

Use of the software program TerraSys to assess the ecotoxicological risks of a TCE-contaminated groundwater

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Following the detection in 1997 of trichloroethylene (TCE) in the groundwater flowing through the Valcartier region (Canada) and in the drinking water system pumped from this water table, the nature and the importance of the risks to the environment due to the presence of TCE and its degradation products (vinyl chloride, *trans*- and *cis*-1,2-dichloroethylene) were determined. The new software program TerraSys v.1.0 was used to estimate the risks to the environment. This complete tool combines all the functions required for ecotoxicological risk assessment of contaminated sites, including conceptual model building, multi-media modelling and toxicological databases. The aquatic and terrestrial ecosystems were considered in order to assess the impact of the contamination of surface water (two rivers receive the aquifer) and soil watered with drinking water. The conceptual model representing these ecosystems was established on the basis of an ecological inventory specific to the Valcartier region. The risks were assessed using a conservative scenario, based on the maximum concentrations as measured in the surface water, and on the average acceptable concentrations determined in a separate study for human drinking water (5.4 and 1.7 µg/L respectively for TCE). The results indicated that according to the described scenario and with the available ecotoxicological data, none of the species assessed were exposed to significant risks.

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