Roadmap for Ranking PFAS Contaminated Sites Based on Exposure Pathway Analysis

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Overview: Per and poly fluoroalkyl substances (PFAS), particularly perfluorooctanesulfonic acid(PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS) are now known to be widely spread all over the world as an environmental contaminant. For land owners and companies who have multiple sites with numerous sources, more tools are needed to enable sites to be ranked based on exposure pathways for both human and ecological receptors. Using real world data from numerous Australian sites, a ranking roadmap tool based on high to low exposure risk pathways has been developed enabling a cost-effective approach to management.

Approach: A review of numerous environmental investigations based in different geological regions was undertaken. The investigations included the collection of a wide range of environmental media to enable detailed conceptual site models to be established. The outcomes of the review were the identification of potential exposure pathways which, if complete, would categorize a site to have a higher risk ranking.

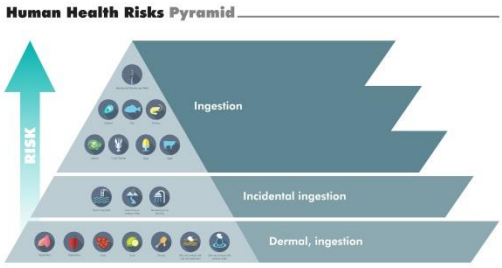

Figure 1 HHRA exposure risk

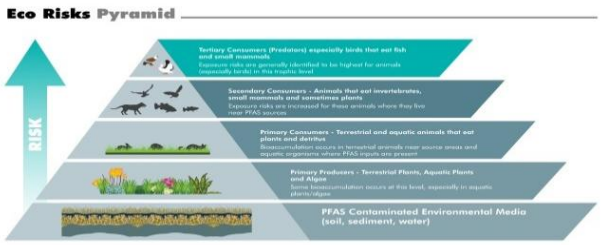

Figure 2 ERA exposure risk

In addition to considering exposure pathways, the environmental setting of the site is important especially with respect to ecological exposure. Sites which are located within a sensitive setting with protected or designated habitat areas will be also ranked higher than those located within urban areas. Data from numerous sites shows that PFOS and PFHxS have the potential to migrate significant distances away from source area.

Results: The tool incorporates available data on PFAS environmental fate and transport with exposure assessment variables to provide a roadmap for ranking sites for investigation or management actions.

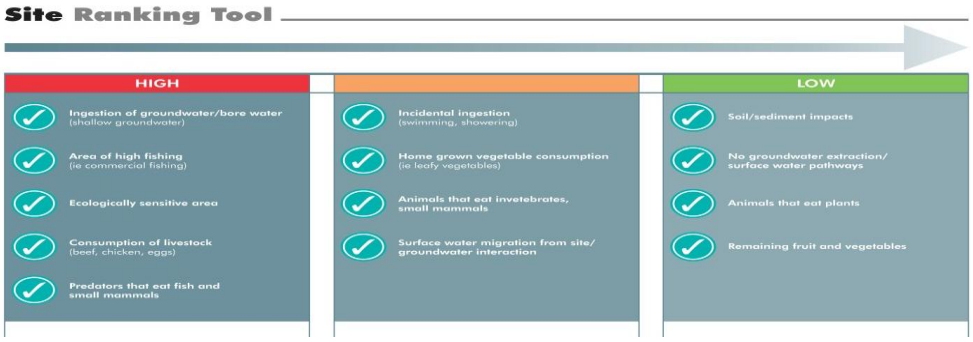

Figure 3 Site ranking tool based on exposure pathway analysis