

CASE HISTORY

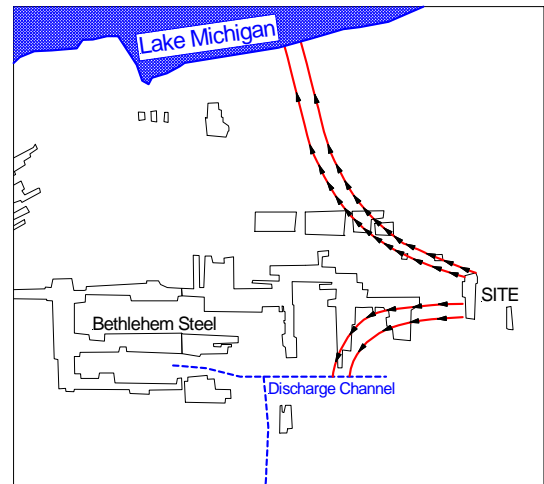
Human-Health Risk Assessment – U.S. Can Company

Challenge:

The U.S. Can Company had been using a soil venting and groundwater air sparging remediation system for five years in order to meet cleanup requirements imposed by a closure plan submitted to the Indiana Department of Environmental Management for an interim status RCRA Drum Storage Unit at its Burns Harbor, Indiana facility. The unit had been used to store spent non-halogenated solvents (F003/F005) by the former owner of the facility. Despite reductions of organic constituent concentrations by the remediation activities of more than 95 % in groundwater and 99 % in soil, low residual concentrations of three organic constituents (naphthalene, 4-methylphenol, and 2,4-dimethylphenol) remained slightly above the cleanup standards set at the chemical practical quantitation limits (PQLs).

Action:

As an alternative to the established PQL cleanup goals, the Unit Closure Plan allowed for the establishment of site-specific cleanup criteria based on the completion of a human-health risk assessment. To accomplish this, MUNDELL evaluated selected migratory pathways and quantified potential exposure concentrations for the U.S. Can facility and its surrounding environment. Two pathways were considered: migration of existing contaminated groundwater to points of on-site and off-site reception, and volatilization of organics from the existing contaminated plume into the site's main structure and outdoor air. To analyze chemical movement along these pathways, MUNDELL risk assessors developed a regional and site-specific groundwater flow model to predict the expected groundwater movement and quantify exposure concentrations in areas of potential discharge or ingestion. In addition, air inhalation modeling was performed to predict air concentrations for on-site workers.



Results:

The results of the risk assessment indicated that residual chemical concentrations did not pose a threat to human-health above an acceptable regulatory level. Groundwater was shown to ultimately discharged either to a nearby ditch or Lake Michigan, and that the relatively small contribution of site groundwater relative to other surface water discharges would result in unquantifiably low and nondetectable concentrations of these organics. Potential organic air concentrations at the site from the remaining subsurface chemical concentrations were also shown to be far below health level concerns.