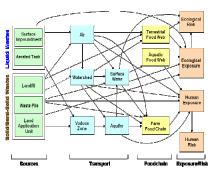
National Assessment of Risk from Land-based Waste Disposal, US

The US Environmental Protection Agency (EPA) is responsible for protecting human health and the environment from significant risks posed by stressors of both natural and anthropogenic origin. An important activity in this context is the setting of regulatory standards. One example is the Hazardous Waste Identification Rule (HWIR), a national-scale rule focused on establishing safe levels of chemical



concentrations in wastestreams entering land-based waste management units (WMUs), such as landfills, surface impoundments. To determine the potential risks related to chemical releases from the WMUs the EPA employed the Multimedia, Multi-pathway, Multi-receptor Exposure and Risk Assessment (3MRA) modeling system. 3MRA consists of a fully integrated set of 17 science models designed to simulate the release of chemicals from the WMUs, their fate and transport through the environment, exposure of human and ecological cohorts (sub-populations with important characterisitics, such as children, farmers). Exposures are coupled with health-effects information to estimate risk. The 3MRA modeling system was applied to assess risks at a sample of actual WMUs distributed across the US. To address aleatory uncertainty the modeling system was applied using Monte Carlo simulation. This highly integrated risk assessment strategy facilitated the estimation of exposure and risk across multiple dimensions of policy interest. Decisionmakers could use the synthesized modeling results to compare risks across human and ecological populations and also as a function of management strategies and policies.

Keywords

Integrated risk assessment, waste management, human and ecological exposure, uncertainty analysis

For More Information

Reference: Marin, C.M., V. Guvanasen, Z.A. Saleem. 2003. The 3MRA Risk Assessment Framework - A Flexible Approach For Performing Multimedia, Multipathway, and Multireceptor Risk Assessments Under Uncertainty. Hum. & Eco. Risk Assessment, 9(7):1655-1677.

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