

# Estates and Facilities Alert



Ref: **EFA/2016/001**

Issued: **04 May 2016**

Valid to: **04 May 2022**



**Carbon steel press fit pipes for water heating systems:  
rapid corrosion and failure.**

## Summary

There has been an increase in the use of thin-wall low carbon steel press-fit pipe work for new installations of water heating systems. It has been found that this pipework may be susceptible to rapid corrosion as a result of the introduction of air (via pin holes, inadequate joints or as a result of poor installation / commissioning practices).

Corrosion can progress to an advanced stage much quicker than expected leading to the unexpected failures in the pipework and this may require more frequent routine inspection of the pipework to detect the problem.

## Action

- Raise awareness amongst Estates Officers that this issue may cause problems earlier than would normally be expected and hence they need to manage the risk accordingly
- Check existing installations for visible evidence of corrosion.
- Take water samples (system water as well as raw water which serves the area) to monitor for any abnormalities.
- Tender documents should require contractors to justify the use of low carbon steel in light of this alert and specify suitable risk management measures.
- Obtain extended warranties from manufacturers AND installers.
- Use additives such as inhibitors and pH regulators in accordance with the manufacturers' instructions for use.
- Ensure any inhibitors used are compatible with local water chemistry.
- Ensure that sections of pipework are not left moist during testing and commissioning. Pipework must either be in a fully dry or full wetted condition
- Do not use water for pressure testing if low carbon steel pipe is installed in phased sections. Manufacturers recommend dry compressed air or inert gas to perform the pressure tests.
- Only use fittings, equipment and inhibitors recommended by the manufacturer and pipe/fittings from different manufacturers must not be used on the same installation. Joints should only be made by the use of the specific manufacturer's own tool, using the same manufacturer's pipe and joints.

### Action by

- Estates
- Capital Planning

### Deadlines for action

Actions underway: 28 May 2016

Actions complete: 28 November 2016

## Device details [optional]

Press fit, thin wall low carbon steel pipe and fittings



## Problem / background

In general thin wall low carbon steel pipe does not carry WRAS approval, therefore must not be used for potable water systems.

Due to perceived cost reductions (compared to stainless steel) there has been an increase in the use of low carbon steel pipe work and press fit technology for heating systems in healthcare installations.

This type of pipe work is only suitable for CLOSED systems (such as LTHW, chilled water, etc.). It must not be used on potable cold water systems or heating systems / chilled water systems that are served by open vent feed and expansion tanks.

There is a higher probability of corrosion if oxygen is allowed into the circuit. The introduction of a small amount of oxygen promotes rapid deterioration of the interior of the pipe and once the corrosion has started it is impossible to stop.

The corrosion may start as a result of:-

- Poorly made joints and often in areas of poor access.
- Wrong installation tools being used.
- Pin holes occurring as a result of inappropriate handling during installation.
- Water being left in pipe work during the hydraulic pressure testing phase and commissioning phase(s).
- incorrect chemical treatment employed.

The corrosion is one element of concern, with the others being flow restriction, areas of bio-film growth and potential higher growth rate of legionella if there are water temperature issues. It may also be that the corrosion is exacerbated by increased chemical disinfection of the supply water due to increased counts of legionella on potable systems.

Inspection of the external insulation will usually show staining, but this will not show the extent of the corrosion internally. It is suggested that water samples are monitored for elevated oxygen and iron levels. It may also be possible to conduct non destructive testing on the pipe by using ultrasonic methods to determine the thickness of the pipe walls and resultant corrosion.

## Manufacturer contacts

This issue is not specific to any manufacturer. At both the installation and commissioning phases, the installer/commissioning specialist must follow the recommendations of the chosen manufacturer exactly as described and confirm in writing that the warranty provided by the manufacturer is in place at contract handover and will be valid for the period of the warranty.

## Distribution

Estates Managers, Risk Managers, Health & Safety, Capital Planning Teams, Accommodation Services

## Enquiries

The above sections of this Alert were compiled by Health Facilities Scotland and distributed nationally without modification.

If you have enquiries about this notice, contact appropriate Regional Office, quoting reference number found at the top of this alert.

### England

Enquires should quote reference number EFA/2016/001 and be addressed to:-

[Mb-defects&failures@dh.gsi.gov.uk](mailto:Mb-defects&failures@dh.gsi.gov.uk)

#### Reporting adverse incidents in England

Defects or failures should be reported on this system: <http://efm.hscic.gov.uk/>

The web-based D&F reporting system is managed by the NHS and Social Care Information Centre on behalf of the Department of Health. For further information on this system, including obtaining login details, please contact the efm-information Helpdesk. Tel 0300 303 5678.

### Northern Ireland

Enquiries and adverse incident reports in Northern Ireland should be addressed to:

Northern Ireland Adverse Incident Centre, CMO Group,  
Department of Health, Social Services and Public Safety

Tel: 028 9052 3868 Fax: 028 9052 3900

Email: [NIAIC@dhsspsni.gov.uk](mailto:NIAIC@dhsspsni.gov.uk)

<http://www.dhsspsni.gov.uk/index/hea/niaic.htm>

#### Reporting adverse incidents in Northern Ireland

Please report directly to NIAIC using the [forms on our website](#).

### Scotland

Enquiries and adverse incident reports in Scotland should be addressed to:

Incident Reporting and Investigation Centre, Health Facilities Scotland, NHS National Services  
Scotland

Tel: 0131 275 7575 Fax: 0131 314 0722

Email: [nss.irc@nhs.net](mailto:nss.irc@nhs.net)

#### Reporting adverse incidents in Scotland

NHS Boards and Local Authorities in Scotland – [report to Health Facilities Scotland](#).

Contractors such as private hospitals carrying out NHS work and private care homes that accept social work funded clients – [report to Health Facilities Scotland](#).

Private facilities providing care to private clients report to the [Care Inspectorate](#) and [MHRA](#).

## Wales

Enquiries and adverse incident reports in Wales should be addressed to:

Simon Russell, Principal Engineer, NHS Wales Shared Services Partnership – Specialist Estates Services, 4<sup>th</sup> Floor, Companies House, Crown Way, Cardiff CF14 3UB

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