

COMPARISON OF LEVELS OF SULFOLANE AND DIISOPROPANOLAMINE IN WETLAND VEGETATION EXPOSED TO SOUR GAS-CONTAMINATED GROUND WATER

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ABSTRACT

Groundwater containing the process chemicals sulfolane (tetrahydrothiophene 1,1-dioxide) and diisopropanolamine (DIPA) has contaminated a wetland in the vicinity of a sour-gas natural gas processing facility. Of concern is the extent to which these contaminants are taken up by vegetation, and the associated risk to wildlife which may eat the plants. All sampled wetland plants contained detectable levels of sulfolane and DIPA. While sulfolane was distributed predominantly in portions of the vegetation above the surface, such as sedge flower heads (430 mg kg⁻¹ wet tissue mass), the levels of DIPA were more evenly distributed and generally lower throughout the plants (cattail roots, 9.4 mg kg⁻¹, sedge flower heads, 16 mg kg⁻¹). Sulfolane may, therefore, translocate to a greater extent than DIPA in wetland vegetation. A wide variability, a factor of 10, was observed between replicate plant tissue subsamples for both contaminants, indicating that dose rates received by wildlife eating the plants will depend on which parts of specific plants are consumed. Site-specific factors, such as the density and type(s) of biomass (eg, roots, stem, leaves, berries) of specific vegetation in the wetland, must therefore be accounted for to properly assess the fate of sulfolane and DIPA in contaminated wetlands.