

BIOPROTA: Sixth Workshop Finland, 22-24 September 2004 Notes from Workshop

Wednesday 22 September

1) Introduction: Aims and Objectives of the Workshop

The purpose of the Workshop was to review the work within the first two years of Bioprota and consider new work in future. Day One discussed the current Themes and work completed to date and Day Two discussed the management changes, the IUR Waste Task Force and more precise ideas for the future work programme.

2) Theme 1: Specialised Database (TGL: Enviros)

The Specialised Database was demonstrated, and distributed to all workshop participants. There are gaps in the database because of knowledge gaps and because of a lack of data provided to the TechSec. The database will not solve the problem of data gaps, but it will focus attention on areas where more research is required. The database will not recommend values to use in safety assessments, but will provide ranges or one or more values for a parameter which are relevant in particular site/ assessment circumstances, which the user can then choose as appropriate.

Whilst the database has not been populated with as much data as anticipated, there is support for such a collation of information. The database will continue to be updated in the future (as discussed below). A final report will be produced by the Task Group Leader to support the database, on the timescales discussed below.

3) Theme 2 Task 1: Irrigation Modelling (TGL: Ulla Bergstrom, Studsvik)

Results of the irrigation modelling exercise were presented, and brief explanation of the results followed. Two major modelling approaches are used, either using an interception fraction or Leaf Area Index. There is low consensus regarding translocation, and there are some minor mistakes within the equations that require clarification. The exercise does demonstrate that surface contamination is important, but this varies between elements. The report is near completion, but it requires some additional explanation on specific issues from participants and more detailed discussion of the results and conclusions as highlighted during the Workshop. The positive and negative aspects of each modelling approach will be included in the report, but the report will not make recommendations. The report will be finalised on the timescales discussed below by the Task Group Leader with support from the TechSec.

4) Theme 2 Task 2: Inhalation Modelling (TGL: Maryla Wasiolek, YMP)

Discussion took place on the key issues of interest, for example, high and low dust levels associated with mechanical agricultural activities, soil particle size and mineralogy, calculation of concentration in air, uncertainties associated with radioecology or assumptions such as occupancy and breathing rate. Differences arise from soil accumulation, air accumulation and dosimetry, but we don't know what is most important. Sensitivity analysis (not uncertainty) is potentially useful if there is interest in continuing this task. As above for Task 1, there are minor clarifications required and the conclusions will be strengthened based on the Workshop discussion, resulting in a final report on the timescales discussed below.

5) Theme 2 Task 3: C-14 Modelling (TGL: Steve Sheppard, ECOMatters)

There have not been significant developments on this Task since May 2004. There are differences in models: soil plant transfer models are different but not necessarily right or wrong. There is difficulty in knowing how to validate the models. The Task Group Leader, with support from Mike Thorne, will finalise a report with information available at present.

6) Theme 2 Task 4: Model Intercomparison (TGL: Achim Albrecht, ANDRA)

This Task has been completed and a final report produced as an internal ANDRA report. The conclusions were discussed, and the report has been circulated to participants. Any comments and an expert review will be taken into account when finalising this report as a Bioprota deliverable.

7) Theme 2 Task 5: Biotic Natural Analogues (TGL: Paul Degnan, Nirex)

The Biotic Natural Analogues report has been drafted by Enviro under contract to Nirex. The report requires additional consideration and will be circulated for comment and expert review shortly. The report considers some guidelines for the use of analogues and discusses some generalisations for parameters and processes of interest. The report will be finalised as per the timescales discussed below.

8) Theme 2 Task 6 & 7: Environmental Change and the GBIZ (TGL: Enviro)

The Working Material Report for the Environmental Change and GBIZ modelling task is a combination of the report prepared by CIEMAT in 2003 and the output from a workshop held in ANDRA, December 2003. There is a lot of useful information contained in this report however there are still outstanding issues which are discussed below (and see presentation by Graham Smith within the Business Collaborator site). There is a degree of arbitrariness associated with the GBIZ. There is scope for more dilution (so maybe over-conservative) but equally there is scope for accumulation (so not so over-conservative). The main issues to consider are the source term definition and the transport processes, in wells/aquifers, soil/subsoil, sediments and surface water bodies and dilution/accumulation. This report will be finalised by the TechSec following comment and expert review according to the timescales below.

9) Theme 3 Task 1 & 2: Site Characterisation, and Research Protocols (TGL: Elisabeth Leclerc-Cessac, ANDRA and Mike Thorne)

The Theme 3 report has not changed significantly since the previous workshop in May 2004. The TGL will update the report with support from Mike Thorne, including the tables (to include an additional column documenting why such data are collected). The report will also include case studies as appendices, and an update of the recommended protocols, adding text referencing their use in actual programmes. There are some BIOMASS parameters that are not thought to be relevant, therefore they may be removed (taking into account other tasks and agencies needs).

10) Finalisation and Publication of Reports

A decision on publication is the responsibility of the Steering Committee. There are three options for publication:

- Publish formally as BIOPROTA output, and use information to support production of papers within a journal etc— only if confident of quality.
- Publish and make available as BIOPROTA Working Material (technically good enough to share with the community but not formatted as well as for Option 1). With this Option the responsibility is on the user to evaluate the Working Material for their purpose, noting that it is not peer reviewed.
- Use within BIOPROTA, but do not distribute more widely.

It is preferable for all material to be published as Option 1. Following external review, if the material is judged to be of sufficient quality, publication of hard copies of the reports by Steering Committee organisations (possibly as part of their own report series) should be encouraged. Otherwise, if a report is judged deficient in some way, publish as Option 2. It was agreed that the third option would not be a favoured option for any BIOPROTA material.

All reports (except Theme 3) should be completed by the end of 2004. During October the lead author will liaise with participants, and a draft will be completed for the end of October. During November there will be external review, these comments will be incorporated into a final draft in December. All reports will have the same format and foreword. Within the reports, the authors should be listed, similar to the BIOCLIM Reports. The editor/lead author should be named on the front page, and all other active contributors named in alphabetical order underneath. The reviewers should be acknowledged within the final reports. Beneath the authors and reviewers, the Steering Committee should be acknowledged by naming the organisations. This format should be used in all final reports.

Each report will be published as a pdf on the BIOPROTA website and (potentially) websites belonging to the sponsoring organisation. Hardcopies will also be made available from the sponsoring organisation.

REPORT	ACTIONS
Specialised Database	Publicise so others know it is available and to encourage others to send data: discuss the context and how it is used, as a News Item or a Software Note for publication e.g within the J Rad Prot. MTA will draft a Note.
Irrigation Modelling	The timescale considered above will be used. A member of the IUR WTF may be available to externally review
Inhalation Modelling	As for Irrigation Modelling, the timescale above will be used. A member of the IUR WTF may be available to externally review.
Carbon-14	Publish the report, including MTA information as Working Material. Complete for the end November.
Intercomparison Exercise	Final version is currently an internal ANDRA publication but BIOPROTA will also publish, possibly with minor amendments following external review by Ales Laciok.
Biotic Analogues	As above for Irrigation and Inhalation reports
GBIZ	Enviros will edit the report then invite Ciemat and other (workshop) contributors to review before end of November, then external review.
Site Characterisation and Research Protocols	There is more to do for this Theme therefore aim for a review by end March 2005 and publish at end of April 2005.

REVIEWS & PUBLICATION

Task	Sponsor org	Endpoint	Responsibility	External Review	timescale
Theme 1		1 (tech note)	Enviros and Mike Thorne		End November
Task 1	SKB	1	Ulla Bergstrom	Ales Laciok	End November
Task 2	BNFL provisionally	1	Enviros and Maryla Wasiolek	Ales Laciok and Shelly Mobbs	End November
Task 3	Not needed	2	Steve Sheppard and Mike Thorne	Ales Laciok	End November
Task 4	ANDRA	1	Enviros	Ales Laciok and Kathryn Higley	End November
Task 5	NIREX	1	Enviros	Ales Laciok and Helen Grogan	End November
Task 7	ENRESA	1	Enviros	Ciemat	End November
Theme 3	TBC	1	Elisabeth Leclerc-Cessac and Mike Thorne		End of March/ April

11) Future Management and Administration of BIOPROTA

BIOPROTA has always functioned as a useful forum for discussing and understanding biosphere issues of common interest to radwaste management organisations. It also provides an opportunity for collaborative efforts to reduce outstanding uncertainties that impact on radiological assessments. But following discussions at the Workshop in Stockholm, May 2004, it was agreed that the current report production process was not appropriate. In particular it was recognised that new arrangements were required that are more commercial and that rely less on the good will of participants as we do currently. BIOPROTA members can contribute in kind or with money.

The Steering Group made several decisions that will result in revised working methods. Notably, projects will be undertaken on a multi-lateral basis, with explicit agreement from organisations wishing to benefit from joint research. The work that is agreed will be financed and managed by the organisations involved and will not be diluted in a central pot. There will be strong control by a project

manager focussing on the need to take responsibility for getting international work done to support national programmes.

The Concept and Definition Document for Bioprota is being revised to reflect the change and will be made available to participants.

12) Work and future plans of the IUR Waste Task Force

A presentation was made by Rodolfo Avila of the IUR Waste Task Force. The presentation is available on Business Collaborator. The Task Force is near completion and will produce a report in the near future. The Task Force would appreciate BIOPROTA members reviewing the report and are requesting volunteers to contact them.

13) Future Work Programme

- Numerical vs Analytical Mathematical Approaches

A presentation was made by Ryk Klos on behalf of Achim Albrecht. They are keen to develop a Task Force to discuss this topic further and there is interest. However, it was agreed that the issue was not so much about numerical versus analytical methods, but more to do with how biosphere systems are conceptualised and translated into mathematical models (whether analytical or numerical) at appropriate levels of detail. Achim is requested to organise and co-ordinate a way forward, developing objectives and scope of a task group. Some of the issues discussed have been considered in previous projects such as BIOMASS and BIOCLIM and the scope will need to take account of this in order for the Task Group to be worthwhile.

- Continued Development of the Specialised Database

The TechSec will continue to be the database Administrator. This will involve managing the database including associated files etc and inputting the data. This database will be a living document, constantly updated with appropriate values or ranges.

As a future task, the Steering Committee will invite a consultant to be responsible for obtaining, collating and assessing the quality of appropriate data, before passing onto the TechSec for inclusion in the database. The expert will also conduct a periodic internal review of the database to ensure the appropriate information is added, and is added accurately. It is envisaged that the consultant will have radioecological experience, IUR connections and a large personal network.

Nirex have offered to Project Manage this Task and will draft a scope of work that consultants will tender for. This will be circulated to the Steering committee in advance of the tendering process.

- GBIZ

Three tasks were suggested in a presentation by Graham Smith for continuation of the GBIZ task:

- Current representation of near surface processes
- Site Characterisation Review (Site Specific)
- Scenario Development

The second sub-task is very similar to the current Theme 3 but it could focus on geosphere processes that Theme 3 has excluded. It will be interesting to consider the main issues that are of interest to disciplines across the GBIZ e.g. hydrology and near-surface geochemistry and how the different disciplines across this zone inform each other.

There are sufficient generic questions and interest to start a project. Delphine Texier may be interested to take this forward as ANDRA PM, but others are welcome to volunteer. Graham Smith will draft a scope of work in consultation with ANDRA, then circulate to participants for comment.

- Natural Foodstuffs

Most assessment models focus on agricultural systems but there is some concern that consumption of natural foods may be a more significant factor than previously considered. There is lack of data for these systems and the IUR are looking at obtaining more data. Some natural foodstuffs have been considered in the past, e.g. in BIOMASS and by SKB, however, this presentation and a paper due to be

published in the JER may highlight this as an area to consider in more detail in future assessments. At the meeting, it was not generally felt that there was sufficient support for this topic to merit a task at the present time, but the situation will be reviewed as the debate continues.

- Stable Element Concentrations in the Environment:

Elisabeth Leclerc-Cessac suggested a new topic that may be of interest to other participants: the transfer of radionuclides into the environment with stable element concentration. There is potentially interest in such a topic, particularly for Cl, I, Se. A consultant could compile data of stable element concentrations in the environment, taking account of distance from sea and bedrock etc. The relationship of a specific site to the stable element gradients, may then be of interest.

Elisabeth Leclerc-Cessac is requested to draft a specification on this topic and circulate to participants.

14) Other items of interest

- Biosphere modelling aspects of the Drigg PCSA

Mark Willans presented the biosphere modelling aspects of the Drigg Post Closure Safety Case. There is further work to complete on the Potential Exposure Groups, and there are conceptual model uncertainties. In addition there were some FEPs that were not included in the PCSA base case. Reports are not always publicly available from BNFL, however, further information may be available on request. Mark Willans will distribute further information concerning the Drigg PCSA to attendees, who are invited to respond with suggestions or comments.

- C-14 FSA Modelling

MTA has drafted some reports for the UK Food Standards Agency and they are near finalisation and may be of interest to Bioprota participants. If the FSA agree, MTA will distribute to participants.¹

- SKB SR-can Interim report

A presentation was made by Ulrik Kautsky on the SR-CAN interim report for SKB. This report is available for download from the SKB website and may be of interest to other organisations.

15) Next BIOPROTA Meeting

The Canadian Nuclear Society, an association of waste management agencies in Canada, are hosting a conference in Ottawa, Canada, 2004. The aim is for the conference to be like the Tucson Waste Management meetings, but smaller. There will be a broad list of topics, and ECOMatters have been asked to help with the biosphere input. The conference will be one week, and the Bioprota meeting could be in tandem with the conference on a day that the topic is of least interest to Bioprota participants. In addition, Bioprota presentations can be included in a formal Biosphere session within the conference (open session).

Abstracts are required quickly, therefore participants are requested to send any Bioprota related abstracts to Enviro ASAP. Enviro will then liaise with ECOMatters on BIOPROTA issues.

¹ Participants may be interested in a new IAEA Publication, "Management of Wastes Containing Tritium and Carbon-14" Technical Report Series no 421, available from IAEA website.

BIOPROTA Sixth Workshop Participation List

Name	Company	Address	Email	Phone	Fax
Paul Degnan	UK Nirex Ltd	Curie Avenue Harwell, Didcot Oxon, OX11 0RH, UK	paul.degnan@nirex.co.uk	+44 1235 825 367	+44 1235 820560
Emma Kerrigan	Enviros	Building D5 Culham Science Centre Abingdon, Oxon, OX14 3DB UK	Emma.Kerrigan@enviros.com	+44 1235 46 8813	+44 1235 46 8828
Graham Smith	Enviros	Building D5 Culham Science Centre Abingdon, Oxon, OX14 3DB, UK	graham.smith@enviros.com	+44 1235 46 8811	+44 1235 46 8828
Elisabeth Leclerc-Cessac	Andra	1-7 rue Jean Monnet 92298 Châtenay-Malabry Cedex, France	Elisabeth.Leclerc@andra.fr	+33 1 46 11 82 86	+33 1 46 11 82 08
Ari Ikonen	Posiva Oy	FIN – 27160 Olkiluoto, Finland	ari.ikonen@posiva.fi	+358-2-8372 3749	+358-2-8372 3709
Ulrik Kautsky	SKB	Box 5864 SE – 102 40 Stockholm	ulrik.kautsky@skb.se	+46 8 4598 419	+46 8 6615719
Tobias Lindborg	SKB	Box 5864 SE – 102 40 Stockholm	tobias.lindborg@skb.se	+46 8 4598 407	+46 8 6615719
Ulla Bergström	Studsvik RadWaste AB	SE-611 82 Nyköping	Ulla.Bergstrom@Studsvik.se	+46 155 22 16 52	+46 155 22 16 16
Morimasa Naito	NUMO	Mita NN Bldg. 1-23 Shiba 4-Chome, Minato-ku, Tokyo 108 0014	mnaito@numo.or.jp	+81 3 4513 1532	+81 3 4513 1599
Mark Willans	NSTS (BNFL)	H280, Hinton House, Risley, Warrington, WA3 6AS, UK	mark.willans@bnfl.com	+44 1925 832 258	+44 1925 833 561
Mr Antonio Cortes	ENRESA	Calle Emilio Vargas 7, 28043 Madrid, Spain	acor@enresa.es	+34 91 566 81 49	+34 91 566 81 65
Steve Sheppard	Ecomatters	Suite 105, WB Lewis Business Centre, 24 Aberdeen, PO Box430, Pinawa, Manitoba, R0E 1L0	sheppards@ecomatters.com	+1 204 753 2747	+1 204 753 8478
Ryk Klos	Alexandria Sciences	37 Coverdale Road Sheffield, S7 2DD	ryk@blueyonder.co.uk	+44 114 255 6469	+44 114 258 9557
Mike Thorne	MTA Ltd	Abbotsleigh, Kebroyd Mt, Ripponden, Halifax, West Yorkshire, HX6 3JA, UK	mikethorneltd@aol.com	+44 1422 825890	+44 1422 825890
Ales Laciok	Nuclear Research Institute	CZ-25068 REZ, Czech Republic	lac@ujv.cz	+42 02 6617 2405	+42 02 6617 2405
Rodolfo Avila	Facilia AB	Valsgardevagen 12, 16853 Bromma, Sweden	Rodolfo.avila@facilia.se	+46 8 445 83 77	+46 8564 511 55