Communicating Risk to Achieve Successful Environmental Restoration: Reshaping LNAPL Management Policies by Better Defining Risk

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Background/Objectives. Light non-aqueous phase liquid (LNAPL) management presents complex corrective action and compliance challenges to petroleum manufacturing, storage, and handling facilities such as refineries, bulk product terminals, fueling stations, airports, and military bases. In the subsurface, LNAPL can be difficult to assess and recover and thus can become a long term source of risk, exposure, and LNAPL aesthetic and mass concerns. In 2007 the Interstate Technology Regulatory Council (ITRC) formed a Light Non-Aqueous Phase Liquid (LNAPL) team to develop guidance documents and training to assist environmental practitioners and stakeholders in recognizing and understanding that LNAPL in the subsurface may not pose the same level of risks or concerns and therefore not warrant the same level of management. The guidance and training would allow stakeholders to better understand and assess subsurface LNAPL behavior and risks, develop and justify remedial objectives, select appropriate remedial technologies to meet those objectives, to promote and enhance communication between stakeholders, and to use science based guidance to facilitate closure of LNAPL remediation projects.

Approach/Activities. In 2008, ITRC conducted a nationwide survey of implementing agencies to gauge and summarize the state of LNAPL management. 2008 also saw the production of a two-part (later expanded to three-part) Internet Based Training (IBT) on LNAPL basics. In 2009, ITRC issued the guidance documents *Evaluating Natural Source Zone Depletion at Sites with LNAPL* (LNAPL 1) and *Evaluating LNAPL Redial Technologies for Achieving Project Goals* (LNAPL 2). Classroom training was subsequently developed. In 2015, a new ITRC LNAPL Team was created to update the existing guidance documents, IBT, and classroom training. In order to assess any changes in LNAPL management strategies, in 2017 a new survey was sent out to the state implementing agencies.

Results/Lessons Learned. Since development, thousands of environmental practitioners and stakeholders have participated in the IBT and classroom training. The recent survey results indicate that many implementing agencies have amended or developed their own guidance specific to LNAPL management based on the ITRC guidance and training. Many of these guidance changes have been directed towards defining, identifying, and communicating the true risks and concerns presented by the presence of LNAPL in the subsurface. These changes, as well as other relevant observations, demonstrate that the guidance and training developed by the LNAPL team has been effective in reshaping LNAPL management policies by better defining and communicating LNAPL risk to achieve successful and practical environmental restoration.