

Chlorine Gas Release During First Fill of Hypochlorite

Document No: **IW-HSQE-SA-10**

Revision:1.00

Approved By: Claire Lyons

Effective Date: 16-08-2017

1. What Happened?

An Irish Water Chemical Supplier was delivering a first fill of Sodium Hypochlorite to an IBC storage tank on a newly installed disinfection system. Approximately 50 to 60 litres of sodium hypochlorite had been delivered when a colour change to the contents (pink/red colouration) was noted by the delivery driver and a smell of Chlorine Gas was detected in addition to activation of the smoke alarm in the chemical storage room. The site was quickly evacuated and emergency procedures enacted. Subsequent analysis by the chemical supplier determined that a side reaction had occurred; most likely due to contamination within the IBC, and that a significant quantity of chlorine gas was produced and released. It further transpired that the newly installed IBC was reconditioned and was designed for flammable rather than corrosive chemicals. Following the incident, an investigation was carried out and the learnings applicable to Designers, Specifiers and Operators of Irish Water chemical facilities are documented here for implementation



2. Immediate Actions:

The site was quickly evacuated and emergency procedures enacted. The area was made safe and a full accident investigation was commenced

3. Further Actions:

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1. It is an IW policy that IBCs should not be installed as permanent storage of hazardous chemicals e.g. acid (Hydrofluorosilic, Sulphuric, Hydrochloric, Orthophosphate) and bases (Sodium Hypochlorite) that have a H314 Classification (Causes severe skin burns and eye damage).
2. In exceptional circumstances where an IBC is deemed appropriate (e.g. storage of polymers or in some instances salts) it shall be new. Reconditioned IBCs are not acceptable.
3. Where an IBC is deemed appropriate as chemical storage it must be ensured that it is chemically compatible with the chemical being stored e.g. flammable versus corrosive etc.
4. For new installations, where an IBC is deemed appropriate as chemical storage it must be fitted with a fixed fill point.
5. Where there are deliveries currently to IBC's, these must be carried out using proprietary cam lock fittings fixable to the bottom valve of the IBC or to the lid of the IBC, or a piped fixed fill point to the top of the IBC. Where this is not possible, IW should be notified immediately via our hazard identification processes eg LA identified items tracker, HAZCON. Robust temporary control measures must be put in place by the operator in conjunction with the chemical supplier.
6. Contract requirements shall require contractors carrying out installation works to provide a verification of cleanliness prior to first fill of chemical for all chemical storage tanks.
7. Ensure tanks and fill points are clearly labelled to reduce the likelihood of chemical being delivered to the wrong tank.
8. Operators should ensure chemical substance and volume are verified with chemical supplier prior to commencing chemical transfer.
9. Operators to request chemical delivery suppliers to undertake pre delivery inspection reports prior to first delivery of chemicals to site.
10. All chemical delivery activities should be risked assessed taking into account the characteristics of each site

SAFETY ALERT

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4. Further Information:

For further information on this safety alert please contact hsqe@water.ie

5. Distribution list

Internal		
Asset Operations <input checked="" type="checkbox"/>	Asset Delivery <input checked="" type="checkbox"/>	Asset Strategy <input checked="" type="checkbox"/>
Asset Management <input checked="" type="checkbox"/>	All IW staff <input type="checkbox"/>	
Other Please Specify _____		

External		
Local Authority <input checked="" type="checkbox"/>	DBO <input checked="" type="checkbox"/>	Capital Contracts <input checked="" type="checkbox"/>
Relevant Framework Contractors <input type="checkbox"/>		
Other Please Specify : _____		