The Results from Three Years of Wide-Scale Chlorinated Hydrocarbon Assessment and Mitigation

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Background/Objectives. Like all industrialized cities, Adelaide and South Australian regional centers have contaminated sites that are the direct result of poor historic chemical handling and disposal practices. In 1995, environment protection legislation commenced that established criminal provisions for causing environmental harm. The Environment Protection Authority (EPA) was established at the same time.

In 2009, the legislation was amended to include retrospective provisions for site contamination. The provisions established a hierarchy for liability based on the polluter pays principle. It includes contemporary risk-based provisions for the assessment, remediation, and management of site contamination. The legislation also establishes a site contamination audit system. However legislation typically does not contemplate historic and orphan sites. In 2016, the South Australian Government committed to an investment of AUD$7.8 million over four years to manage a number of legacy orphan sites. This is the first fund of its type in Australia. The EPA has been tasked to implement this program.

Approach/Activities. When the EPA identifies that an orphan site assessment is necessary, it actively engages with all stakeholders, especially affected owners and occupiers of land. The EPA has, in the past three years, undertaken multiple large-scale (across suburbs) chlorinated hydrocarbon assessment programs. This work involves assessment across hundreds or thousands of properties. The main risk drivers are (intentional and unintentional) access to contaminated groundwater and the potential for vapour intrusion. Home type, building condition, lifestyle and climate are all variables that affect the latter. The same variables also affect the reliability of the assessment program. The ‘bottom-up’ and numerical modelling assessment methodology has been the subject of considerable debate.

The EPA’s main focus is on sensitive land uses (residential, childcare, kindergarten). Multiple lines of evidence are needed to provide certainty to the EPA and the community.

As the environmental regulator, the EPA will engage consultants to execute the assessment work and (where necessary) mitigation. This is intended to provide a degree of separation between the EPA’s regulatory function and its assessment task. All reports are published on the EPA website to provide community confidence in relation to transparency and accountability. Where relevant, the assessment program outcomes are discussed in detail with individual home owners or at community meetings. At all times, the EPA seeks to protect the privacy of home owners.

The EPA has recently completed the first Australian residential vapour mitigation trial. It has been successful in reducing indoor TCE concentrations from 40 $\mu g.m^{-3}$ to <2 $\mu g.m^{-3}$.

Results/Lessons Learned. Communities are genuinely concerned when they are advised of soil, groundwater and/or vapour contamination. The EPA seeks to openly address these concerns as early and as quickly as possible. The assessment programs are typically complex and prolonged. Media interest is typically high. Every assessment is different, however there are some common principles that apply to all work. The EPA continues to review, modify and refine its approach to large-scale assessment programs.