NATO/CCMS Pilot Study Meeting: Small Sites in Urban Areas – June 5 -9, 2006 – Athens, Greece

Summary

Twenty-one countries participated in the meeting including a new country (Hungary) and several new country representatives (from Georgia and Belgium). Twenty-one technical papers were delivered by country representatives, consultants, and academics and six country tours de table describing developments related to contaminated land were given. In addition, the soil inventory and assessment work at the European Environment Agency in Copenhagen and the EU's program—EURODEMO—to showcase results and enhance commercialization of remediation technology investments were presented. U.S. speakers from academia, a state government, and a technology vendor described developments in in-situ groundwater cleanup, especially for solvent contaminated sites.

The country representatives decided that the final meeting of this five year Pilot Study will be held in Slovenia in May-June 2007 and cover the principal topic of sediment sites with a special poster session devoted to POP's chemical disposal and clean up issues. This will allow all of the countries to have a strong interest in participating in the meeting.

Highlights

- The Greek Ministry of Environment speaker described 2004 efforts to register and prioritize solid waste dumps with 1663 closed, 1287 permits issued for acceptable facilities, 429 rehabilitation projects completed to date, and 225 projects ready to begin. During 2006, hazardous waste management will become a priority building on Oct. 2004 submissions of hazardous waste management plans from generators along with storage information. A groundwater quality monitoring program is underway apparently in response to the EU groundwater directive. The Ministry of Development representative highlighted a current 120M Euro investment in 8 new waste management facilities, plans to deal with tires, batteries and other special waste streams, and efforts to introduce EMS certification into industrial sectors to prevent and control future waste management problems.

- F. Quercia on behalf of the European Environmental Agency gave a presentation on the EU soil inventory and assessment project. The EEA is a 150 person organization with 30M Euro budget organized into 5 centers. The Agency estimates about 2 million contaminated sites in 25 countries of which about 100,000 need remediation With an average of 5 sites per 1,000 habitants, an average 2.2 % of the surface is contaminated. Average annual expenditures are approximately. 2.5 % of expected total costs. A preliminary risk assessment model is being pilot tested on sites for which data are readily available—principally mining sites—in seven countries. Based on feedback so far, it is anticipated that EU wide inventory work will rank sites by site type vs. human and eco risk. The anticipated new EU soil directive which will cause all countries to have basic contaminated land programs should increase the availability of data that can be summarized at the EU level.Dr.

- Dr. Demetriades of Greece gave a case study on the Lavrion mining site. This site of 170 km. has been a mining and beneficiation site, principally for silver and lead, since 3500 B.C. until 1977. It has disturbingly high levels of arsenic (up to 7000 mg/kg in some areas vs. .23-3 mg/kg as a standard) and lead (up to 70,000 mg/kg vs. 5-51 as a

standard of concern). The public has been made aware of hazards for ingestion and from gardens, but cleanup is not underway. The presentation discussed projects to use biosolids, fly ash, compost and phosphates in various combinations to cost effectively restore the site.

- The remainder of the agenda (available on NATO/CCMS web site) was organized around small sites with petroleum hydrocarbon contamination, small sites with other organics, risk assessment at small sites, and sites in unique settings (i.e. residential or congested urban areas). All of the powerpoint presentations are currently located at www.cluin.org/athens. Several technical presentations of note included:

  Contarini presentation (Italy) dealt with special leak detection and MTBE cleanup at gas stations

  Garrett presentation (UK) gives a detailed operational and cost comparison of steam enhanced cleanup of a petroleum HC site vs. bioremediation

  Rose presentation on Canadian Brownfields redevelopment in Kingston has detailed discussion of registry for sites and many economic/tax incentives for cleanup

  Wcislo presentation (Poland) has detailed presentation of three risk assessment case studies including a phytoremediation site.

  Cemi presentation (Turkey) discusses the practical implementation approach of an EMS system to control and prevent risks at gasoline stations

  Hosami presentation (Japan) reported on three new technologies ready for use: (1) non-invasive soil gas survey instrument, (2) real-time PCR technique for measuring *Dehalococcoides* as a monitoring approach for bioremediation of chlorinated ethane at contaminated sites, and (3) operation of full scale mechano-chemical process for destruction of POP's and PCB's.

  Bastiaens presentation (Belgium) described a clustering approach for multiple dry cleaners in densely populated Antwerp and the use of multiple technologies for remediation after detailed evaluation of options.

  U.S. presentations by Sewell (bio), Siegrist (oxidation), and Baker (thermal) were well received along with case studies of each.