C12 Standardization of Risk Assessment: Why It Doesn't Always Work

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After attending this presentation, attendees will become aware the potential pitfalls of using a standardized risk assessment approach in the characterization of human health risk at hazardous waste sites.

This presentation will impact the forensic science community by providing attendees with an appreciation for the potential shortcomings inherent in the use of a standardized approach to risk assessment at hazardous waste sites.

Over the last two decades, state and federal regulators have been working to standardize the conduct of human health risk assessments at hazardous waste sites. Regulators have long sought a process of human health risk assessment that is, quick, efficient, consistent, and easy to understand. The application of a standardized approach to risk assessment, however, does not always provide human health risk information that is useful to risk managers. This is because standardization of this process relies on the use of generic exposure parameters, equations, and other information in preference to site-specific information.

Actions taken to clean up Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund sites are designed to be protective of human health and the environment. At such sites, a baseline assessment of human health risk is an integral part of the Remedial Investigation/Feasibility Study (RI/FS). The goal of the RI/FS is to gather information sufficient to support an informed risk management decision regarding which remedy appears to be the most appropriate for reducing health risks. Specific U.S. EPA guidance relating to the performance of baseline risk assessments identifies them as "site-specific" assessments of human health risk that can "vary in both the detail and the extent to which qualitative and quantitative analyses are used," characterizing the complexity and particular circumstances of a site. U.S. EPA experience has shown that Superfund sites are complex, characterized by heterogonous wastes, extreme variability in contamination levels, and a variety of environmental settings and potential exposure pathways. Because the complete characterization of a site, necessary to reduce uncertainty, is not feasible or cost-effective, U.S. EPA adopted a streamlined approach to the RI/FS and the selection of appropriate remedies, making a policy decision "to use, wherever appropriate, standardized assumptions, equations, and values in the human health evaluation." According to the U.S. EPA, this policy "has the added benefit of making the human health risk assessment easier to review, easier to understand, and more consistent from site to site." The inherent problem of such streamlined standardized approach to assessment of human health risk is that it may not always provide useful information to risk managers about which remedy is most appropriate for reducing human health risk.

The Massachusetts Department of Environmental Protection (MassDEP) has taken a similar approach to the conduct of human health risk assessment with its ShortForms. Provided as a "shortcut" or "streamlined method for evaluating potential human health risk at hazardous waste sites" MassDEP provides ShortForms (i.e., computer spreadsheets) to calculate human health risk associated receptor exposure to environmental media. These ShortForms only require the operator to input an appropriate exposure point concentration (EPC) for the media of interest in order to quantify human health risks. Similar to other standardized approaches to human health risk assessment, the resulting estimates of human health risk may not always provide useful information to risk managers about which remedy is most appropriate for reducing human health risk.

While anyone might use a standardized approach to perform risk assessment, only qualified professionals are capable of determining whether the resulting health risk estimates are useful to risk managers in the selection of appropriate remedies. In this presentation, the potential for several standardized approaches to human health risk assessment used by state and federal regulators to result in inappropriate risk management decisions will be examined.

Risk, Assessment, Standardization

