

NATO/CCMS Pilot Study on Prevention and Remediation of
Selected Industrial Sectors
Meeting on Rehabilitation of Old Landfills
Cardiff, Wales
May 23-26, 2004

Summary

The purpose of the three year Pilot Study is to share information on preventive strategies and remedial approaches for an industry sector—a different one each year. This second, annual meeting dealt with issues related to rehabilitation of old landfill sites. Twenty countries participated, including several NATO partner countries (Austria, Ireland, Switzerland and Moldova) plus the Russian Federation as well as representatives of new member countries, including Latvia, Lithuania, Romania, and Slovenia. Also, Australia and Japan participated in the meeting as well.

Outputs from the meeting will include a book of abstracts and a CD containing all meeting presentation materials (i.e. powerpoint slides); they will be NATO publications. Multiple copies of the CD and the book of abstracts are sent to each country rep to assure broad dissemination. In addition, all the meeting presentation materials are mounted on the CLU IN web site at: www.cluin.org/wales.

While this “sector”(i.e. rehabilitation of old landfills) is a bit unique, it was the consensus choice of the countries. Nineteen technical papers fell under the broad topics of new remediation and monitoring technologies, strategies for completion and aftercare, and managing and treating landfill leachate and gases. In addition, five countries gave Tour de Table presentations--summaries of state of the development of waste and/or contaminated land programs in their respective countries. A field trip was conducted to closing land disposal pits at the U.K.'s oldest refinery in Swansea, Wales.

Next year's sector of interest is mega-sites (including both large urban industrial and remote mining sites) and the meeting is tentatively set for Yellow Knife, N.W.T., Canada. The countries also decided to request the CCMS plenary to extend the Pilot Study to five years, in order to cover industry sectors that were of mutual interest.

Highlights

- o Many of the papers will be of interest to researchers working on bioreactors, landfill gas management, and leachate treatment. The abstracts and the full powerpoint presentations are on the web site and will also be available on the CD to be produced from the meeting.
- o Two of the U.S. presentations (from Albright, Desert Research Institute and Thornloe, ORD) derive from public private partnerships on alternative covers under the Remediation Technologies Development Forum (see www.rtdf.org) and the use of optical scanning to detect landfill gas under the U.S. EPA Monitoring and Measurement for the 21st Century demo program.
- o Of note to the hazardous waste remediation community are also papers from Chassagnac (France) on

the use of phytotechnologies as a polishing step in a natural attenuation system for leachate, Diels (Belgium) on evaluation of optimized combinations of treatment zones in permeable reactive barriers (work to be completed this fall) for leachate plumes, Reichenauer (Austria) on an expert system to evaluate technologies for old landfills and contaminated soils, Ragozzino (Italy) on the identification and remedy of landfill gas problems based on phytotoxic damage, Esposito Group (Italy) on planned new instrumentation for contaminant detection in horizontal well drilling equipment, and Rettenberger (Germany) on use of passive treatment systems for landfill gases. (See powerpoint slides on the web site.)

Several new developments in country remediation programs were covered in the **Tour de Table** presentations:

- o **Italy** – 50 contaminated sites have been identified for “national” attention (vs. regional government- led efforts). Of these large sites, four of them constitute 2% of the land area of Italy. It is estimated that 3 billion Euros will be required for remediation of these sites. In addition, 4300 sites have been confirmed by the regional governments from an estimated population of 12,000. Of these, 3,000 have completed characterization and 300 have remediation complete.

- o **Lithuania** –Of 750 municipal type landfill sites identified in 2003, 42 have been closed and 108 are under detailed investigation. An additional 950 sites with pesticide contamination have also been identified. By 2009, all municipal waste will be flowing only to 11 new regional landfills–in order to be consistent with EU guidelines.

- o **France**–With 54 departments of 99 reporting, France estimates a total of 110,000 potentially polluted sites. 3,735 sites have been identified; 1500 have been treated with some user restrictions, while 1486 are under study. The clean up market in 2002 was estimated at 200 M Euros. Hazardous waste landfilling charges are about 110-120 Euros/ton. The Federal agency ADEME is managing about 60 difficult contaminated sites at the national level with a budget of 11 M Euros/year. Regarding municipal waste, France has 366 landfills that take 80% by weight of all municipal waste. 208 handle > 20k tons/year and 70 handle > 100k tons/year. There are 6,000 sites handling < 3,000 tons/year (2% by weight of the waste stream) and only 2,000 of them have administrative permits. Landfilling costs from 45-100 Euros/ton, with an average of 70 Euros. As of April 15, a requirement has been in place to inventory all landfills taking waste and all closed landfills. A landfill tax of 9.5 Euros/ton for legal landfills and 19.5 Euros/ton for all others is now in effect to develop a fund for rehabilitation of old landfills.

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