



*Evolution of the Ammonia
Refrigeration Industry in Chile
towards safety*

Chillventa, October 2018

euramm^on

refrigerants delivered by mother nature

Let's go back a few years

- How things were before 2012.
 - There were a lot of food processing plants and cold storages using ammonia refrigeration.
 - There was a general ignorance of the risks associated with the use of ammonia refrigeration.
 - The end customer didn't realize (care about) the safety concerns of their installations.
 - Authorities didn't have any knowledge about ammonia refrigeration safety.
 - The main contractors followed IAR guidelines.
 - Some of the smaller contractors didn't.

Let's go back a few years

- January 18th, 2012, a tragedy that changed the Industry:

Chemical emergency in a fruit packing plant leaves one person dead and more that 160 injured in Codegua.

A 20 year old worker died as a result of the accident and another 18 year old had to be transferred to Santiago with severe burns. The Minister of Labor, Evelyn Matthei, assured that the company Los Nobles "does not have a bad work history", but the mayor Ana María Silva reacted annoyed and spoke of previous cases: "You can not tell me that it has been an example of safety", she said.



Let's go back a few years

- Industry engineers joined in a meeting to look for ways to improve safety in the Ammonia Refrigeration industry.
- The Ministries of Labor and Health starts a similar process.

- Everybody started working together!!!

Industry's reaction to the accident

The Good Practice Manual

The new National Ammonia Refrigeration Standard

The evolution of the Chilean Chamber of Refrigeration and Air
Conditioning (CChRyC)

Chilean Chapter of the International Institute of Ammonia Refrigeration
(IIAR)

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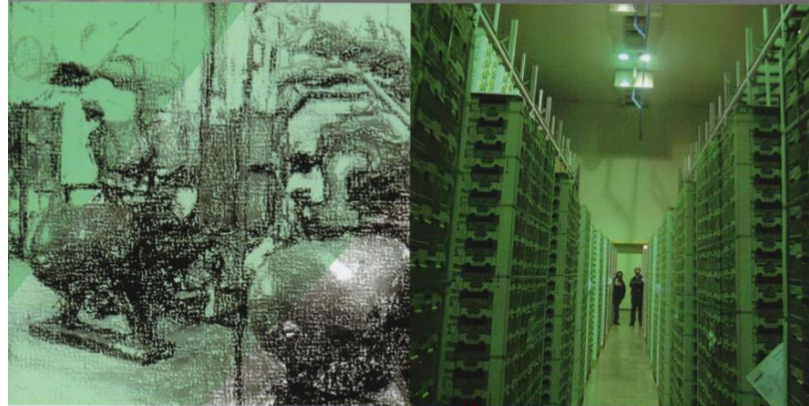
Chilean Chapter of the International Institute of Ammonia Refrigeration
(IIAR)

The Good Practice Manual

- In February 2012, 4 engineers of the Industry got together.
- In April 2012 we called an assembly with industry professionals to invite them to collaborate on our initiative.
- 40 people accepted on invitation and were grouped in 6 working tables to write the manual.
- Each table was appointed to work on a main chapter of the book.
- 5 people working in the leader group reviewed all of the chapters and consolidated the manual.
- In August 2016 the first draft was sent for public consultation.
- In November 2016 the manual was published.

The Good Practice Manual

www.cchryc.cl



Manual de
Buenas Prácticas
en Refrigeración
con Amoníaco



Cámara Chilena de
Refrigeración y
Climatización A.G.

Documento N° 001-2013 rev. 2 - noviembre 2016

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The new National Ammonia Refrigeration Standard.

- In 2014 we were called to a meeting at the Ministry of Health.
- 10 people started working to create the new
National Standard for Ammonia Refrigeration
- In September 2016 the first document was released for public consultation.
- 60 days after all comments had been received and we started working on the final version.
- In September 2017 the final document was presented to the legal department of the Ministry of Health.
- The Ministry of Health requested training for 40 auditors who are going to be responsible for enforcing the new regulations.

The new National Ammonia Refrigeration Standard.



MINISTERIO DE SALUD

**APRUEBA REGLAMENTO SOBRE CONDICIONES DE
SEGURIDAD EN LOS SISTEMAS DE REFRIGERACIÓN CON
AMONIACO.**

N° _____/

SANTIAGO,

VISTO: Lo dispuesto en los artículos 1, 2, 3, 82 letra a) y en el Libro Décimo del DFL N° 725, de 1967, del Ministerio de Salud, que aprueba el Código Sanitario; en los artículos 65 y 68 de la ley N° 16.744 y en el artículo 4° del DFL N° 1, de 2005, del Ministerio de Salud y las facultades que me confiere el artículo 32 N° 6 de la Constitución Política de la República.

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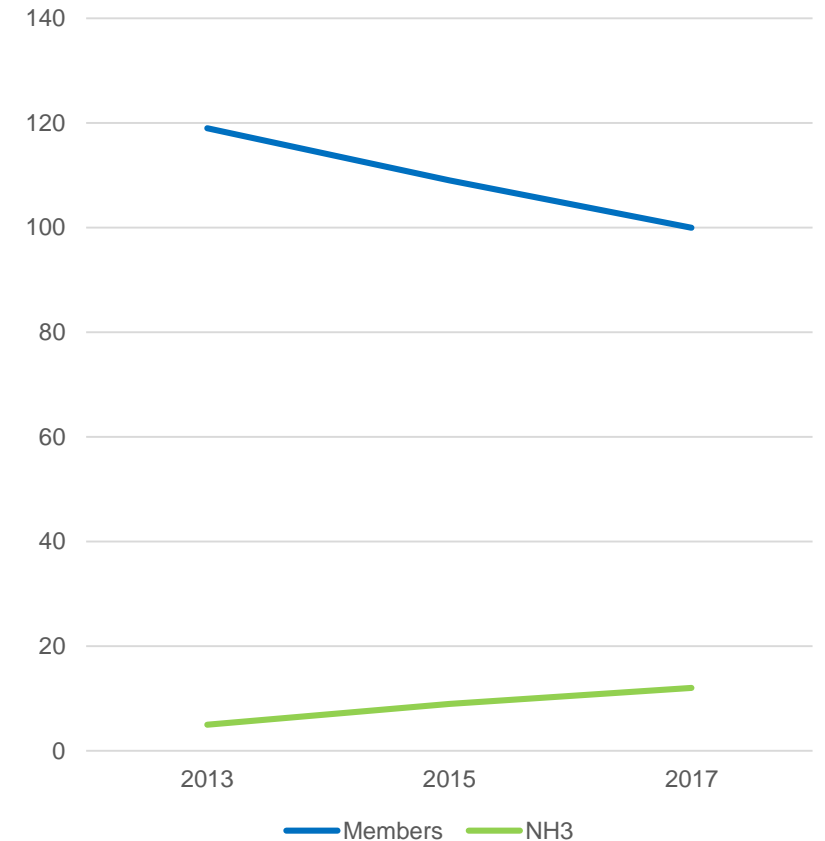
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CChRyC evolving.

- 2013:
 - 119 member companies.
 - 5 members dedicated to ammonia refrigeration (4,2%).
- 2015:
 - 109 member companies.
 - 9 members dedicated to ammonia refrigeration (8,3%).
- 2017:
 - 100 member companies.
 - 12 members dedicated to ammonia refrigeration (12%).



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CChRyC and IIAR.

- After the IIAR Seminar held in Chile in 2012, IIAR and CChRyC started working on a collaboration agreement.
- In March 2013 IIAR and CChRyC signed a collaboration agreement.
- In August 2014 a second IIAR seminar was held in Chile.
- In July 2016 the IIAR Chilean Chapter was established.
- In August 2018 the third IIAR Seminar was held in Chile.

IIAR Seminars in Chile

- 2012:
 - 208 attendees.
 - 18 tables.
- 2014:
 - 280 attendees.
 - 17 tables.
- 2018:
 - 232 attendees.
 - 13 tables.

The Ammonia Refrigeration Industry today

- We have a Good Practice Manual that's been used for the design, installation and operation of the Ammonia Refrigeration systems.
- A new Standard for Ammonia Refrigeration Systems is ready and about to be published.
- The CChRyC has a new Ammonia Refrigeration Department.
- We have an IIAR Chilean Chapter.
- We have 2 professional skills profiles for the training, evaluation and future certification of Ammonia Refrigeration System Operators and Plant Engineers.

The Ammonia Refrigeration Industry today

- We have a new Diploma in “Engineering for Ammonia Refrigeration Systems” with the Universidad de Santiago starting in March 2019.
- ... And the most important:
- The Industry is increasingly aware of the advantages of the ammonia as a natural, efficient and environmentally friendly refrigerant, and the importance of the safety considerations in the design, installation, operation and maintenance of the refrigeration systems.

With our main target

“Making the safe use of ammonia a mandatory practice in the industry”

eurammon is always available as a sparring partner for questions on refrigeration with natural refrigerants.

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