GUIDANCE

IN-SERVICE INSPECTION PROCEDURES

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Prepared by: Pressure Equipment Committee (TC1)

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SITUATION:

A gas explosion occurred at the ICL/Stockline factory in Maryhill, Glasgow in 2004 resulting in 9 fatalities and many injuries. The cause of the explosion was gas leaking from a buried carbon steel pipe due to external corrosion. This accumulated in an unvented basement of the building until an explosive mixture was present and a source of ignition led to its detonation. The pipe was carrying propane vapour from a storage vessel in the yard into the building and its condition had never been assessed since its installation some 35 years previously.

An inquiry into the explosion has been carried out by Lord Gill and the results published as The ICL Inquiry Report.

A major conclusion is that all buried metallic pipework carrying LPG vapour at commercial and industrial premises should be replaced by polyethylene piping. This will be carried out on a prioritised basis following a timetable agreed between HSE and UKLPG with the oldest pipework in the least well maintained condition and located in the most corrosive soils being replaced first.

GUIDANCE:

If any inspection work is carried out by SAFed members on LPG installations with buried metallic vapour pipework it should be ensured that the user and gas supplier have assessed the priority of pipework replacement and the work is scheduled. UKLPG Technical Memorandum 84 provides advice to occupiers on how to conduct a risk assessment on underground LPG pipework for prioritising replacement.

Notes:

- Due to limited numbers of qualified Gas Safe engineers the higher risk pipework may not be replaced until the end of 2013.
- Pipework at domestic installations is subject to separate considerations.
- The requirements do not apply to pipework carrying LPG liquid. Similar failure mechanisms could apply to buried metallic LPG liquid pipework but this was outside the terms of reference of the inquiry. Replacement of liquid pipework with polyethylene piping would need additional consideration because of the higher pressures involved. Although probably not a requirement under Pressure Systems Safety Regulations a suitable examination procedure for buried metallic LPG liquid pipework should be in place and this would normally include excavation and examination of pipe and protective coatings in representative areas.
- It may be acceptable to ensure the integrity of buried metallic LPG vapour pipework with a suitable examination procedure rather than replacing it with polyethylene but the HSE/UKLPG timetable relates to replacement only.
- Polyethylene piping can be subject to degradation even though external corrosion is not a problem. Ultra violet light affects the properties of the material so it should only be used below ground and risers above ground should be sleeved for protection. Other issues such as susceptibility to impact damage, resistance to subsidence or ground settlement and behaviour in fire situations are areas where polyethylene would appear to be not as good a choice as steel.