EMRAS NORM Working Group Report - Meeting #3

Working Group Meeting held in Sevilla, Spain, at the University of Seville, May 9th-May 11th 2005.

Participants

Richard O'Brien, Australia (chair)
Peter Waggitt, IAEA (Scientific Secretary)
Theo Zeevaert, Belgium
Jan Horyna, Czech Republic
Milko Krizman, Slovenia
Virginia Koukouliou, Greece
Eduardo Quintana, Argentina
Danyl Pérez-Sánchez, Spain
Giancarlo Torre, Italy
Leandro Magro, Italy
Rafael García-Tenorio, Spain
Raúl Periañez, Spain
David Cancio, Spain

MEETING NOTES

Monday 9 May

The meeting began with a welcome from the local organizers Rafael Garcia-Tenorio from the University of Seville and David Cancio and Danyl Pérez-Sánchez, both from CIEMAT (Research Centre for Energy, Environment and Technology), Madrid.

A summary of progress to date was then presented by Richard O'Brien, the Chairperson of the Working Group). Richard focused on three main topics:

- Identification of usable models;
- Publication of draft hypothetical scenarios on the web page;
- Initial testing of scenarios; and
- Collection of real scenarios.

The meeting then turned to a general discussion which began with a more detailed review of the hypothetical scenarios. This lead to some suggestions for modification and debugging of the draft scenarios. The major issues discussed were:

- source terms,
- covered vs uncovered waste, with emphasis on the influence of the exhalation rate, and
- K_d values to be inserted.

As a result of the discussions the group agreed on some further development of the three hypothetical scenarios.

The meeting then heard 3 presentations on field and modeling studies, both completed and in progress, at the Fertiberia site at Huelva. The presentations were made by:

- Rafael Garcia-Tenorio (Universidad de Sevilla), '*Radioactive impact from phosphate factories following a spill of waste from the Huelva site in the late 1990s*'.
- Raul Periañez (Universidad de Sevilla), EMRAS aquatic working group), '*River modeling in relation to discharges of phosphogypsum into the Rio Tinto River and studies on contaminated river sediments.'*

- David Cancio (CIEMAT/Madrid), '*A history of the waste disposal site at the Huelva phosphate fertilizer plant concentrating on studies of the remediation of the waste disposal area.'*

Tuesday 10 May
The working group traveled by bus to Huelva to make a site visit to the fertilizer manufacturing complex operated by Fertiberia. On arrival at the plant the party was greeted by the Manager of Maintenance who made a comprehensive presentation about the operation that covered a number of technical and economic aspects as well as a description of the disposal system for the phosphogypsum waste. This was particularly interesting as it included a comprehensive series of aerial photographs depicting the development of the 900 ha waste disposal site which clearly showed the impacts of changes in waste management policy over the years and the extent of remediation.

The party then undertook a guided tour of the fertilizer factory which included the sulphuric acid and phosphoric acid plants. There was a lot of interest in the issue of maintenance of the pipe work in relation to possible NORM residue accumulation, but the advice from the engineer was that this had not been an issue. The tour then moved to the waste disposal area starting with the larger remediated area which has been put aside to become a public park. The state of the revegetation was good with a reasonable mix of grass and shrub species as well as trees.
The party then crossed to the operational waste disposal site to examine in detail the waste disposal system. It was noted that the facility was essentially two large lagoons with the outer walls being raised by upstream construction. Water is lost by evaporation as well as being recycled to the processing area. Seepage from the waste heaps is collected in toe drains and also recycled to the process.

Upon the return to Seville the group made a further review of the scenarios and completed the drafting of all three hypothetical scenarios.

Wednesday 11 May
The meeting commenced with a presentation by Jan Horyna on the first model test of the hypothetical point source discharge scenario. This had included the use of two models and the outcome of the test was deemed satisfactory although it may need to be repeated to take account of some minor changes to the scenario used.

The meeting then continued with a session devoted to future planning which included the following topics:
- Discussion of model options and preliminary selection of possible models for testing;
- Discussion of real data collection, including a discussion of
    - four potential scenarios which were thought to be suitable (Greece, Slovenia, USA, Germany),
    - validation of data sets that would have to be arranged.

It was noted that all data collected from real scenarios could only be used with the full agreement of the owners of the data i.e. the operating company or regulating body, as appropriate.

The collection and distribution of documents by and between WG members was discussed, including the development of the bibliography. The Chairman asked that members continue to provide him with citations of papers and reports from the public domain which are considered to be relevant to the activities of the working group. It was proposed to distribute a copy of the

current bibliography in draft form before November 2005. Other ongoing activity before November was agreed to include:

- testing of hypothetical scenarios using models
- initial assessment of model comparisons
- possible testing of real scenarios
- initial verification of models

The next major item was the planning of work program. It was noted that the next EMRAS meeting will be the 3rd plenary session to be held on 21 November 2005,in Vienna. The next Working Group meeting will be held in May 2006, at a venue to be decided before the end of the November meeting. However, Venice was one suggestion from the Italian delegates, with the idea that the group could also visit the phosphogypsum remediation work at Mestre.

The Chairman then turned to the issue of the Final Report preparation schedule. In particular he suggested that there should be a preliminary draft of at least the framework of the document available for discussion at the plenary meeting in November. He then proposed that the final draft would need to be ready for review at the next WG meeting in May 2006. There was then a discussion about the need to include any other activities in the work plan which raised the topics of mining and water treatment as significant NORM-related industries but which had not been given a great deal of attention in the discussions. It was decided that these activities should be covered in the application of the models and in the application of the hypothetical scenarios.

Finally the Chairman proposed a vote of thanks to the local organizers and closed the meeting with a reminder that the group would formally reconvene in Vienna on 21 November 2005.

Note: Due to the timing of the travel arrangements of some members there was an additional informal networking session in Seville on the morning of 12 May where discussions on various aspects of the work programme took place.