2018 ITRC Teams

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Implementing the Use of Advanced Site Characterization Tools - NEW

Leads: Alex Wardle (alexander.wardle@deq.virginia.gov) and Edward Winner (edward.winner@ky.gov)

Project: A number of advanced site characterization tools, which greatly expand the ability to understand contaminant concentration and mass, as well as increase the ability to understand the stratigraphy of the contaminated media (soil, rock), are available but underutilized. These tools can be broadly classified into analytical tools and geophysical tools. While some of these tools, as well as the core principles underlying newer variations of such tools, have been in existence for several years, advances in computing and supporting technologies have vastly improved data analysis, presentation, and user experience. The goal of this project is to meld existing guidance, primary literature, vendor literature and personal experience, illustrated by projects from the states, into a practical guide on the selection and application of advanced site characterization tools. The team will address the selection, application, and integration of the tools into the project life-cycle of site characterization, remediation, monitoring, and closure.

Optimizing In Situ Remediation Performance & Injection Strategies - NEW

Leads: Dave Scheer (dave.scheer@state.mn.us) and Janet Waldron (janet.waldron@state.ma.us)

Project: *In situ* (on site) reagent injection-based remediation technologies have advanced to mainstream acceptance and offer a competitive advantage over many forms of *ex situ* treatment of soil and groundwater. However, detailed site-specific injection-based strategies are absolutely critical to the success of such *in situ* treatment remedies. In the interest of expedited and cost-effective solutions, many *in situ* projects have been executed based on an incomplete understanding of the hydrogeology, geology, and contaminant distribution and mass. Many sites have undergone multiple rounds of *in situ* injections and not advanced to closure. Better strategies and minimum design standards are required to decrease uncertainty and improve outcomes. To concisely summarize the issues surrounding the topic, the team will create a guidance document on optimizing injection-based remediation technologies. The document will discuss risks and limitations on these technologies, and how to address them to improve remedial success.

PFAS

Leads: Bob Mueller (bob.mueller@dep.nj.gov) and Ginny Yingling (virginia.yingling@state.mn.us)

Project: The goal of this project is to produce concise technical resources that will help regulators and other stakeholders improve their understanding of the current science regarding PFAS compounds. Per- and polyfluoroalkyl substances (PFASs) such as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are a large and complex class of anthropogenic compounds whose prevalence in the environment have become an emerging, worldwide priority in environmental and human health. Certain compounds are believed to be environmentally persistent, and bioaccumulative, and pose human health risks. Recent high-profile cases involving human exposure in the United States have further focused both public and regulatory scrutiny on PFASs. The scientific community's understanding of PFAS sources, site characterization, environmental fate and transport, analytical methods, and remediation is growing rapidly. However, there is no central clearinghouse available that presents this information in a manner conducive to those other than subject-matter experts. As a result, there is a gap in the broad technical understanding necessary for informed and expedited decisions by regulators and policy makers. The project will produce a series of six Fact Sheets, each synthesizing key information for one of the following core subjects: (1) History and Use of Environmental Sources, (2) Nomenclature Overview and Physicochemical Properties, (3) Fate and Transport, (4) Site Characterization Tools, Sampling Techniques, and Laboratory Analytical Methods, (5) Remediation Technologies and Methods, and (6) Regulatory Summary. Following these will be the release of a detailed technical-regulatory guidance document and an internet-based training course, which will provide links to pertinent scientific literature, stakeholder points of view, technical challenges and uncertainties, and the necessary breadth and depth not given by the Fact Sheets.

LNAPL Update

Lead: Randy Chapman (randy.chapman@deq.virginia.gov)

Project: Since 2007, ITRC has been a national leader in producing technical and regulatory guidance documents and training courses focused on the assessment and remediation of light non-aqueous phase liquids (LNAPL) contaminated sites. With the advancement of science and lessons learned, the curriculum of the classroom training

course has reached a point such that there is more new science presented than what was captured in the original ITRC LNAPL documents. The project team proposes to develop a comprehensive up-to-date web-based guidance document that captures relevant historic information for the assessment and management of LNAPL contaminated sites as well as lessons learned and will also incorporate cutting edge new science developed in recent years. This information based on the science of LNAPL, LNAPL Conceptual Site Model (CSM) development, transmissivity, and natural source zone depletion will form the basis of a comprehensive, one-stop LNAPL guidance document and online training that will serve ITRC's target users to support improved decision making at LNAPL sites and support states in basing regulatory guidance on the state of the science.

Evaluation of Innovative Methane Detection Technologies

Leads: Ona Papageorgiou (ona.papageorgiou@dec.ny.gov) and Timothy Taylor (timothya.taylor@state.co.us)

Project: The methane team is working to produce a web-based Technical and Regulatory Guidance Document that will establish a national consensus for evaluating and comparing the effectiveness of methane-detection and characterization technologies. Several states have passed or are considering regulations of methane emissions related to oil and natural gas production and distribution. Moreover, the U.S. Environmental Protection Agency (EPA) has finalized regulations for methane leaks at new sources and is gathering information for proposed regulation of methane at existing sources. Historically, gas detection technologies used to regulate fugitive emissions in the oil and gas sector had to comply with EPA's Method 21 Requirements. With the advent of optical gas imaging (OGI) technologies, EPA established an alternative work practice (AWP) to allow inclusion of manually operated infrared cameras, which provide visual evidence, in most environmental conditions, of a gas plume when a leak is present. EPA's finalized amendments to New Source Performance Standards (NSPS) on methane and volatile organic compounds (VOC) for oil and gas sources include Method 21 and OGI technologies as approved compliance methods. States like Colorado and Pennsylvania also allow use of Method 21 and OGI technologies for methane and VOC detection, and also have the option for approving new detection technologies. The team will assess the performance of state-of-the-art methane detection technologies, as well as regulatory barriers that might hinder the use of a standardized evaluation methodology.

Quality Considerations for Multiple Aspects of Munitions Response Sites

Leads: Roman Racca (roman.racca@dtsc.ca.gov) and William Harmon (harmonw@michigan.gov)

Project: ITRC recently completed the Technical and Regulatory guidance document titled "Geophysical Classification for Munitions Response Sites" (GCMR-2). The document and companion internet-based training rely heavily on the Project Planning and Quality Assurance components of Geophysical Classification, using state of the art advanced sensor technology. Information in the previous ITRC documents "Geophysical Prove- outs for Munitions Response Projects" (UXO-3) and "Quality Considerations for Munitions Response Projects" (UXO-5) will not be applicable in the transition of geophysical classification technology. Technological advancements in geophysical detections systems, and process improvements in geophysical surveys, have rendered UXO-3 and components of UXO-5 outdated or obsolete. The team will produce a separate document which will update the ITRC UXO-3 and UXO-5 documents to reflect technical and procedural advances. The document will provide guidance to regulators concerning the process and integration of Quality Control/Quality Assurance programs to support geophysical classification objectives. The guidance will empower regulators and stakeholders to quickly assess the quality of work performed, thereby minimizing rework, speeding up munition cleanup projects, and reducing their cost. The primary deliverables will be 1) an updated technical and regulatory guidance document, and 2) revised internet-based training.

TPH Risk Evaluation at Petroleum-Contaminated Sites

Leads: Thomas Booze (Thomas.Booze@dtsc.ca.gov) and Mike Kwiecinski (mike.kwiecinski@state.co.us)

Project: ITRC will review, update, and develop guidance on methods and procedures used for evaluating risk and establishing cleanup requirements at TPH contaminated sites. A lot of this information has been published by states and other entities over the past 20 years (e.g., TPH carbon range chemistry and toxicity, methods to develop weighted

toxicity factors and screening levels for different fuel types, models and approaches to develop screening levels for direct exposure, vapor intrusion, drinking water and aquatic toxicity, gross contamination, etc.). The ITRC document will primarily be a compilation of this existing information presented in an easy-to-use manner for regulators and consultants. This document will also incorporate updated TPH information currently being collected by the American Petroleum Institute (API). A comprehensive state guidance document based on making scientific, risk-based decisions at petroleum-contaminated sites will be developed by the team.

Stormwater BMP Performance Evaluation Team

Leads: Rebecca Higgins (Rebecca.Higgins@state.mn.us) and Allison Dunaway (allison.dunaway@deq.virginia.gov)
Project: The goal of this project is to identify best methods for evaluating the pollution-reduction capabilities and verifying the performance of stormwater best management practices (BMPs) for Clean Water Act compliance purposes (to see full project proposal, click here). Facing a diversity of stormwater management laws, regulations and other mandates, regulators have no national consensus on how best to determine the pollution-reduction capabilities of Best Management Practices (BMPs) that reduce the flow of stormwater and associated pollutants into the nation's waterbodies. In addition to ensuring appropriate design and effectiveness, regulators must ensure that stormwater practices are properly installed, maintained and reducing pollution loading over their lifetime. Federal and state environmental regulators, DoD installations, agricultural entities, other large land owners, municipalities, builders, businesses, and a host of stakeholders share a strong interest to develop and implement such a consensus.