IEC 60079 and ISO/IEC 80079 series standards on flammable gases.
IEC TC31, IEC SC31J, ISO/IEC SC31M

Neil Dennis
Chair IEC SC31J
IEC TC31 Scope

To prepare and maintain international **standards relating to equipment for use** where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>1st Std ‘flameproof’</td>
</tr>
<tr>
<td>2003</td>
<td>IECEx commences</td>
</tr>
<tr>
<td>2005</td>
<td>Joint ISO/IEC work</td>
</tr>
<tr>
<td>2017</td>
<td>40+3 standards</td>
</tr>
</tbody>
</table>

**IEC 60079 and ISO/IEC 80079 series**

IEC TC31 and IECEX certification scheme:- UNECE endorsed as best global practice for management of flammable gas explosion hazards
IEC TC31 - Application

Domestic
Basic principles are still valid for domestic situations

Commercial
Applied to a vast array of industrial and commercial applications including A2L gases

Industrial
Rolling program, standards revised 5-7 year cycle

Time to consider changes to ‘accommodate’ refrigerant gas needs is NOW.

Several key standards beginning revision cycles.

Possible migration?
Nominated by national committees
Interest groups (in descending order)
- Test/Certification bodies
- Equipment Manufacturers
- End users/Consultants

Broad ranging experience in flammable gas safety. However, none have ‘refrigeration’ background. Liaison is needed to other committees/experts.

An individual may occupy several ‘team positions’ i.e. be a member of several groups.
Referenced in electrical and safety regulations in many parts of the world

EU ‘ATEX’ regulations have been a major driver in the last 15 years
Parallel vote in CENELEC to meet EU regulations

Market demand for new services
Extension to new environments
Lesson’s learnt and closing gaps
New Technologies

Responding to issues and developments

Invoked through regulations since A2L gases are classified as flammable
Gases under the UNECE GHS for the Classification of chemicals.
Properties of flammable gases
Relationship example - gas standards

ISO 817
Refrigerant gases

IEC 60079-20-1
(ISO/IEC 80079-20-1:2017)

Non Flammable

5
A2L

11
A2-A3

Flammable

313

- Flammable range
- Boiling point
- Toxicity
- Molar mass

- Flammable range
- Boiling point
- Flash point
- Relative density (to air)
- Ignition temperature
- Minimum igniting current
- Safe explosion gap

Currently no clear responsibility, agreement or resolution process with overlap in committee scope
<table>
<thead>
<tr>
<th>ISO TC86/SC8: ISO 817</th>
<th>Emerging liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties of Refrigerant gases</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISO TC86/SC1: ISO 5149 series</th>
<th>No liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerating systems and heat pumps – Safety and environmental requirements</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IEC SC61C: IEC 60335-2-24</th>
<th>No liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household and commercial safety Refrigeration appliances</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IEC SC61D: IEC 60335-2-40</th>
<th>Liaison 9 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household appliance safety Heat pumps and air conditioners</td>
<td></td>
</tr>
</tbody>
</table>

Currently - no formal proposal to modify IEC TC31 standards to consider refrigeration issues (but conceived as possible).

Liaison = agreement
Thank You
IEC TC31

neil.dennis@aecom.com