Catania Meeting

Participants

Peter Waggitt	IAEA
Richard O'Brien	Australia
Virginia Koukouliou	Greece
Loren Setlow	USA
Charley Yu	USA
Danyl Perez Sanchez	Spain
Jan Horyna	Czech Republic
Kremena Ivanov	Bulgaria
Julian Hilton	UK
Brian Birky	USA
Mario Paganini	Italy
Christina Nuccetelli	Italy

Day 1

Introductions

Opening remarks – Peter Waggitt – Scientific Secretary

Peter asked all members of the WG to think about planning for post-EMRAS as the Agency has indicated that a follow-up is being considered and wants a plan included in the final report.

Opening remarks – Richard O'Brien – Chairman

This was a very brief summary of the project so far in the form of a PowerPoint presentation.

There was also a brief outline of an invited paper presented at the recent Natural Radiation and NORM conference (London, March 4-6, 2007). This conference emphasised the need for transparency and stakeholder involvement in managing NORM residues, and also noted that optimisation rather than limitation may be more appropriate for NORM.

Presentations

Kremena Ivanova – Bulgaria

Kremena presented a summary of the history of uranium mining in Bulgaria (PowerPoint). U-mining started in 1946 and finished in 1972.

Mario Paganini - Italy

Mario presented a summary of the current situation in Italy; a written paper is available.

Loren Setlow – USEPA

This was a presentation on the Soil Screening Guidance Calculator for Radionuclides (SSL) developed by USEPA, which is available on the internet.

The calculator estimates soil cleanup levels for radionuclide contaminated sites.

The main use of this model is for screening. It is not a transport model.

There are many contaminated sites in the US. People are now living on some of these sites, and on some sites dwellings have been constructed using contaminated waste as building material. SSL is very useful as a first check on radiation levels at these sites and in these dwellings.

It was pointed out that this model could be used with the Camden scenario.

Danyl Perez Sanchez & Virginia Koukouliou

This was a brief description of the poster prepared for the NORM V meeting in Seville on behalf of the WG and the accompanying 3-minute presentation (in PowerPoint format)

Virginia Koukouliou

This was a summary of the Group presentation delivered at the April Conference held in Vienna, 'Environmental Radioactivity, from measurements to assessment to regulation'.

Danyl Perez Sanchez & Virginia Koukouliou

This was a summary of a poster paper presented at the NORM V conference on the use of RESRAD-OFFSITE for the Kavala site in northern Greece. There is a problem for this site with the leaching rates, in that the predicted well water concentrations and ground water concentrations are not consistent with measurements.

Charley Yu

This presentation discussed the history of the development of the RESRAD Codes and gave some indications of how they can be used. The use of sensitivity analysis in determining which parameters are most important was emphasised, and it was pointed out that it is important for modellers to recommend that monitoring programs focus on these critical parameters, rather than simply trying to measure everything.

Richard O'Brien

This was a brief presentation of some of the results calculated for the area source scenario and the area source plus river scenario using RESRAD-OFFSITE. The emphasis was on the consistency of the predictions with intuitive understanding of the problem. It was pointed out that one simple check that can always be done when using models for NORM problems is a calculation of the natural background dose levels.

Outcomes

The written paper for the April conference (Vienna) has to be submitted by June 1.

The Kavala work will be written up for inclusion in the final report.

There was a lively and detailed discussion of some of the issues that need to be emphasised in the final report. These included:

- In many situations, even though the scientific work says the risk is low, the perception of the non-scientific community is quite different
- There is a move towards a holistic approach which, in some situations, can result in relaxation of regulations when it is obvious that further remediation or dose reduction is not justifiable on economic grounds
- ALARA has to be applied in its original sense (i.e. taking social and economic factors into account)
- Modelling is not an end in itself – the results of modelling studies have to be presented in a form that is useful to regulators and decision makers e.g. in showing possible outcomes in an EIS
- Specification of useful methodologies is more important than specification of specific numbers – this implicitly acknowledges that all sites are different, both in terms of the site characteristics and the residue characteristics
- Future use of contaminated/remediated sites (recreational, agricultural, industrial, residential) has to be taken into account when modelling environmental impact
- Communication of issues (transparency, involvement of all stakeholders) may be more important than regulation – this relates to the concepts of acceptable risk and informed consent. Huelva and Kavala seem to be going through this detailed process
- Why do we use models? Are the predictions from models useful? The current trend is towards an integrated or holistic iterative approach involving models, measurements, revision of models, more measurements etc.
- The issue of different regulations and different standards in different countries was mentioned.

Day 2

Site visit – Gela

The group travelled to Gela to visit a large petro-chemical complex which used to produce phosphoric acid and fertiliser, and to look at a phosphogypsum dump which is managed by the company and is still under regulatory control.

The phosphogypsum stack is 55 ha in area and 18-20 metres deep. This corresponds to a mass of approximately 15-17 Mt, but the company figures are 5Mt. A retaining wall was built around the stack in 2003 to eliminate leaching to surrounding environment. This wall is 60 cm thick and approximately 20-25 metres deep and penetrates the clay layer underlying the phosphogypsum to a depth of approximately 3-4 metres.

Measurements indicate that there is contamination outside the retaining wall. It has not been clearly established whether this contamination was present before the wall was built or is the result of continued leaching from the stack and leakage through or under the wall.

The phosphoric acid production plant stopped operating in 1992 and is now awaiting decommissioning.

At the end of the visit the party held discussions with the Chief Executive of the complex and there were promises made of possible further cooperation, including data exchange.

Day 3

Presentations

Jan Horyna

This presentation discussed the use of RESRAD-OFFSITE with the area scenario.

Paul McDonald

The first part of this presentation discussed results obtained using the PC-CREAM modelling package for the point source scenario.
This was followed by a presentation of results obtained using RESRAD-OFFSITE for the area source scenario.

Discussion of draft of final report

The working group spent the afternoon discussing the draft of the final report, concentrating on the introductory sections and the general structure of the document.

The major gaps were clearly identified and tasks were assigned to group members to ensure that the information needed to fill these gaps is provided in good time. A

deadline of September 24 was set for circulating the final draft to members for review prior to the main EMRAS meeting in Vienna (November 5-9).

Tasks were assigned to members of the working group for particular sections of the report as follows:

Loren Setlow
1. Write up of the SSL calculator and its application to the Camden scenario;
2. Short write-up of the FRAMES package.

Danyl Perez Sanchez
1. Write up of the work done on the Huelva scenario.

Richard O'Brien
1. General collation of contributions and development of the draft report;
2. Checking results for the area source scenario and the area source plus river scenario;
3. Write up of the section on comparison of results from different models and from different modellers using the same model.

Charley Yu
1. Words on the development of the RESRAD codes
2. Results of RESRAD calculations.

Virginia Koukouliou;
1. Final description of the Megalopolis scenario;
2. Final description of the Kavala scenario.

Julian Hilton
1. Write up of the "holistic" approach to NORM residue management.

Day 4

The discussion of the draft report continued up until the lunch break, with the main emphasis on collecting and discussing ideas for the sections on DISCUSSION and RECOMMENDATIONS.

The final afternoon was spent going through some of the scenario calculations using RESRAD-OFFSITE. This was extremely useful for those members of the working group who are not familiar with this modelling package.

Summary and Closing Remarks

It was agreed that the meeting had been both productive and constructive.

Thank you to Mario and Christina for their help in organising the meeting and their generous hospitality.