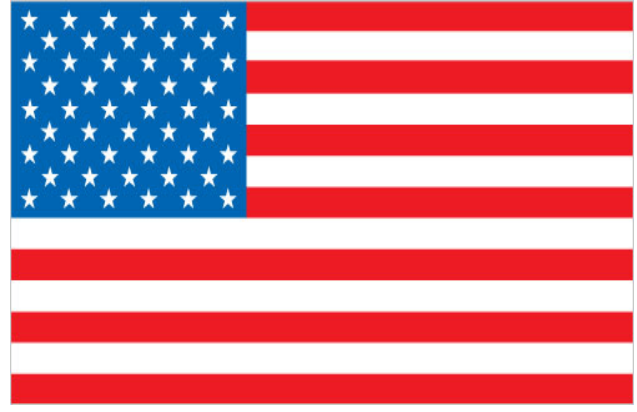
- Membership Based Technical Society
  - ANSI Approved Standards Writer
  - Publisher of Technical and Educational Resource Material
- Comprised of design engineers, contractors, manufacturers, end users, students, scientists, and trainers



**IIAR Standards • For the Safe and Efficient Use of Natural Refrigerants**

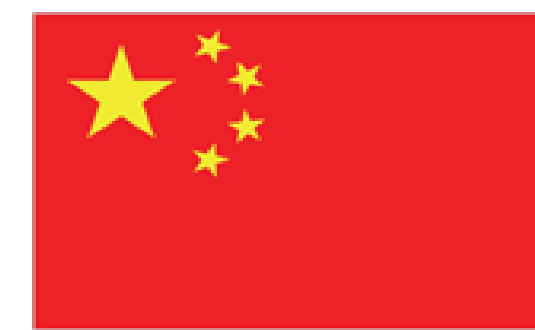
# IIAR Worldwide Members





# Allied Associations

- ACAIRE - Colombia
- ASHRAE - USA
- Association of Ammonia Refrigeration – India
- Australian Refrigeration Association - Australia
- Chinese Association of Refrigeration - China
- Cámara Chilena de Refrigeración y Climatización – Chile
- eurammon – Germany
- Global Cold Chain Alliance - USA
- Refrigerating Engineers & Technicians Association (RETA) – USA



# The **Benefits** of **IIAR** **Membership**



**IIAR eLibrary** – The most comprehensive on-line resource of natural refrigeration technical publications:

- Free online access to IIAR Bulletins and Standards
- Free online access to more than 350 Technical Papers.

**IIAR Publications Discounts** – IIAR members receive significant discounts on popular industry publications.

**IIAR Communications** – The *Condenser*, a quarterly magazine and the *IIAR Connect Newsletter*, delivered digitally each month.

**IIAR Conference Registration & Exhibitor Discounts**

**IIAR On-Line Membership Directory**

**Your Membership Helps IIAR help our Industry!**



# IIAR Suite of Standards Approved ANSI Standards



**IIAR 1** – 2012: **Definitions and Terminology Used in IIAR Standards**

**IIAR 2** – 2014: **Safe Design** of Closed-Circuit Ammonia Refrigeration Systems

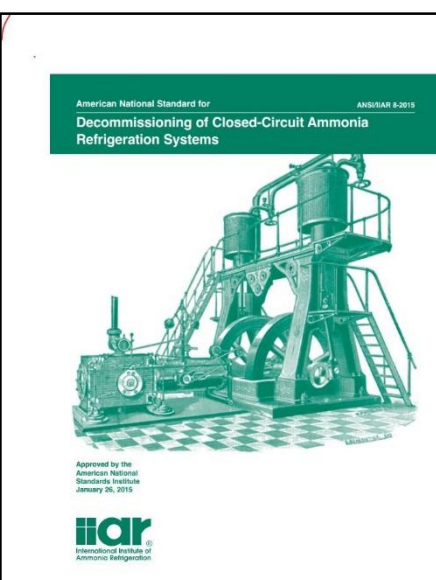
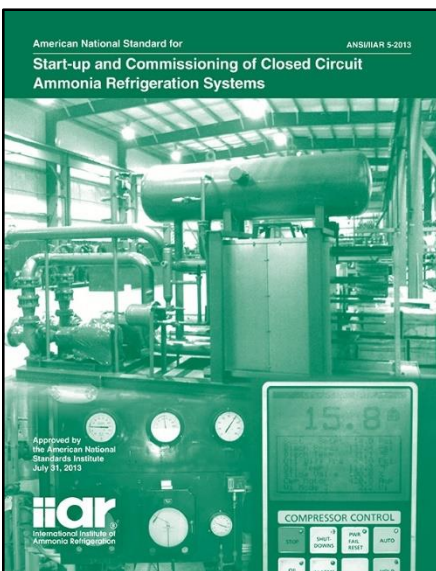
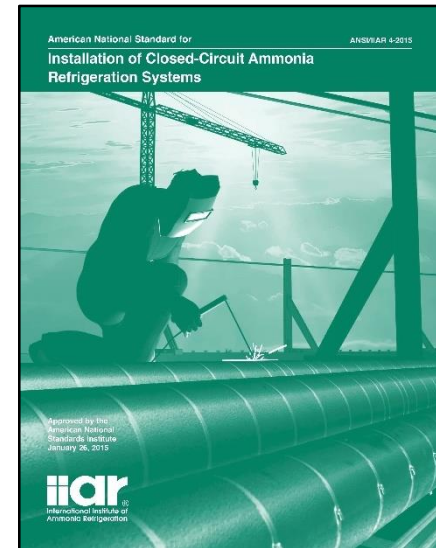
**IIAR 3** – 2012: **Ammonia Refrigeration Valves**

**IIAR 4** – 2015: **Installation** of Closed-Circuit Ammonia Refrigeration Systems

**IIAR 5** – 2013: **Start-up and Commissioning** of Closed-Circuit Ammonia Refrigeration Systems

**IIAR 7** – 2013: **Developing Operating Procedures** for Closed-Circuit Ammonia Mechanical Refrigerating Systems

**IIAR 8** – 2015: **Decommissioning** of Closed-Circuit Ammonia Refrigeration Systems



# IIAR Suite of Standards

## Standards Currently Under Development



**IIAR 6 – 20xx:** *Inspection, Testing, and Maintenance of Closed-Circuit Ammonia Refrigeration Systems*

**IIAR 9 – 20xx:** *Recognized and Generally Accepted Good Engineering Practices for Closed-Circuit Ammonia Refrigeration Systems*

**IIAR C2 – 20xx:** *CO<sub>2</sub> Refrigeration*





# IIAR Active Bulletins



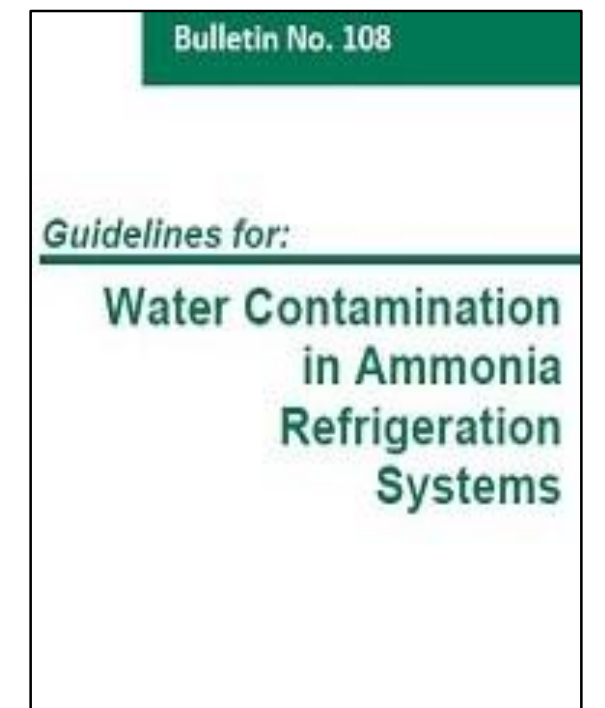
**Bulletin No. 108** Guidelines for: Water Contamination in Ammonia Refrigeration Systems (Date: 1986)

**Bulletin No. 109** Guidelines for: IIAR Minimum Safety Criteria for a Safe Ammonia Refrigeration System (Date: 1997)

**Bulletin No. 110** Guidelines for: Start-Up, Inspection and Maintenance of Ammonia Mechanical Refrigerating Systems (Date: March 2002)

**Bulletin No. 114** Guidelines for: Identification of Ammonia Refrigeration Piping and System Components (Date: 2014)

**Bulletin No. 116** Guidelines for: Avoiding Component Failure in Industrial Refrigeration Systems Caused by Abnormal Pressure or Shock (Date: 1992)



# IIAR Superseded Bulletins



- Bulletin No. 107** Guidelines for: Suggested Safety and Operating Procedures When Making Refrigeration Plant Tie-Ins
- Bulletin No. 111** Guidelines for: Ammonia Machinery Room Ventilation
- Bulletin No. 112** Guidelines for: Ammonia Machinery Room Design
- Bulletin No. R1** A Guide to Good Practices for the Operation of an Ammonia Refrigeration System



# Codes & Standards Consistency




- Gap analysis with ASHRAE 15, UMC, NFPA 1, IMC, & IFC
- Differences were mostly included or revised in our document



# Code & Standards Consistency



- Clarity for Some Practices
- Addressed Compliance Issues
- Recognized and Generally Accepted Good Engineering Practices - RAGAGEP
- Addressed Hot Topics 



# ANSI approved IIAR Standards

- Ensure Safe Design, Safe Operating Procedures, and Safe Inspection, Testing, and Maintenance Practices
- Are enforceable and address Regulatory Compliance  
Bulletins and Guidelines are not enforceable
- Are Recognized and Generally Accepted Good Engineering Practices – Have your RAGAGEP organized and readily accessible – Be in the driver’s seat with RAGAGEP!





## *Contact Information*

*Website: [www.iiar.org](http://www.iiar.org)*

Phone #: 703-312-4200

[tony\\_lundell@iiar.org](mailto:tony_lundell@iiar.org)



**ATMO**  
**sphere**  
business case  
**natural refrigerants**

June 16 & 17, 2016 – Chicago



Thank you very much!