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Industry Guidelines

INSTALLATION OF POTABLE WATERMAINS IN CONTAMINATED GROUND

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INSTALLATION OF POTABLE WATERMAINS IN CONTAMINATED GROUND

This guidance note applies specifically to the installation of plastics piping systems conveying potable water.

When plastics pipes carrying potable water are installed in contaminated ground some organic compounds, such as lower molecular weight hydrocarbons, can permeate the pipe wall and impart a taste and / or odour to the water. Whilst it is extremely rare that contamination of soils occurs to such an extent that issues of taste and odour result, there is nevertheless a risk some past and present industrial sites will be contaminated.

For pipelines installed for other than potable water applications there might not be any concern with taste and odour and therefore permeation may not be a problem. Under these circumstances the advice of the pipe manufacturer should be sought to ascertain whether the soil contaminants might affect the pipe itself.

The notion of contaminated soils must be put into perspective in terms of the effects soil conditions have on buried pipeline systems of all types.

- Firstly, it should be noted that the vast majority of soil conditions have no detrimental effect on plastics pipe systems.
- Secondly, practically all the features of a soil that result in corrosive conditions that degrade metallic and concrete pipe systems do not affect plastics pipe systems. For example, low pH, acid sulphate soils, saline or high ground water conditions, intertidal zones, anaerobic soils and even clay soils can be of concern with metallic and/or concrete pipe systems. These corrosive conditions occur frequently compared to the rare situations where hydrocarbon contamination will be an issue for plastics pipe.

Contamination with hydrocarbons to a level that would be of concern to plastics pipe will generally be the result of gross negligence or long term systematic release of the compounds during a period when current environmental controls did not exist.

For non-permeable pipe materials, consideration must be given to the joints and whether these are equally impermeable.

There has been considerable work, especially in the UK, on the subject of potable water pipe installations in contaminated soils, and hence PIPA suggests the most appropriate source of reference information is that produced by the UK Water Industry. These reference documents provide guidance on the acceptable threshold levels of contaminants for a range of compounds in soils where potable water pipelines are to be installed.

PVC pipe will be less permeable than PE or PB to many of these contaminants, but PIPA has taken a conservative approach and recommends that the same thresholds apply to PVC pipe

There are 2 main reference documents:

1. Water Regulation Advisory Service (WRAS) Information and Guidance Note No 9-04-03: “The Selection of Materials for Water Supply Pipes to be laid in Contaminated Land”. This is a freely available document from their website www.wras.co.uk.
2. Foundation for Water Research Report FR0448: “Laying Potable Water Pipelines in Contaminated Ground- Guidance Notes”. This is available for a fee from the Foundation for Water Research http://www.fwr.org.