RECENT ADVANCES FOR CHARACTERIZING ENERGETIC RESIDUES ON MILITARY TRAINING RANGES

ALAN D. HEWITT
U.S. Army Corps of Engineers
Engineer Research and Development Center (ERDC)
Cold Regions Research and Engineering Laboratory (CRREL)
72 Lyme Road
Hanover, NH 03755-1290
(603) 646-4388
alan.d.hewitt@erdc.usace.army.mil

Energetic residues are heterogeneously distributed over military training ranges as particles of various sizes, shapes, and compositions. Moreover, most energetic residues are deposited on the surface, and the highest concentrations exist at firing positions, near targets, and where demolition activities are performed. To address the compositional and distributional heterogeneity associated with the deposition of particles and to obtain representative mean energetic residue concentrations, the sampling strategy must strive for the acquisition of samples that contain the constituents of concern in the same proportion to the bulk matrix as exists within the decision unit sampled. Likewise, to ensure that the subsample taken for analysis of energetic residues is representative of the sample, the field sample must be thoroughly processed.

To promote conformity among various government agencies in their efforts to characterize the amount and distribution of energetic residues on military training and testing facilities, ESTCP (ER-0628) facilitated the documentation of Method 8330B and published a sampling guide. The Office of Solid Waste - Environmental Protection Agency (OSW-EPA) posted Method 8330B on the SW-846 website in November 2006 (http://www.epa.gov/epaoswer/hazwaste/test/new-meth.htm#8330B). This method includes an appendix that describes recommended sampling and sample processing guidelines for soil samples collected on military training and testing facilities. ERDC-CRREL recently published a technical report that provides the information necessary to develop a conceptual site model and describes sampling strategies and designs that have been used to obtain representative surface soil samples on ranges (http://www.crrel.usace.army.mil/library/technicalreports/ERDC-CRREL-TR-07-10.pdf). These two documents represent several advances that are the product of the lessons learned during range studies at more than 30 installations over the last eight years. SERDP, the U.S. Army Corps of Engineers Distributed Source Program, the Army Environmental Center, and U.S. Garrison Army Alaska are funding these research activities.

This presentation will summarize the newly recommended laboratory sample processing and handling protocols and will give some examples of the sampling strategies and designs used to assess the surface loading of energetic residues. In addition, a summary of the current status of these new protocols will be provided.