

TECHNOLOGY CAFÉ: SESSION C

12 A Web-based GIS Application for Creating, Evaluating and Operationalizing Sampling Designs

Molly Rodgers | *Eastern Research Group*

EPA's Center for Environmental Solutions and Emergency Response's Homeland Security Research Program tasked Eastern Research Group (ERG) to develop a solution to support analyzing tradeoffs among sampling designs and to operationalize sampling maps to support characterization and clearance sampling. A large-scale contamination event would require significant time and resources for recovery. EPA planners and response personnel need to quickly analyze trade-offs to inform characterization and clearance sampling plan designs. Building on previous research conducted to quantify resources demands associated with various biological sampling designs, an interactive web-based application was developed to facilitate comparing the costs and time required to implement various characterization and clearance sampling plans.

A custom geographic information system (GIS)-based web application—EPA's Trade-off Tool for Sampling (TOTS)— is now available and allows users to create sampling designs, configure and include custom sampling methods, visualize sampling plans, share sampling plans, and operationalize sampling plans to use with field data capture technologies. TOTS is used to support emergency response training and bioterrorism simulations and exercises. Decision-makers can use the tool's resource demand estimates to inform selecting an appropriate sampling technique based on an informed evaluation of established sampling and data quality objectives to identify contamination that could impact human health. In addition to generating resource demand estimates, TOTS also operationalizes sampling plan maps by enabling field response personnel to leverage a web-based map, real-time navigation, and field data capture while sampling in the field. TOTS outputs include geospatial assets that can be saved and shared for reuse. This presentation will provide an overview of TOTS using a case study to illustrate key features, example applications, and future enhancements.
