Final Report about Specialist workshop on:

LANDFILLS OF HAZARDOUS WASTE AND ITS IMPLICATIONS ON HEALTH AND ENVIRONMENT

15-17 November, 2011
Lulea University of Technology

Invitation and goals for the workshop:

The workshop offers possibilities for specialists interested in the design and performance of landfills for hazardous material to discuss the nature of the processes in engineered barriers, particularly clay-based liners, and ways of modeling them conceptually and theoretically. The workshop will focus on practical matters and refer to geological, geotechnical and soil physical issues, and also deal with construction methods. The importance of long time behavior in different climatic regions will give focus on degradation of liner material in long time perspectives, 103 years and more. The aim of the discussions is to create a common basis for predicting the performance of liners and cover layers and to find principles for proper design of these types of landfills.

A second purpose is to consider the disposal and isolation of depleted uranium emanating from weapons and ammunition used in the Iraqi war. The problems with pollution and effective isolation of such slightly radioactive waste are very similar to those of safe disposal of hazardous chemical waste. Both can be disposed of under quite different climatic conditions, which require detailed consideration of how clay-based barriers operate with respect to temperature and hydrology.

Organization Committee:

- Prof. Sven Knutsson, Luleå University of Technology, Sweden (Chairman)
- Prof. Roland Pusch, Luleå University of Technology, Sweden
- Prof. Raymond Yong, Canada
- Prof. Nadhir Al-Ansari, Luleå University of Technology, Sweden
- MD. PhD. Prof. emeritus Kadhim Al-Muqdadi, former head of Environmental Department of the Arab Academy in Denmark
- Dr Batool Almousawi Iraqi Emabssy, Cultural Office, Stockholm
- Prof. MD. Anders Brahme, Karolinska Insitutet, Stockholm, Sweden
- Prof. MD. Anders Romelsjö, Karolinska Insitutet, Stockholm, Sweden

Program:

The program started with an opening ceremony. There were 4 speakers during this ceremony. They were:

1. Professor Johan Sterte (President of Lulea University of Technology).
2. Dr Qussay Alsuhail (First deputy chairman of Iraqi Parliament).
3. Dr Hussein Alameri (Iraqi Ambasssador, Sweden).
4. Dr Batool Almousawi (Iraqi Cultural Attaché, Stockholm).

Professor Johan Sterte

Dr Qussay Alsuhail

Dr Hussein Alameri

Dr Batool Almousawi

These speeches were followed by three keynote papers. These papers were given by Professors Roland Pusch, Sven Knutsson and Nadhir Al-Ansari.

Professors Roland Pusch

Professors Sven Knutsson

Professors Nadhir Al-Ansari

Before the start of the First session on 16th November 2011, the Iraqi Minister of Environment (Eng. Sargon Lazar Slewa) gave his speech because he could not arrive at Lulea on 15th November, 2011.

Eng. Sargon Lazar Slewa

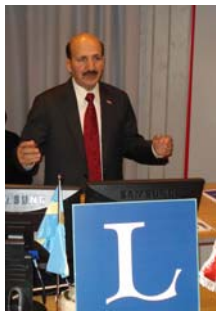
The papers received and accepted were 19 and there were 4 presentations given at the general discussion session. There were 7 sessions, one for keynote papers, 4 for presentation of papers, one for general discussions and one for recommendations. Generally, the papers presented were trying to find solutions to the problem and presenting case studies. They can be divided in two major groups:

A. Engineering perspective.
   In this group of papers, site selection criteria and the design of the landfills were discussed in details. There was a great concern that these landfills should perform for a long period of time.
B. Medical and environmental perspective.
   This group of papers presented case studies and data about polluted areas and techniques used in defining these areas. Other papers highlighted the health and humanitarian side of hazardous waste.















All the papers can be seen on LTU wed site:
http://www.ltu.se/research/subjects/Geotechnical-engineering/Konferenser/Landfillworkshop-2011/Final-Schedule

Participants:

The overall number of participants was about 70. About 30 participants were from Iraq and the remainder from Sweden.
The participants are university staff members, researchers, local provisional council members, medical doctors and postgraduate students.










Recommendations:

During the last session recommendations were suggested and discussed. All the participants suggested the following recommendations:

1. It is evident from the work of various researches that uranium weapons are very dangerous to humans and the environment.
These weapons are made of nuclear waste containing uranium isotopes U-238, U-235, U-234, in addition to the non-natural isotope U-236 and other dangerous chemicals. On explosion, they emit alpha, beta and gamma particles, causing serious biological damage associated with the depleted uranium physical, chemical, radiological, and toxicological properties as an actual contaminant of the environment and the human organism.

2. There is a stolid refusal among the world's most powerful nations, which produce and use DU in war munitions, to acknowledge the potentially serious and permanent health risks of DU weapons and assume responsibility for the destruction that they appear to be causing.
In view of this:
The Specialist workshop on LANDFILLS OF HAZARDOUS WASTE AND ITS IMPLICATIONS ON HEALTH AND ENVIRONMENT, held at Luleå University of Technology, Sweden, November 15-17, 2011 from professional and humanitarian duty, and concern for the next generations, would like to bless all the efforts to for prohibition of the manufacturing and transporting, storing and using of such weapons in the future.
This is in agreement with resolutions taken by a great majority of countries in the UN general assembly. The last UN resolution in December 2010 calling on state users of depleted uranium weapons to review where the weapons have been fired when asked to do so by affected countries. The Swedish delegates regret that Sweden abstained to take a position (vote) on this issue

3. Regarding Iraq, warnings of scientists, researchers and institutions are to be considered about the dangers imposed on humans and the environment due to the use remnants of war that most battered by uranium shells during the wars of 1991 and 2003 which are radioactive and harmful to the environment and its elements and foremost human beings. It had been scientifically proven that the radiation emitted from them will remain for millions of years. Leaving this scrap accumulated in open air, and the delay in burying it effectively, will cause serious health and Environmental consequences.

From this perspective the Iraqi Government is urged to take prompt and immediate actions to minimize the effect of DU military waste on the people and environment which were used in 1991 and 2003 wars. The following measures are to be taken immediately:

A- Establishing a "High Commission" with exclusive authorities including legislative, executive and judicial and scientists and researchers in this field. This commission should be granted all the required powers and support from the Iraqi Government to take measures and action to get rid of this waste. The commission should closely work with experts from WHO, IAEA, IACR, UNEP and any other International organizations and universities. It is believed that the commission should put at least 5 years strategic plan.

B- Iraqi personnel should be trained by International Institutions and or universities on how to get rid of this waste.

C- It is believed that the first task to be executed is collecting the scrap of war in areas that are not populated, not cultivated and does not pollute ground water resources. Hot spot places with unexploded bombs or ammunitions should be first to be dealt with.

D- To implement the above point, an overall survey of DU weapons should be conducted by ministries of Defense, Environment, Industry, Interior, Science and Technology, Higher Education and Scientific Research, Agriculture and Water resources with close cooperation with local authorities.

E- A serious program (under the Federal Government control) is to be put in action to bury this waste and legislations are to be put in this context about:

i- Set site selection criteria for sitting landfills in general and special selection criteria for hazardous waste in particular.

ii. Set design criteria for landfills in general and special design criteria for hazardous waste in particular.

F- Good public awareness program should be set, so that the public are aware of the dangerous consequences of hazardous waste. Part of this program should include lectures in all schools in Iraq.

G- The Iraqi Government is to enhance Iraqi students and researchers to work on solving hazardous waste problems when they are doing their research outside Iraq. In this context the Iraqi Government is to finance all aspects of this type of research.

H- A committee is to be established from the Ministries of Health, Environment, Science and Technology, and specialists from Iraqi Universities under the supervision of UN. This committee should pinpoint the damages and effects caused by the use of DU weapons on Iraq. The forces used these weapons then are obliged to compensate Iraq for the damages on humans and the environment or at least they should offer all technical and scientific assistance to get rid of these wastes.

I- Modern technology (remote sensing and GIS) are to be used to locate polluted areas in Iraq. The help of research institute in this field is to be enhanced.

J- Establishing scientific research center that can locate the polluted areas and suggests scientific ways and means to get rid of the polluted waste. This center should coordinate its work with existing centers that can offer technical and scientific help in this context.

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4- Thanks to the Organization of "The Federation of Iraqi Associations in Sweden" for their help in distributing the news about the workshop and printing some of the papers.

5- The participant in the work shop would like to extend their thanks and gratitude to:

a. Lulea University of Technology for arranging and hosting the workshop.

b- Organization committee of the workshop due to their extra ordinary effort and hospitality.