

## The True Cost of Remediation

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Active remediation, be it in situ or excavation, comes with a cost; the most commonly considered one being the financial cost to the responsible party. However, there are many external costs that are borne by government and society. When considering the benefit of undertaking complete remediation, as opposed to a risk management option, the full cost of the project should be taken into account. Costs that are often external to the estimates to complete the remediation include: energy use by remediation systems and the associated emissions, burdening of landfills designed with a finite lifespan, wear and tear to roads as well as safety issues associated with extensive trucking, volatilization of contaminants to the atmosphere, and stripping of virgin fields to obtain clean backfill for excavations, just to name a few.

This presentation will illustrate some of the non-financial life cycle costs associated with in situ extraction, in situ chemical oxidation, excavation, and landfill disposal. These costs will be contrasted against the risks and benefits of a risk assessment or risk management approach.

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Gary Millard is an Environmental Geologist for Shell Canada Products, managing assessment and remediation of downstream facilities in the prairies. Gary has more than 10 years experience in environmental assessment and remediation, including several years in consulting.