

# A EUROPEAN NETWORK FOR RADIOLOGICALLY CONTAMINATED LAND

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## **Abstract**

Radioactively contaminated land arises as a consequence of a wide range of activities, all of which have the potential to result in ground contamination. This legacy of radioactively contaminated land clearly sits uneasily alongside the principles of sustainable development. This is a particular problem when land is at a premium. The re-use of contaminated land is a sustainable strategy option, so long as the redevelopment activity does not lead to unacceptable risks to either the environment or public health during or post remediation. If left unmanaged, radioactive contaminated land poses a serious potential risk to human health.

BNFL are currently trying to set up a European network for radiologically contaminated land. The proposed network will aim to bring together those actively involved with research on radioactively contaminated land in Europe with the end users of sites; such a fully-integrated approach has not been carried out on a Europe-wide scale to date. There are other networks already in existence which deal with contaminated land, but none which deal exclusively with radioactive contamination or at a scale which we wish to achieve. The uniqueness of the proposed network shows that there is a need for such an organisation to be initiated.

The network shall aim to unite owners of operational sites from across Europe with those working to restore disused land, researchers developing new technologies and methods to restore sites, and the service providers and practitioners implementing solutions on the behalf of site owners. This will ensure that a consistent approach is adopted across Europe, leading to the effective management and rehabilitation of contaminated land in a cost-effective, risk-based manner.

The network must focus on technical, logistical and health issues but involve a wide stakeholder perspective. We envisage an initial three or four year programme of work, set around a series of regular Workshops and members meetings. The members meetings would steer the project while the workshops would act as vehicles for disseminating and sharing experience as well as determining which R&D projects to pursue. We believe it would also be beneficial to have a training programme component.

## **Introduction**

Radioactively contaminated land arises as a consequence of a wide range of activities associated with the nuclear industry, as well as other industries which may at some time handle radioactive material. Contaminated land may arise due to accidental spills, from uncontrolled dumping or disposal of material, or even as a consequence of authorised disposal which has not been contained in line with current best practice. In some instances naturally occurring radiological material may also pose problems. If left unmanaged, radioactively contaminated land has the potential to pose a serious risk to human health and the environment. Any such problems should therefore in an ideal world be understood and if necessary mitigated before they have the ability to get worse. This legacy of radioactively contaminated land clearly sits uneasily alongside the principles of sustainable development and is a particular problem in areas where land is at a premium.

## **Needs and Relevance**

A European network aimed specifically at addressing an improved understanding of the issues pertaining to radioactively contaminated land can only be beneficial. These issues are

quite wide ranging in that they cover technology, regulatory, finance, stakeholder communication and safety.

Historically there has always been a general mistrust of nuclear related activities. This is partly through a lack of public understanding of radioactivity and its associated risk, and partly because of the secretive nature of such industries. Breaking down some of these barriers can therefore only be beneficial for everyone, because in most countries the decisions made need to be communicated first to a wide range of interested stakeholders.

Many European countries are independently managing radioactively contaminated land issues. In some cases the potential impact of contaminated land may lead to a detriment to neighbouring countries as a consequence of contamination migrating through groundwater, surface water or wind. There is a general mistrust and even nervousness of those countries whose power plants, processes and safety regimes are deemed to be managed at a lower level than general international expectations. A network would help resolve some of these issues through greater communication, assistance, training and integration.

While relatively clear guidelines exist for radiological waste disposal thresholds, the guidelines for managing radiologically contaminated land are less than satisfactory. It is quite likely that European directives for radiologically contaminated land will be developed upon the back of existing and emerging legislation/guidelines on other contaminants and groundwater protection. A network would provide an opportunity for industry and the regulators to work together in setting out clear, measurable and achievable targets.

Obtaining funding for new projects is extremely difficult. There would be clearly significant benefit if the available finances were shared across R&D projects rather than spending these finances in an independent and isolated manner. Integration ensures greater consistency in approach and additionally allows those network members who are restricted by finances to actively contribute to the research and development required to improve the assessment and management of contaminated land.

### **Network Objectives**

The network shall aim to unite owners of operational sites across Europe with those working to restore contaminated land, researchers developing new technologies and methods to effectively manage sites, and the service providers and practitioners implementing solutions on behalf of the site owners. Additionally if the policy makers and regulators are represented this could provide the basis for essential dialogue on legislation and guidance. This will move towards the development of a consistent approach across Europe, leading to the effective management and rehabilitation of contaminated land in a cost effective risk based manner.

Such an integrated approach has not been carried out on a European wide scale. There are other networks already in existence which deal with contaminated land, but none which deal exclusively with radioactive contamination or at a scale which we wish to achieve. The uniqueness of the proposed network shows that there is a need for such an organisation to be initiated.

The objectives of the network can be summarised as follows;

- Improve integration and consistency
- Improve understanding of radiological issues and trust of nuclear related industries
- Disseminate existing knowledge and technology
- Determine information and technology gaps
- Create high priority R&D projects
- Provide training
- Cost effective approaches to contaminated land management
- Ensure decision making considers environmental risk assessment
- Stakeholder communication

## Approach to the network

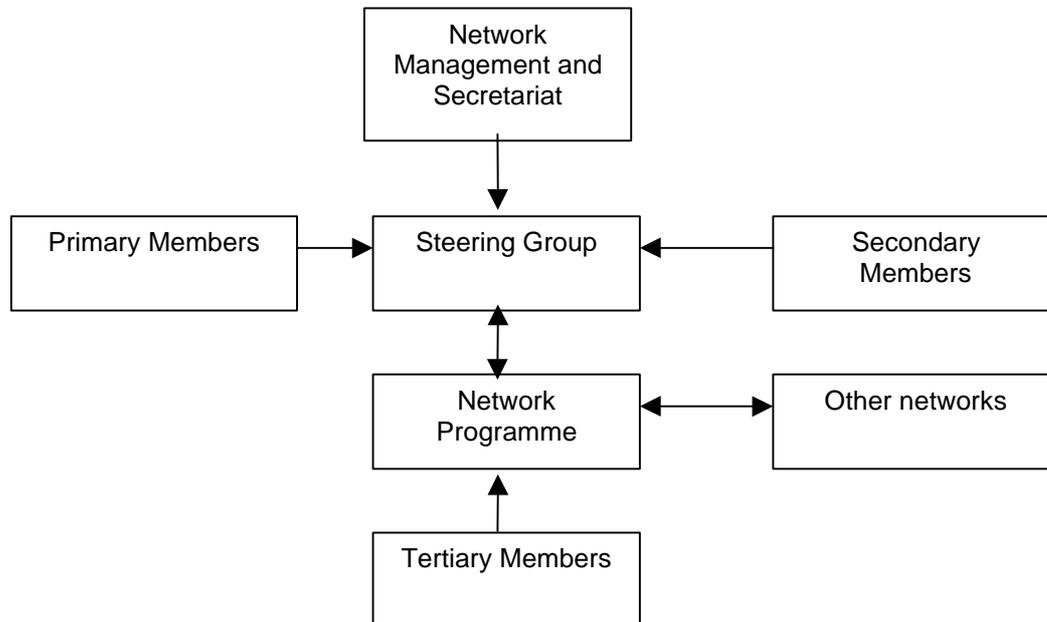


Figure 1 –Proposed Network Structure

The network will consist of primary, secondary and tertiary members.

Primary members will pay a subscription to the network and as active members will sit on the Steering Group and lead on specific topics. They will be expected to drive the network and the resultant programmes.

Secondary members will undertake some of the training and R&D projects. Some will sit on the Steering Group in order to ensure that there is a sensible balance of experience and background.

Tertiary members will be primarily gaining information from the network. They will attend workshops and conferences and receive training if required. The majority of their involvement and communication will be via the web site.

The network's web site will act as the primary information dissemination tool as this is cost effective and of course nowadays internet is accessible to a large number of people. However, as highlighted in Figure 2 below the main focus for developing the programme will be through Steering Group meetings and Workshops.

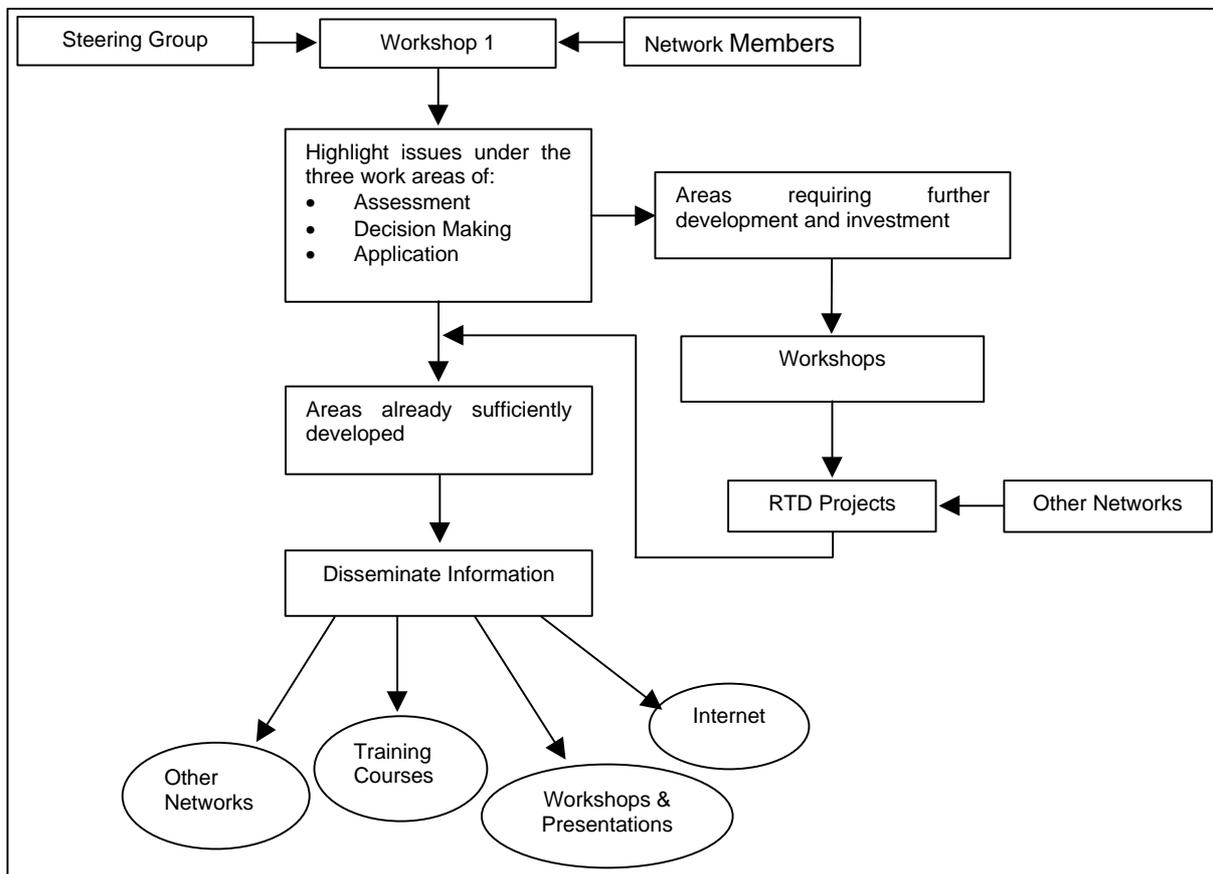


Figure 2 – General Approach to the Network

The most important aspect of a network is to share and disseminate information. To meet these objectives the Steering Group meetings and Workshops will highlight those areas within the key areas of endeavour (see Section below) which are sufficiently well developed to be disseminated. This dissemination will take place in a number of ways, namely via the internet, workshops and presentations, training courses and other networks.

The areas requiring further development will themselves be highlighted and prioritised at the workshops. Where necessary R&D projects will be created in order to develop further these areas and then the results will be disseminated in the same manner as highlighted above.

### Key Areas of Endeavour

The workshops should be used as the vehicle to define the exact programme of work. However, the table below shows an indication of the areas which are likely to be covered by the network under the three principal activities of;

- Assessment
- Decision Making
- Implementation

This list within the table is not intended to be exhaustive, but gives an outline of the topics for discussion at the first workshop meeting.

Principal Activity	Key Areas of Endeavour
Assessment	Environmental Risk Assessment Conceptualisation Site Characterisation Laboratory Analysis Naturally Occurring Radioactive Material (NORM) Code Development Best Practice
Decision Making	Multi-Attribute Decision Analysis (MADA) Best Practicable Environmental Option (BPEO) Understanding legislation and gaining consistency Understanding objectives and endpoints Success Criteria Definitions/trigger levels for radiologically contaminated land
Implementation	Management and Remedial Solutions Treatment Technologies Monitoring Waste Solutions

### Programme

The initial three year Network Programme will constitute Steering Group meetings, Workshops, R&D Programmes, Training and a Network Conference.

The Steering Group meetings will help to provide a prioritisation on the subjects and issues that the network should focus on. The workshops on the other hand will involve a greater number of participants thus allowing the R&D programmes to be determined and developed. The R&D programmes themselves will be primarily funded from those organisations deemed to benefit from the ensuing work but are likely to be carried out by many network members in an integrated manner. Training is an important component of the network and will be undertaken through a number of mechanisms like formal training courses, stakeholder communication processes and presentation packs. It is hoped to hold a conference near to the end of the three year period which will allow further dissemination of work from the network in addition to general presentations on the various aspects of radiologically contaminated land.

### Conclusions

It is hoped that enough support can be generated in order to set up the network. We believe that the issues surrounding radiologically contaminated land require much greater development and integration than that currently existing today. This can only be achieved through an integrated network on a European wide scale.