



The Technical Support Project (TSP) consists of five major Technical Support Centers (TSCs) within ORD, and three are located in the SHC RAP.

## Engineering Technical Support Center (ETSC)

ETSC's mission is to provide site-specific scientific and engineering technical support to remedial project managers, on-scene coordinators, and other Regional and Program Office personnel for contaminated sites (clients). ETSC's mission allows the responsible local, regional or national authorities to work more quickly, efficiently and cost-effectively, while augmenting the technical experience of the remediation team. The Center's goal is to provide relevant scientific and engineering knowledge with expertise in soil and sediment treatment and remediation practices. This goal is achieved by either applying existing or conducting novel ORD research to address clients' needs. This provides building blocks that bridge the basic research and applied science needs of both ORD and clients. ETSC services can include:

- Support on surface water, sediment, land and unsaturated subsurface contamination;
- Research, development and field demonstration of remediation and treatment technologies;
- Technical assistance (document review, reporting) for contaminated sites



Engineering Issue Papers (EIPs) offer a description of applicable technologies, remedial issues, costs, and feasibility along with other criteria. ETSC provides this technology transfer and support to assist clients with contaminated site issues.



ETSC products in 2013 and 2014 have covered a variety of topics. A short listing of these include:

Vapor Intrusion Sampling and Mitigation	Permeable Reactive Barriers	Active Sediment Capping Technologies
Monitored Natural Recovery (MNA)	Optimizing Remediation Technologies	Passive Sampling Techniques
Remediation and treatment technology assessment for various soil and water contaminants: As, Pb, Zn, TCE, PCBs, Dioxin	Mining Waste Treatment Technologies for Contaminated Soil and Water	Technical Information Resources in emphasis areas: Mine Influenced Waters, Rare Earth Elements, and PCBs

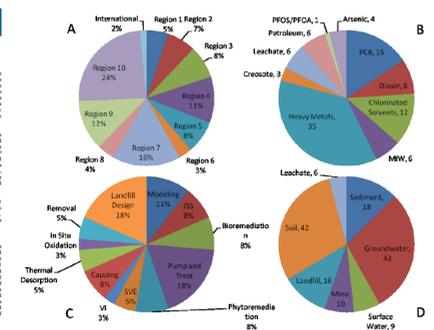
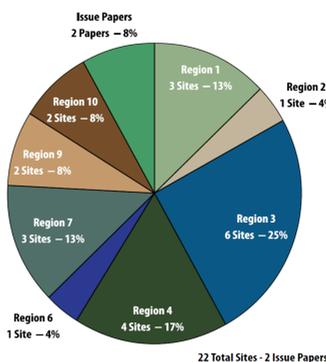


## Site Characterization and Monitoring Technical Support Center (SCMTSC)

The primary goal of the SCMTSC is to provide site characterization assistance to waste program project managers by supporting the use of state-of-the-science methods and technologies for identifying contaminants, determining levels and concentrations, and identifying their geographic extent.

SCMTSC offers waste program staff up-to-date information needed to perform their work by providing a suite of technical and statistical services:

- Reviewing field sampling, monitoring and contaminant measurement activities
- Evaluating reports, models and work plans related to field sampling and measurement
- Developing issue papers and providing up-to-date information.
- Performing special analytical services
- Providing vapor intrusion evaluations
- Performing environmental forensics
- Providing reliable and accurate information on innovative site characterization technologies.
- Providing remote sensing technology evaluations



A. Regional breakdown of technical support requests (%), B. contaminants encountered (#), C. remedial solutions used at sites in % (multiple solutions could be used at one site), and D., type of media that is being remediated (#).

### Pro-UCL

To assist decision makers in analyzing environmental data, SCMTSC also developed and provides direct support for ProUCL, a software package that computes rigorous and defensible statistics and provides statistical graphical tools. ProUCL aids in addressing many site evaluation issues such as comparing background data sets; estimating exposure point concentrations; performing trend evaluations, and identifying outliers and unusual observations present in an environmental data sets. It can be downloaded for free at <http://www.epa.gov/osp/hstl/tsc/software.htm>

### Vietnam



USEPA in partnership with the Government of Vietnam (Academy of Science and Technology) evaluated bioremediation technologies for treatment of dioxin-contaminated soil sites due to Agent Orange usage during the Vietnam conflict. EPA's objective was to provide input on the best methods for sharply reducing the levels of Agent Orange and dioxins in the soil in cost effective manner given bio-remediation can be less expensive over a large area than other more labor intensive technologies. ETSC and SCMTSC were both involved at the site.

ETSC Contact  
John McKernan  
mckernan.john@epa.gov  
513-569-7415

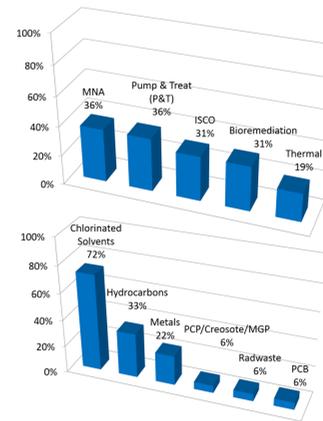
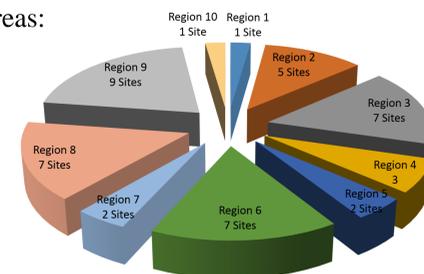
SCMTSC Contact  
Felicia Barnett  
barnett.felicia@epa.gov  
404-562-8659

GWTSC Contact  
David Burden  
Burden.david@epa.gov  
580-436-8606

## Ground Water Technical Support Center (GWTSC)

The GWTSC provides technical support for restoration of contaminated ground water, and also for restoration of impacted ecosystems, under GWERD's mandate (i.e., as the Ground Water and Ecosystems Restoration Division). GWTSC technical support efforts fall under these three specific areas:

- Subsurface contamination (contaminants in ground water, soils and sediments),
- Cross-media transfer (movement of contaminants from the subsurface to other media such as surface water or air)
- Restoration of impacted ecosystems.



GWTSC technical experts source their information from all areas of the environmental arena, including in-house research projects, environmental research organizations, universities throughout the world, laboratories in other federal and state organizations, and commercial operations engaged in environmental remediation. GWTSC's goal is to provide access to the most up-to-date and state-of-the-science technologies and approaches while ensuring that Remedial Project Managers (RPMs) and other technical support users can trust that the GWTSC recommended approaches are success-proven solutions to today's problems.

### TSC Specific Products in FY'14 were;

- The annual reports from ETSC, SCMTSC and GWTSC.
- A site specific remediation plan using the decision support framework and evaluate its effectiveness within the larger watershed context.
- A site specific ecosystem services restoration plan using the decision support framework following remediation.
- Complete performance evaluation of indoor releasable Asbestos Filed Sampler (RAFS).
- Comparison of results of asbestos analysis by optical contract microscopy (PCM) and transmission electron microscopy (TEM) for three asbestos types and two filter loadings.
- Report on risks of exposure to asbestos and relative potency of Libby asbestos.
- Report on "Four Fish Kills Spanning 2011 – 2013 in the Red River Watershed Beaver Creek to Lake Texoma, Oklahoma" tracing potential causes.
- Data and reports that detail the state of the science research efforts published by the Bioavailability Committee on the interrelationship of media characteristics, in-vitro, and in-vivo data and test methods.

### TSC Specific Products for FY'15 are;

- Collaborative TSC Lessons-Learned document.
- FY 2014 annual reports from ETSC, SCMTSC and GWTSC.
- Develop separate Conceptual Site Models (CSM) on the contaminated portions of the Kodiak Coast Guard Base in Kodiak, Alaska to optimize remediation efforts.

