

Ten most commonly identified non-compliance issues

Mark Roxburgh
Director
Mercury Technologies

Maurice Young
Principal Consultant & Director
Maurice Young Consulting



Safe Management of Ammonia Refrigeration Systems – May 2017 in Grantham

Ten most commonly identified non-conformance issues...

1. Ownership.
2. Documentation.
3. Training.
4. Emergency Planning and Procedures.
5. Standard Operating Procedures.
6. Maintenance regimes.
7. Configuration of machinery rooms and plant layouts.
8. Ammonia detection equipment.
9. Ventilation of machinery rooms and other areas containing ammonia equipment.
10. Behaviour.

1 – Ownership...

- Operators fail to fully understand their obligations under current health and safety regulations
- Poor management of refrigeration contractors:
 - ❑ Poorly defined scope of contract works and contract documentation
 - ❑ Failures to supervisor refrigeration contractors
 - ❑ Risk assessments, method statements and permits to work are frequently generic and not specific to the plant/site being worked on
 - ❑ Failure to regularly review performance of refrigeration contractors
- The Written Scheme of Examination is something our insurer takes care of:
 - ❑ Failure to understand the role of the 'competent person'
 - ❑ Current WSE not readily available for inspection
 - ❑ Actions are not completed in a timely manner.

2 – Documentation...

- Refrigeration circuit diagrams (P&ID) are not kept up to date.
- Maintenance manuals are not up to date and records incomplete.
- Risk assessments do not cover all risks, are unclear and frequently are task generic rather than plant/site specific.
- Permits to work are poorly managed – a tick box mentality rather than a management control.
- Operators seldom read or understand the WSE.

3 – Training...

- Lack of on-site skills – ammonia awareness.
- Failures to properly check the skills and competence of refrigeration contractor's engineers.
- Little evidence of robust health and safety induction training (and reviews) before engineers first work on operator's site(s).
- Poor emergency response training across the site.

4 - Emergency Planning and Procedures...

- Emergency procedures heavily biased towards reaction rather than the control measures needed to manage and contain identified risks.
- Safety systems simply meet minimum requirements and not generally accepted good practice.
- Emergency procedures are an extension of 'Fire Alarm' and do not consider affects of an ammonia release.
- Hazard Analysis and other available risk assessment techniques (for example, gas dispersal models) are seldom used.
- Consequently, planning does not identify everyone who could be affected in the event of a release.

5 – Standard Operating Procedures...

- Standard Operating Procedures are informal and rely upon the knowledge of one or two key employees:
 - ❑ If they were formal they would be drafted, reviewed, approved, trained out and regularly assessed.
- First reaction is to push the re-set button and hope the plant starts-up.
- Consequences of deviations from standard operating conditions are not fully understood.
- Slow response time due to the availability of the refrigeration contractor's team of engineers.
- History (plant running data) is not analysed to improve performance.
- Poor working practices – safe isolation of plant and equipment, use of RPE/PPE, work at height, working in confined spaces etc.

6 – Maintenance regimes...

- Too many maintenance regimes are reactive (run to failure) rather than pro-active (preventative).
- Operators think they have a maintenance contract but in practice it is merely an arrangement to have periodic inspections carried out.
- Maintenance regime is driven by cost and not influenced by manufacturer's recommendations, age of plant and in-service operating experiences.
- Failure to review performance of the plant and schedule major overhauls, 'like for like' replacements and modernisation programmes.

7 - Configuration of machinery rooms and plant layouts...

- The design and construction is frequently an after thought rather than integral to the overall design and operation and maintenance of the refrigeration system.
- Principal Designer (CDM Regulations) assumes it is the responsibility of the refrigeration contractor who is seldom involved.
- Ammonia machinery rooms are used for other purposes such as workshops and stores.
- Access to outside equipment and other areas containing ammonia refrigeration equipment is frequently poor.
- Access is not restricted to authorised persons.

8 - Ammonia detection equipment...

- Ammonia detection set points are frequently not known.
- Too few ammonia detectors are installed.
- Areas away from the machinery room are frequently not protected with ammonia detection equipment.
- In many cases unprotected plant is still operational after the main alarm is activated.
- Detectors are not re-calibrated in accordance with manufacturer's recommendations and good practice.
- Functional tests are seldom carried out regularly.
- Inadequate visual and audible alarms are installed.
- Many installations are outdated.
- If I have ammonia detectors I don't have to comply with DSEAR...!

9 - Ventilation of machinery rooms and other areas containing ammonia equipment...

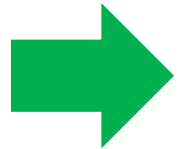
- Ventilation during normal operating conditions is generally ignored:
 - ❑ too cold in winter so the ventilation gets blocked up
 - ❑ too hot in summer all the doors are left open.
- Design of ventilation does not ensure that it permeates the entire machinery room.
- Frequently emergency ventilation equipment is not to the correct specification.
- Ventilation cannot be controlled from both inside and outside the machinery room.
- Adjacent rooms are not positively pressurised.
- Other areas containing ammonia equipment is poorly ventilated.

10 – Behaviour...

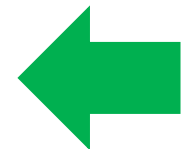
- Site sign-in and induction procedures.
- Standard of visual health and safety information around the site.
- Standards of general housekeeping throughout the site and where ammonia refrigeration equipment is installed.
- Conformance to site rules regarding health and safety.
- Maintenance and regular checking of safety systems.
- Availability of correct PPE, RPE, and other safety equipment etc. and its condition.

The compliance gap...

When Items 1 (Ownership) and 10 (Behaviour) score well



Compliance gap is narrow



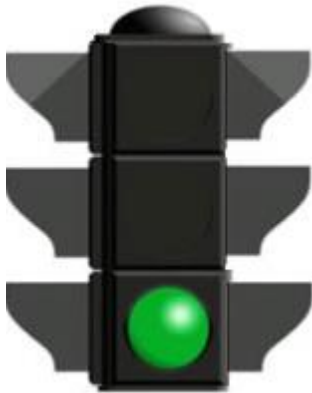
The compliance gap...

When Items 1 (Ownership) and
& 10 (Behaviour) score badly

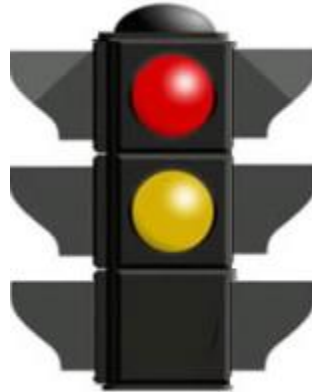


← Compliance gap is wider →

The compliance gap...



Too FEW



NORM



Too MANY

THANK YOU FOR YOUR ATTENTION

ANY QUESTIONS...?

roxburgh@mercurytechnologiesltd.co.uk

mjy@mauriceyoungconsulting.co.uk



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