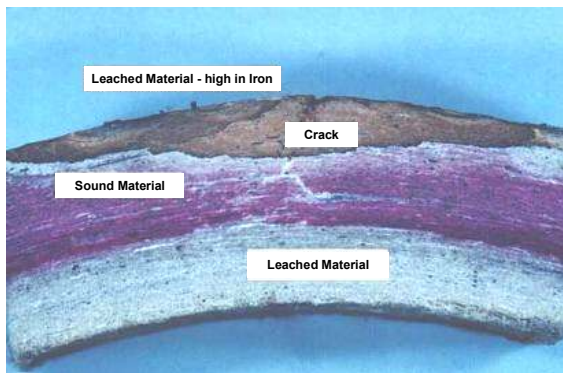


Cementitious Pipeline Assessment



Advanced Engineering Solutions Ltd (AESL) has developed specialised experience and skills in obsolescent pipe materials, where pipe is no longer manufactured but existing pipelines remain in use with potential for substantial further service. Cementitious pipe, including Asbestos Cement derivatives, is one of the most common of such materials.

Asbestos cement pipe does not degrade in a similar manner to ferrous pipe, i.e. localised pitting does not occur. Cementitious pipe most often degrades by leaching of lime (calcium hydroxide) from the cement matrix and this is likely to occur relatively evenly along the pipe length. Where lime leaches from asbestos cement pipe, the degree of leaching can be quantified by the use of pH indicator solution applied to a freshly cut pipe surface.



This test clearly shows locations where lime has been leached or lost from the pipe wall, resulting in a loss of strength and possible failure. Although the test is relatively simple, all work on asbestos cement pipe requires a number of defined safety processes to:

- Control the potential release of asbestos fibres and ensure the use of appropriate respiratory protection, if required
- Ensure safety by Risk Assessment and COSHH controls
- Ensure safe storage and handling of all asbestos materials
- Secure disposal of all asbestos waste

Method statements are also required for the cutting of asbestos cement pipes and the use of pH indicator solutions.

A significant proportion of the UK's water supply is currently delivered via asbestos cement pipe and the Drinking Water Inspectorate (DWI) is becoming increasingly interested in reducing leakage from potable water mains. Inspection of cementitious pipelines, as a pre-emptive measure to detect potential leakage, should be an integral part of all leakage control programmes and pipe replacement strategies.

Development Activities

AESL recognise the benefits of integrating results of leaching inspections of cementitious pipes in an overall Condition Assessment process. The feasibility of improving condition assessment processes for cementitious pipe is therefore being assessed.

All leaching tests for cementitious pipe require intrusive sampling of the pipe. However, this also gives the opportunity for a more general assessment of the pipe condition to be made during the inspection process. The leaching test requires staining by Phenolphthalein solution and an assessment of the depth of carbonation exhibited by the pipe sample. Ideally, the output data from the leaching assessment should include a prediction of the remaining service life of the pipe. AESL will provide analysis of carbonation depth and are currently developing procedures to assess the likely remaining service life of the pipe.

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