

The role of western European stakeholder panels in the development of a handbook for living in long term contaminated areas

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EXECUTIVE SUMMARY

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1 INTRODUCTION

Various rehabilitation strategies have been implemented in the contaminated territories of parts of the former Soviet Union affected by the Chernobyl accident. These have highlighted the need and importance of involving the population in the day-to-day management of the radiological situation. This approach complemented the rehabilitation programmes implemented by governmental authorities, especially in the long-term.

In particular, the ETHOS Project in Belarus (1996-2001) has revealed that, in order to be effective and sustainable, public involvement must rely on the dissemination of a practical radiological protection culture within all segments of the population. In particular, this culture needs to be instilled within professionals in charge of public health and education systems (Hériard Dubreuil et al., 1999). Experience from ETHOS has demonstrated that the development of such a culture involves several factors. These include basic knowledge about exposure pathways in a contaminated environment together with direct access to measurements and possibly measurement equipment and the means to evaluate the radiological quality of this environment. This was referred to within ETHOS as "inclusive radiation monitoring". The establishment of such a shared culture requires a specific infrastructure related to the health care and education system. This infrastructure must bring together public and local professionals in order to implement the necessary management procedures. The involvement of non-Government Organisations and representatives of the public in the practical implementation of rehabilitation strategies has proved to be a key factor in the effectiveness and quality of this approach.

The aim of the SAGE Project was to contribute to the development of guidance for disseminating such a culture in Western Europe, for use in the event of an accident or malevolent act with long-term radiological consequences. The main output from this project is a handbook on practical radiation protection for those living in an area with long-term contamination. The handbook gives guidance for health care professionals and the general population including practical information on how to avoid unnecessary exposures during day to day activities.

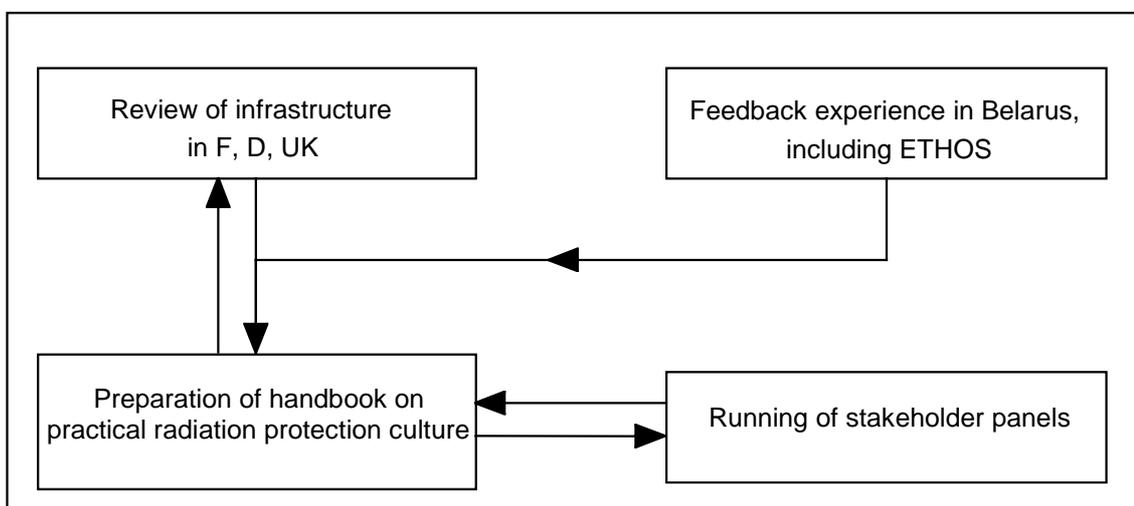
This has been achieved by:

- reviewing and assessing the current infrastructures for the management of post-accident situations in three Western European countries (France, Germany and United-Kingdom)
- drawing the lessons from the feedback experience of the day-to-day management of the radiological situation by professionals and local populations living in the contaminated territories during the last fifteen years in Belarus.

- testing the proposed strategies and guidance in the contaminated territories in Belarus at the level of local communities by professionals involved in the public health area
- validating the handbook through a consultation process involving Western European stakeholder panels comprising public health and radiation protection professionals and other relevant people

The interaction between the different components of the SAGE project is presented in Figure 1.

Figure 1. Graphical presentation of the project and components



This report describes the stakeholder consultation process that was undertaken in three countries of Western Europe. It sets the scene by providing a brief summary of the structure and content of the SAGE handbook. It sets out why it was necessary to involve stakeholders in developing this handbook and describes which stakeholders were engaged. The report then describes the consultation process that was undertaken in France, Germany and the UK including specific issues raised by the national panels. Initial feedback from the stakeholder panels on the structure and content of the handbook is given to illustrate how the stakeholders' views influenced the handbook's development. There is also a section that brings together stakeholder opinion at the end of the consultation period on both the final version of the handbook and the SAGE project in general. Future plans for developing this area of work with Western European stakeholders is outlined at the end of the report and a few conclusions are drawn.

2 THE SAGE HANDBOOK ON RADIATION MONITORING AND PROTECTION IN CASE OF LONG-TERM CONTAMINATION

The SAGE handbook presents concepts and practical tools for living in an environment that will be affected by contamination in the long term following a nuclear accident or other event. It is applicable where the levels of contamination are relatively low but which will persist over several decades. The handbook does not apply to situations where there are high levels of contamination for which evacuation and clean up are required. It is also not applicable to the first few weeks after an incident when the actions are mainly driven by centralised and pre-established plans implemented by the authorities.

The handbook is divided into two main sections. The first section provides general information about radioactivity and the routes by which people are exposed. It gives information on how to measure the levels of radiation and radioactivity in the environment, in foodstuffs and in the body and how to interpret these data in terms of whether protective actions are required. There are four entry points to the first section according to whether the reader wants to find out about the concerns of the *householder*, the role played by *health professionals*, the services provided by the *measurement professionals*, or the function of the *stakeholder advisory board* for exchange of information.

The second section of the handbook provides a series of technical sheets that are subdivided into four topic areas. These are *radioactivity* (description, units, health effects, and uptake by the body); *exposure routes* (external, ingestion, inhalation and transfer in the environment); *radiation monitoring* (ambient dose rates, concentrations in foodstuffs, body contamination), and *practical tools* (interpretation of measurements, comparisons with reference situations and regulatory limits, advice on carrying out improvement options).

The handbook is being produced in a loose-leaf modular format to facilitate revisions and updates and also as an electronic interactive version to be distributed via the Internet and CDs.

3 WHY STAKEHOLDER ENGAGEMENT?

A top down approach where decisions are taken by public authorities on scientific evidence only, often creates conditions for public misunderstanding. In turn, this can potentially lead to severe loss of social trust (Hériard Dubreuil, 2002). Expertise is often presented as essentially science-based in order to reinforce its credibility. Scientific expertise is however only a preliminary step in decision making. If it is to be practicable, policy decisions must integrate not only the

relevant scientific knowledge but also the context of the decision including social, economic, ethical and even political considerations. This is the basis of the idea of inclusive governance, where the aim is to broaden the political approach to taking decisions on new or contentious technological activities by gradually increasing the input from concerned people or organisations into the decision-framing process (TRUSTNET, 2004). This approach, which requires the careful combination of available scientific knowledge and broad involvement of stakeholders, creates the conditions for interested people and groups to engage in framing the issues and questions surrounding the development of policy, and in particular in the identification and evaluation of the possible options.

There are numerous examples of innovative approaches involving stakeholders in radiological risk assessment and management. These cover a wide range of radiation protection situations and range from society wide priority setting (Edwards and Olson, 2002), through industry-wide openness (Coates, 2002) and societal concerns, to local-level responses to specific problems (Lochard, 2004).

In the field of restoration and rehabilitation of long-term contaminated environments there are two initiatives that have successfully engaged stakeholders at either the national or local level to formulate management strategies. In the UK, the Agriculture and Food Countermeasures Working Group (AFCWG) was set up in 1997 to involve stakeholders in the development of strategies for managing agricultural land and products following a nuclear accident (Nisbet and Mondon, 2000; Alexander et al., 2005). The AFCWG currently includes 22 representatives of which 10 are from Non-Government Organisations (NGOs): membership is drawn from the whole of the UK including the devolved administrations. Participation is at a senior level and covers a wide range of disciplines and expertise including various Government departments and regulatory authorities, the water, milk and farming industries, the retail trade, consumer and green groups. Since its inception the AFCWG has been debating the issues concerning the practicability and acceptability of a wide range of countermeasures and rural waste disposal options. Over time the stakeholders have been able to reach a consensus on those options that should be considered by the Authorities in the event of a radiation incident. This has culminated in the production of a UK Recovery Handbook (NRPB, 2005) which stakeholders have had a major input to. The stakeholders will continue to be involved in regular reviews of the Handbook via the AFCWG to ensure it still represents/reflects their views as political and cultural agendas change over time.

At a much more local level, a strong involvement of the local population in the rehabilitation process in the five villages of the Stolyn District in Belarus has contributed to the reconstruction of the overall quality of life on a day to day basis. The ETHOS project, through a European initiative, helped to set up working groups dedicated to meet specific concerns or priorities expressed by the population of the villages. These included the radiological protection of the children, the production of clean milk, the marketing of privately produced food,

the management of domestic waste, the education of school children and the involvement of young people in the general rehabilitation process. In all, some 100 inhabitants committed themselves to participate actively in the working groups. Considerable resources of time and effort were allocated by these individuals who were motivated by the aim of improving the living conditions for themselves and for the community as a whole.

It is clear from the above examples that stakeholders can play an essential role in developing widely acceptable management strategies at the local and national levels. The development of the SAGE handbook could not have been carried out without the input of all the key stakeholders, from the start of the process and has demonstrated the role that stakeholders can also play at the international level.

4 WHO ARE THE STAKEHOLDERS?

The strategies and guidance contained in the SAGE handbook are primarily targeted towards members of the public and professionals involved in the public health domain such as general practitioners, public health physicians, nurses, medical social workers etc. Nevertheless, it could serve other professional bodies, educational establishments and individuals with important roles within communities. The range of stakeholders may therefore vary across Europe according to inherent differences in infrastructure and culture between Member States. The sections that follow describe the composition of the stakeholder panels in France, Germany and the UK.

4.1 French stakeholders

The French panel comprised 12 stakeholders from 9 different organisations/professions (Table 1). On balance more non-government organisations than government organisations participated in the group. A brief summary of the role of each organisation is given below:

- CLCV was created in 1952. It is a national consumer association that brings together individuals who act in all aspects of life to find solutions to individual or collective problems. It has more than 400 local branches in France.
- ACRO was formed in 1986 following the accident at the Chernobyl nuclear power plant. It specialises in providing information and monitoring capacity in areas affected by radioactivity. ACRO owns an independent analysis laboratory and performs measurements on request of individuals, local authorities, professionals or other associations. More information about ACRO and the conditions under which ACRO participated in the SAGE project are given in Appendix A.

- EDA was set up in 1990, following the discovery of reproductive problems in cattle by a farmer bordering the heavy metal processing factory at Metaleurop. Since then, EDA has tried to establish links between environmental contamination and health. It encourages the population to feel responsible for decisions concerning the management and the development of an area if there are short and long term consequences. More information about EDA and the conditions under which EDA participated in the SAGE project are given in Appendix A.
- DDASS are decentralised services of the Social Services Ministry, of the Ministry of Employment and Solidarity, of the Ministry of the Health, of the Ministry of Family and of Disabled People. Consequently, DDASS are in close contact with the population and represent their local social and health authority.
- CPAM encompasses 28 cities of the area around Montbéliard. These cities work together on different topics: urban transport, water, education, economic development, waste...The gathering of the towns in this way enables more financial resources to be devoted to these fields, to co-ordinate the different actions and to improve their efficiency.

Table 1 showing composition of French stakeholder panel

Stakeholder	Position
Marie-Paule Hocquet-Duval	President of the association 'Consommation, Logement et Cadre de Vie' (CLCV), Gravelines
Chantal Mandron	Member of the association 'Consommation, Logement et Cadre de Vie' (CLCV), Gravelines
Jean-Claude Autret	President 'Association pour le Contrôle de la Radioactivité dans l'Ouest (ACRO), Hérouville St Clair
Mylène Josset	Member of 'Association pour le Contrôle de la Radioactivité dans l'Ouest (ACRO), Hérouville St Clair
Anne Lepicard	Primary school teacher, Cany
Anita Villiers	Association 'Environnement et Développement Alternatif' (EDA), Neuville en Ferrain
Joël Robert	Direction Départementale des Affaires Sanitaires et Sociales (DDASS), Poitiers
Gladys Ibanez	Medical student, Paris
Patrick Dahlet	Medical doctor, professional fireman, Head doctor Fire and Emergency Aid in Indre et Loire, Tours
Olivier Vergely	Medical doctor, Ministry of Foreign Affairs, Paris
Jean-François Klopfenstein	Member of Communauté d'Agglomérations du Pays de Montbéliard (CPAM), Paris
Isabelle Nétillard:	Member of Communauté d'Agglomérations du Pays de Montbéliard (CPAM), Paris
Dominique Maison	Member of Direction Générale de la Sûreté Nucléaire et de la Radioprotection (DGSNR), Paris
Catherine Luccioni	Member of Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Paris

4.2 German stakeholders

The German panel comprised 10 stakeholders representing 8 different professions/organisations (Table 2). There was a good balance of GOs and NGOs. The panel included a general practitioner, other medical professionals responsible for regional centres of radiation protection, experts from public authorities responsible for the monitoring of radioactivity, as well as representatives from the Bavarian Farmers Union, teaching profession and an aid organisation active in the contaminated areas in Belarus and Ukraine. Overall, the areas of expertise covered by the German panel were complementary and considered adequate for a thorough evaluation of the handbook. The convenor of the German panel found that it was easier to engage those stakeholders whose work already involved radioactivity. The teacher and farmers' representative were exceptions to this trend being keen to participate because of the influence that long term contamination would have on their daily lives. Several others not familiar with radioactivity however (e.g. nursery school teacher, expert in waste management) declined the invitation to participate in the panel because they either had no time available or felt that they had no expertise to offer.

Table 2 showing composition of German stakeholder panel

Stakeholder	Position
Dieter Berg	GSF National Research Centre for Environment and Health, Institute for Radiobiology, Physicist (made measurements in Belarus)
Johann Faleschini	Bavarian Environmental Protection Office (LfU), Centre for the Surveillance of the Environmental Radioactivity, Physicist and head of the centre
Volker List	Research Center Karlsruhe (FZK), Medical Department, Regional Radiation Protection Center, Physician and head of the centre
Wolfgang Waschkowsky	Central Scientific Unit (ZWE), Research Reactor II of the Technical University Munich, Retired physicist with interest in nature conservation
Harald Jugel	Bavarian State Office for Health and Food Control (LGL), chemist responsible for the monitoring of radioactivity in foods
Daniela Gehler	Bavarian Farmer's Union (BBV)
Heinz Czempel	Schwabinger Hospital in Munich, Department for Radiotherapy and Nuclear Medicine, retired physicist,
Bernhard Kofler	„Help for Gomel“ Physician
Dieter Knautz	„Help for Gomel“
Grete Engelmann	Deputy Headmistress Teacher

4.3 UK Stakeholders

A core group of stakeholders comprising public health physicians', specialists in radiation protection and an expert in risk communication was established (Table 3). This core group agreed to take on responsibility for the setting up of an

extended stakeholder panel to evaluate the applicability of the handbook to a much wider range of people in the UK. The extended panel included:

- a Welsh public pressure group (Llanbradach Health Watch) an officially sponsored public pressure group consisting of members of the public
- a South West England public health group consisting of public health specialists in Primary Care Trusts, Health Protection Units, Strategic Health Authority, Medical schools and academics
- a local health protection unit/environmental services department for a large conurbation in the Midlands
- a group of experts (academics) from University of Manchester, Manchester Business School, University of Leeds and University of Liverpool specialising in risk communication, risk management, environmental science and decision making.
- a head teacher of a rural primary school in Oxfordshire

The composition of the extended stakeholder panel in the UK was considered to adequately cover the range of disciplines for which the handbook was directed.

Table 3 The composition of the UK core group of stakeholders

Stakeholder	Position
Jill Meara	Assistant Director and Public Health Physician, National Radiological Protection Board
Elaine Farmery	Medic and Deputy Director, Chemical Hazards and Poisons Division, Health Protection Agency
Anne Nisbet	SAGE project manager, National Radiological Protection Board
Mark Temple	Role, National Public Health Service Wales
Sarah Harrison	Role, Devon Health Protection Unit
Ruth Lockley	Role, Birmingham and Solihull Health Protection Unit
Alex Stewart	Specialist registrar in Public Health, Chester Health Protection Team
Gabe Mythen	Principal lecturer in Communications and Culture, Manchester Metropolitan University

5 STAKEHOLDER CONSULTATION PROCESS

The panels in France, Germany and the UK met on at least three occasions during the consultation process. The mechanisms for consultation varied between panels as did the frequency of meetings and topics for discussion. However, the common aim and main focus of meetings was the provision of

feedback on the handbook and thereby further its development. The following sections summarise the stakeholder consultation process in the three participating member states. A short discussion section at the end highlights the strengths and weaknesses of the different consultation processes.

5.1 French panel

The French panel met on five occasions. The main purpose and objective of each meeting are summarised in Table 4. In common with the other panels, the first meeting provided background information relating to the SAGE project, it enabled stakeholders to introduce themselves and to agree the overall objectives for the panel.

The second meeting was unique in that it provided a practical session on radiation monitoring. There was a demonstration of the various types of measurements that could be made in the case of long-term contamination (ambient dose rates, foodstuffs and whole body measurements – WBMs). A van containing measurement equipment enabled some on-the-spot WBMs as well as measurements of fresh mushrooms brought by the various participants. The second meeting also provided an opportunity for the stakeholders to give ideas about the content of the handbook, based mainly on their knowledge of the Belarussian experience.

The third meeting of the panel had four main components.

- (1) A practical case study on the interpretation of whole body measurements (WBC) using data on the contamination of foodstuffs. The analysis was conducted using the different interpretation tools developed in the handbook.
- (2) The French regulatory system. A representative from the French authority (Direction Générale de la Sûreté Nucléaire et de la Radioprotection, GSNR,) gave a presentation on general principles, organisation, and major regulatory texts.
- (3) Design of a strip cartoon dealing with radioactivity. The French non-governmental organisation CLCV presented its ideas for making a strip cartoon that could be more easily understood by the general population and appeal to young people.
- (4) Comments on the second version of the handbook.

The fourth meeting of the panel focussed on a detailed review of the handbook (hard copy + interactive CD version) and the related computer tool for helping the health and measurement professionals in analysing the results from body and foodstuffs measurements. The final meeting considered the limitations of the handbook and the need to make the reader more aware of its scope. The

stakeholders also provided feedback on the project and made suggestions on how the concept of the handbook could be taken forwards in France in the future.

Table 4 Meetings of the French stakeholder panel

Dates of meetings	Purpose of meetings
19 June 2003	Introduction to SAGE project. Viewing of ETHOS video. Round table introductions of stakeholders and their reasons for taking part. Importance of defining reference situation. Fixing of objectives for the panel.
20 October 2003	Practical session on radiation monitoring (external irradiation, internal irradiation, contamination of foodstuffs and people) Discussion of preliminary content of handbook based on ETHOS experience.
26 January 2004	Interpretation of whole body measurements Presentation of French regulatory framework Presentation of a strip cartoon on radioactivity Discussion on format and content of handbook, suggested changes
3 May 2004	Discussion on new draft of handbook, further clarification French panel's contribution to final workshop
1 December 2004	Discussion on the limitations of the handbook Final feedback on the SAGE project Ideas for future work

5.2 German panel

The German stakeholder panel met on three occasions. The main purpose and objective of each meeting are summarised in Table 5. In common with the other panels, the first meeting provided background information relating to the SAGE project; it enabled stakeholders to introduce themselves and to agree the overall objectives for the panel. To get more familiar with the topics of radioactivity, radiation protection and medical problems resulting from a nuclear accident, three members of the panel gave presentations on these specialist subjects. Additionally the term "stakeholder" was discussed since some panel members were unclear of the definition. The concept of long-term contamination was also explored.

The German panel discussed the structure and content of the second and fourth versions of the handbook in their second and third meetings, respectively. Stakeholders were sent the handbook in advance of each meeting. The main topics of the handbook were presented at the meetings and discussed. Stakeholders provided suggestions on how the handbook could be improved. They were then given the opportunity to send further remarks after reviewing the handbook again subsequently. It was felt that this procedure gave stakeholders sufficient time to critically evaluate the handbook. The third

meeting also provided stakeholders with an opportunity to give final feedback on the SAGE project and to discuss how this type of approach could be taken forward in Germany.

Table 5 Meetings of the French stakeholder panel

Dates of meetings	Purpose of meetings
10 November 2003	Introduction to SAGE project. Viewing of ETHOS video. Round table introductions of stakeholders and reasons for taking part. Background lectures on radioactivity, radiation protection, and medical aspects of nuclear accidents. Discussion of the term 'stakeholder'. Deeper appreciation of long-term contamination.
2 March 2004	Discussion and feedback on structure and content of version 2 of the SAGE handbook
19 October 2004	Further feedback on version 4 of the SAGE handbook Final feedback on the SAGE project Ideas for future work

5.3 UK panel

The UK core group of stakeholders met on three occasions. The main purpose and objective of each meeting are summarised in Table 6. In common with the other panels, the first meeting provided background information relating to the SAGE project, it enabled stakeholders to introduce themselves and to agree the overall objectives for the panel. A brief review was given of the existing infrastructure in the UK for dealing with long-term contamination. Other relevant work relating to stakeholder engagement in contingency planning, and in the development of a UK Recovery handbook for radiation incidents (NRPB, 2005) was presented. One of the stakeholders described a study on the long-term rehabilitation of an area in Wales affected by chemical contamination. It was agreed that the lessons learnt were similar to those in Belarus.

Table 6 Meetings of the UK stakeholder panel

Dates of meetings	Purpose of meetings
1 July 2003	Introduction to SAGE project. Viewing of ETHOS video. Round table introductions of stakeholders and their reasons for taking part. Review of UK infrastructure for dealing with long-term contamination. Other relevant and related work. Long-term rehabilitation of area affected by chemical contamination in Wales.
11 May 2004	Discussion and feedback on structure and content of version 3 of the SAGE handbook Agreement on wider consultation strategy with stakeholders Agreement on key questions to ask stakeholders

6 October 2004	Discussion of feedback from the four satellite groups of stakeholders Demonstration of UK Recovery Handbook How to take forward the SAGE handbook in UK context
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The third version of the SAGE handbook was circulated in advance of the second meeting of the UK panel. Stakeholders discussed the structure and content of the handbook and provided feedback on improvements to the text. It was agreed to send a revised version of the handbook out to a wider range of stakeholders. Four satellite groups in different regions of the UK were identified encompassing members of the public, nurses, health visitors, environmental health officers, experts involved in communication strategies and risk communication. To aid discussion with stakeholders and to obtain appropriate feedback, a series of questions were developed under the following headings:

- General applicability of the handbook to the UK
- Practicability and appropriateness of information/guidance provided
- How the handbook might be adapted for the UK
- Format of the handbook

Four members of the core UK stakeholder panel agreed to take responsibility for co-ordinating response from each satellite group. They used the ETHOS video to introduce the new stakeholders to the problem of long-term rehabilitation before providing them with the fourth version of the handbook. Stakeholders were instructed to focus on the key issues (see feedback questionnaire below) and given a month to provide feedback. Feedback was directed to each convenor through a mixture of face-to-face meetings, telephone conversations, emails and written responses.

The third and final meeting of the UK panel served to consolidate feedback on the handbook following the wider stakeholder consultation exercise. Complementarity between the SAGE handbook and the UK Recovery Handbook was discussed. The merits of adapting the SAGE handbook for use in the UK were debated and proposals on how best to take forward the concepts on long term rehabilitation were made.

5.4 Feedback questionnaire

Final feedback from stakeholders was required to establish whether the Handbook was likely to meet their perceived needs in the event of long term contamination of an area in France, Germany or the UK following a nuclear accident. To harmonise the feedback coming from national stakeholder panels, a questionnaire (Appendix B) was designed to cover all of the key issues, based on a series of questions developed by the UK panel (section 5.3 above). The idea

was that this questionnaire was to be used as a guide. It was recognised that some of the questions were outside the field of expertise of certain stakeholders. The questionnaire was circulated to stakeholders to coincide with discussions on an advanced draft of the handbook. The results of the questionnaire are presented in Section 7 that describes final feedback.

5.5 Critical evaluation of the stakeholder consultation process

The SAGE project was the first attempt at bringing together stakeholder panels in Western Europe for the purposes of discussing strategies for managing long-term contamination following a radiation accident or incident. The composition of the stakeholder panels and the methods adopted for engaging with stakeholders varied between France, Germany and the UK. At the end of the consultation period, the following strengths relating to the process were identified:

- It had been possible to engage all of the key stakeholders
- The establishment of satellite groups by members of the UK core stakeholder panel was an efficient mechanism for eliciting feedback from a wider range of stakeholders (n > 30)
- Meetings of each panel provided a good mix of presentations and discussion sessions that facilitated feedback on the handbook and on the wider subject of rehabilitation
- The higher frequency of meetings of the French panel enabled more topics to be covered in greater depth. The practical sessions on monitoring and in the interpretation of measurement data were particularly helpful at maintaining the interest of the stakeholders (particularly NGOs)
- The stakeholders felt empowered by the consultation process because of their involvement from the outset in developing the handbook, acknowledging that their ideas and many of their concerns had been addressed
- The indirect dialogue between the Western European stakeholders and a panel of Belarussian professionals, who have been directly involved in the day to day management of the long term rehabilitation in the contaminated territories, was of great benefit in the development of practicable strategies

Inevitably there were several parts of the consultation process that could have been improved. The main points were as follows:

- More representatives from the authorities (GOs) should have been included in the French panel.

-
- A longer period of time should have been allowed for consultation with all stakeholders
 - A higher frequency of meetings should have been scheduled in Germany and the UK

At the end of the consultation process, it was obvious that the stakeholder panels had had a significant influence on the scope, format and content of the handbook at each stage of its development. The contribution of the stakeholders was considered to be invaluable. Furthermore, the process not only benefited the production of the handbook, but also raised the profile of rehabilitation issues, which up until now have been largely neglected in Western Europe. For the first time, authorities are starting to understand the issues at stake and some are making plans for tackling deficiencies in national infrastructure.

6 INITIAL FEEDBACK ON THE SAGE HANDBOOK

The first draft of the SAGE handbook was produced by experts on the basis of their extensive experience and dialogue with local stakeholders in Belarus. Subsequent versions of the handbook were developed in conjunction with stakeholder panels in France, Germany and the UK to reflect the conditions in Western Europe more specifically. The stakeholders had a significant influence on the scope, format and content of the handbook at each stage of drafting and their contribution was invaluable. Analysis of the initial feedback on the handbook showed that stakeholders from France, Germany and the UK shared many of the same concerns as well as similar ideas for improvement. These are discussed in the general feedback section below. Any country-specific points are outlined in separate sub-sections.

6.1 General feedback from France, Germany and the UK

The stakeholders wanted the target audience for the handbook to be more clearly identified, as this would influence the language and level of technical information presented. The panels all stressed the importance of developing a common language that could be used and understood by both experts and the general population. In order to make the handbook more easily understood there was a recommendation that sections giving more technical information should be included at the back of the handbook. Stakeholders felt that the handbook would also benefit from more illustrations and more background information from Western Europe such as ambient levels of radioactivity in foodstuffs and the environment. They also considered that the inclusion of a glossary was essential together with a short summary of important terms relating to radioactivity.

There were reservations expressed by all panels about doctors having a fundamental role in a long-term rehabilitation strategy (as suggested in the first 2 versions of the handbook). A doctor (general practitioner) (GP) in France, Germany and the UK has a very different function to a public health physician and will not be familiar with radioactivity and the medical consequences of a nuclear incident. Furthermore, GPs would be over-stretched if they were expected to carry out the functions proposed in the handbook. For the scheme to become a reality, an extended offer of education and training has to be put in place in advance for all health professionals. The stakeholders considered that it was important that the handbook referred to "health professionals" not just "doctors" (which implied only GPs). In this way public health physicians, staff of hospitals, nurses, pharmacists, psychologists, school doctors and company doctors would all feel that they could be involved. All of these health professionals would have an important role in answering questions for individuals and family units. Some would also be in a position to assess the individual's situation in view of the results of measurements, propose possible ways to improve that situation and suggest means by which improvements could be monitored. They could also provide advice on the options for follow up measurements in people, in the environment and in for example food products following any corrective actions that may have been taken.

The German panel was concerned with the concept of giving the population an opportunity to make their own measurements. This was because of the experience after the Chernobyl accident when untrained people made their own measurements but had no knowledge of how to interpret the results. This caused some confusion in the country and certainly contributed to the lack of confidence in the recommendations of the authorities. For this reason it was felt necessary to mention in the handbook that reliable measurements are only possible if the instrumentation has been suitably calibrated, if proper training has been provided in the use of the instrument and in the collection and preparation of the samples and if there is support from experts.

Another related issue was the direct involvement of the population in the measurements. There was a recommendation that the general population should only do direct measurements such as ambient dose rates. Many stakeholders were of the view that measurements of activity concentrations of radionuclides in food as well as whole body measurements should still be made only by experienced measurement professionals. This would not prevent the population from being proactive in bringing samples of food for analysis or for asking for whole body measurements to be made. This would fulfil individual strategies for reducing internal contamination. It was also recommended that all types of measurements should be discussed with experts.

The French and UK panels required further clarification of the role and composition of the stakeholder advisory board (the fourth point of entry to the handbook). The French stakeholders commented that it appeared to be 'a catch-all' that needed definition. The UK panel insisted that it needed to include

lay representatives to enhance the credence of the panel amongst the general public and to maintain good links between expert and lay groups. The stakeholder advisory board was depicted as being rather omniscient with little being said about how different groups feed communications through to and/or directly engage with the board.

6.1.1 Specific feedback from France

Some members of the French panel expressed their wish to know the dose from which there is a risk of developing cancer and insisted that the population is interested in the individual risk and not in a statistical risk. The stakeholders also recognised that an exposure to radiation does not necessarily cause an illness (cancer) and that this should be made clear in the handbook under stochastic risks. The group noted that, for the public, the concept of stochastic risks is difficult to understand and would need to be carefully explained.

There was also some confusion between short and long term management of contaminated areas. The panel frequently came back to their concerns about management of the crisis. There seemed to be a requirement for a complementary handbook for dealing with the early to late phase*.

The French panel worked on the definition of a "reference situation". The participants showed the need to know different kinds of values (regulatory values, "so-called" background values...) and the necessity to have methods of comparison. In this way people would be able to evaluate their own situation.

6.1.2 Specific feedback from Germany

The stakeholders initially doubted whether a handbook was really necessary to cover management of long-term contamination. They felt that at the present time there is no demand as there is no acute situation concerning radioactivity, the situation after the Chernobyl accident has been forgotten and the German government is not expanding its nuclear power programme. Furthermore, the population is not anxious about a terrorist attack. In the event of a radiation incident they considered that effective radiation protection for the population and environment still exists on a high level in Germany. Indeed after the Chernobyl accident well-developed monitoring programmes for the environment and foodstuffs were implemented. Currently, there are also well elaborated civil protection programmes. Hence stakeholders felt that in the event of an accident, actions could be taken in time to protect the population. Following discussions however, it became clear that the existing radiation protection concepts would

* Two handbooks for managing contaminated food production systems and inhabited areas in Europe are under development through an EC 6th Framework Initiative. These specifically consider the early and late phases.

not cope sufficiently with the problems arising from post accidental long-term management. The teacher and her colleagues recognised the need for the SAGE handbook and suggested that schools could be provided with a CD version. She also emphasised the importance of psychological care to complement the medical support provided.

6.1.3 Specific feedback from the UK

The UK panel was particularly concerned about the extent that the information from Belarus would be transferable to consumer-based countries in Western Europe. There was a feeling that greater attention needed to be paid to the role played by the major supermarket chains. Furthermore, several of the UK stakeholders thought that the handbook seemed to be oriented towards rural communities, and would like it to be broadened to fit the requirements of those living in urban areas. Questions were also raised about the composition of the stakeholder advisory panel. To this end, it was thought that the widely reported distrust in expert institutions in the UK might affect the ability of the panel to gain acceptance in affected areas, unless lay representatives were involved. In terms of content, risk communication experts explicitly commented that the section on units of radioactivity should be placed nearer the beginning of the document, prior to initial usage of the terms becquerel, gray and sievert.

7 FINAL FEEDBACK ON THE SAGE HANDBOOK AND REFLECTIONS ON THE SAGE PROJECT

7.1 Final feedback from France

The French stakeholders emphasised that the handbook has to be considered as a general document that is not designed to answer every question that may arise. It does however give the first principles of how to live in an area that will remain contaminated for a long period of time. The panel highlighted the fact that the handbook is particularly directed at situations where contamination exists in rural areas and then it only considers radiocaesium. It was proposed that before publication the handbook should include a foreword that clearly indicates the objectives and the limits of the handbook (in order that it will not be misinterpreted subsequently). The panel suggested revising the title of the handbook to reflect its preliminary content.

The French panel did not want the handbook to be regarded as a remedy to the problems caused by radionuclide contamination as this might be interpreted by some as a pretext for the rational use of nuclear technology. The handbook must convey the fact that situations of contamination are both abnormal and dangerous. Furthermore, contamination can affect territories at great distances from the source and life within these territories are irreversibly changed. The

handbook provides guidance on how to live with contamination where return to normality is impossible.

A few participants were concerned about the future of the handbook from the point of view of who was going to take it forward, adapt it and use it in France. The weak participation of the Authorities from the panel reinforced these fears.

7.1.1 Reflections on the SAGE project

At the end of the meeting, each stakeholder was invited to express its feeling related to its participation to the SAGE project.

A participant highlighted that this project was a good example of participative approach and that the imperfection of the handbook was inherent to its process of making. *"It must be noted somewhere that it was a step of "the governance in action", that is to say that we have around this table medical doctors, teachers, representatives of associations, we are in a participative approach. I think that it is an asset for the document, hence its imperfection compared to a scientific or strategic document."*

Other stakeholders wanted it noted that they did not support/agree with the entire content of the handbook, although they were pleased to have been able to contribute to it. They were also pleased to have participated in the panel and appreciated the originality of the approach as well as the diversity and the complementarity of the stakeholders, which enabled the right questions to be asked.

Several participants emphasised that one of the objectives of the SAGE project was to encourage the authorities to tackle the problem faced by long-term contamination by raising awareness. They regretted that representatives of the authorities did not take part more widely in the group.

7.2 Final feedback from Germany

The German panel felt that the quality of the handbook had improved significantly following input by all of the stakeholder panels. At the end of the project, the stakeholders agreed in principal to the concept of the handbook. However, they also had some reservations. The general opinion was that the handbook itself did not provide a sufficient depth of information for the medical professionals, whereas the technical sheets were in some parts too complicated and too complex for the general population. The panel considered that more help was needed on how to interpret the measurement data and how to deal with the consequences of long lasting radioactive contamination. Some stakeholders suggested that leaflets containing basic information and recommendations could be produced for the general population e.g. on how to do their own measurements, what they can do in case of contamination etc. It was

recognised that the level of detail given in the handbook for health professionals would be dependent on the level of training they have received beforehand. To ensure the applicability of the handbook in Germany all panel members agreed that there was a need for a German version, providing links to the websites of the responsible authorities.

7.2.1 Reflections on the SAGE project

The current situation in Germany is that the system of radiation measurement and protection proposed by the SAGE project does not fit with the existing infrastructures or legislation. At the local level only a few measurements of ambient dose rates are still carried out whilst there are no measurements of radionuclides in food. In the event of a nuclear incident the BMU is the decision maker and the corresponding authorities are responsible for and decide on measurements etc. This is fixed in the StrVG (Precautionary Radiation Protection Act, 1986). The capacity for implementing the measurement system proposed in the SAGE handbook does not exist in Germany and will actually be reduced further in the future. Without the infrastructure and equipment, it will probably be difficult to justify training courses on the management of long term contamination for health professionals and measurement professionals. Furthermore, the German stakeholders considered that the handbook could not be easily adapted to other contaminants since they perceived the problems caused by radioactivity as being very special.

7.3 Final feedback from the UK

7.3.1 Applicability of the Handbook in the UK Context

It was broadly agreed by the UK panel that the Handbook would be a useful reference tool for UK health professionals, professionals involved in measurements and the stakeholder advisory group. The health professionals were of the opinion that the system proposed in the handbook is not currently practicable in the UK but with 'political will' and funding, all stakeholders felt that it would be a valuable resource, complementing the existing UK public health system. The headmaster pointed out that the proposed system of radiation monitoring and protection would only work in areas where there was a good sense of community. Whilst, the handbook focuses on long-term contamination from ^{137}Cs , stakeholders felt that the concept of local information, structures and support would be invaluable, irrespective of the contaminant. In time, some thought that it would be useful to include additional radionuclides that might be released following explosion of an improvised terrorist device. Other stakeholders suggested the broadening of the handbook even further to include a wider range of contaminants (i.e. chemicals).

7.3.2 Practicability of Information/Advice

Most stakeholders found the technical information in the handbook to be acceptably presented, although the level of detail within some of the technical sheets might exceed the knowledge and grasp of some of those identified as sources of advice and guidance (e.g. teachers, pharmacists, nurses). Furthermore, some doubts were expressed about the relevance and suitability of the handbook for the general public. It was felt that the majority of the UK population would be unfamiliar with the style of language employed, the technical terminology and descriptions of the effects of radiological contamination. In particular, it was felt that members of the public may not be able to grasp some of the concepts outlined (deterministic and stochastic effects) or understand the tables and mathematical formulae. Rather than reassuring the general public, it was felt that the complexity of some of the technical details might have the reverse effect leading to anxiety, unease and frustration. Some stakeholders suggested having specific targeted material, as the needs of members of the public are very different from health professionals. The idea of briefer information to alert the public was suggested (i.e. leaflets).

The experts in communication and the teacher felt that there were still parts of the handbook where there was a lack of clear specification about the roles and responsibilities of different stakeholders. For example, the professional groups were often lumped together and there was a lack of precision in defining exactly which professionals could be expected to do what in the event of a large-scale radiological incident. Who, for example, would be responsible for devising the 'individual booklet of the radiological situation'?

7.3.3 Adapting the Handbook for UK Use

Stakeholders made several useful suggestions for adapting the handbook for use in the UK by:

- Clarifying the organisational arrangements for managing long-term contamination, including specific roles and responsibilities of the different health professionals, identifying membership of the stakeholder advisory board and the level it would operate.
- Clarifying the role of supermarkets in the provision of advice about food safety.
- Providing links to national websites and other sources of information
- Including UK specific examples and removing pictures and examples from elsewhere.
- Editing the text by an English speaker to make the handbook easier to read and understand.

7.3.4 General Format of the Handbook

Several members of the panel commented on the need for a more detailed and lucid statement of aims and objectives in the introduction. It was felt that clearer guidance was needed about which groups the handbook is targeted at, how to read the document and how different groups could use the information provided in the handbook. It was strongly felt that this information needed to be 'up front' and placed before the more technical details about exposure and contamination. The group fully supported the posting of such a handbook on a website and encouraged the use of hyperlinks to provide illustration and offer up further references. The group also thought that consideration should be given to the production of separate publications for members of the public and health professionals.

8 FUTURE WORK INVOLVING STAKEHOLDERS IN LONG-TERM REHABILITATION

8.1 France

The stakeholders remarked that the two years allocated to developing a handbook had been insufficient. Nevertheless, the current version did provide a good basis for developing the concepts further. For example, there was a suggestion that the handbook could be applied to a range of specific territories, perhaps also including inhabited areas. In this way, the handbook would be more targeted and readers would feel more concerned. The stakeholders have also started to design a leaflet based on the handbook to allow members of the public to come to terms with the situation when they discover that their environment is contaminated. It will indicate what has changed, give points of reference and practical information (places to avoid, foodstuffs sensitive to radionuclides). It will explain the routes of exposure and different kinds of measurements but contain a minimum of technical data. It will encourage the population to visit health professionals and those responsible for measurements to find out more information.

8.2 Germany

The German stakeholder panel will meet again to discuss the SAGE project and how to adapt the handbook for German needs and how to disseminate it most effectively. Funding for such a project has yet to be agreed. The handbook has already been sent for information to a representative of the Federal Environmental Office, who will be invited to the next meeting to discuss how to implement the handbook in future projects. Furthermore, a panel member

belonging to the SSK (Strahlenschutzkommission) will be asked to present it to the commission.

In 2005 BfS (Federal Office for Radiation Protection) is planning to support research projects concerning communication with the public in case of radiological events. This may provide the stakeholders with an opportunity to work together on projects with similar objectives to those of the SAGE. The representative from the Bavarian Farmers Union remarked that the SAGE handbook did not cover the needs of German farmers in case of long-term contamination.[†]

8.3 UK

At their last meeting, the UK stakeholders reached a consensus that the concepts contained in the SAGE handbook merited further development for application in the UK. Ideas on how this could be achieved were discussed and the following key points were made were:

- In the UK there are two target audiences for the SAGE handbook; members of the public and health professionals. Separate handbooks and/or leaflets would be required to cover the requirements of the different target audiences, although some information would be common to both.
- The style of NRPB's 'At a Glance' leaflets could be adopted as a basis for providing information to the public on what they can do to protect themselves from long-term contamination. Much of this leaflet(s) could be prepared in advance so that only organisational information, contact details, help lines, websites etc would need to be added following the incident. This would potentially help to gain the public's trust by showing that Government was well prepared. Well designed leaflets are probably as important if not more important than electronic media to the public, although both have their place
- The public would rely on health professionals for reassurance and for answering queries. The current National Health Service (NHS) Direct service would be an important source of information, as would Primary Care Trusts. Both of these resources need to be trained however. A set of

[†] A handbook for managing contaminated food production systems in Europe is under development through an EC 6th Framework initiative. Furthermore, Germany is setting up a stakeholder group similar to the UK Agriculture and Food Countermeasures Working Group to tackle problems caused by contamination of the foodchain.

recommendations could be produced that outline the mechanisms that would need to be put in place to train health professionals, provide monitoring equipment etc in the case of long-term contamination. The 'trainers' could be trained in advance and a draft handbook could be pre-prepared for health professionals.

- It should be possible to produce a generic top-level handbook for health professionals covering radiological and chemical contaminants. Sponsorship would be sought for this initiative.

9 CONCLUSIONS

The involvement of stakeholders in the development of a handbook on radiation monitoring and protection is a good example of participative inclusive governance for tackling the challenging topic of long-term contamination where it is unlikely that people will be able to return to 'normality' i.e. the circumstances that pertained prior to the accident. The stakeholder panels functioned well when there was a good balance of GO and NGOs. The engagement of the authorities was deemed to be particularly important to get widespread acceptance of strategies for rehabilitation. The dynamics of the stakeholder engagement process had a significant and positive impact on determining the final scope, format and content of the handbook.

The generic nature of the handbook meant that it was difficult for stakeholders to develop guidance for what was a 'virtual territory' i.e. one for which they could not specify particular characteristics. Future developments should focus on adapting the generic handbook for specific territories and environments.

There is a need to have other types of handbooks, strategies and guidance for management of the early and late phases of an accident and these must be consistent with the principles set out in the SAGE handbook for long-term rehabilitation.

It was clear from discussions with stakeholders that the public would rely on health professionals for answering queries about contaminated land and responding to concerns about the potential impacts on health. The need for the training of health professionals to cope with these demands was considered to be an important issue for the future. Governments therefore, need to recognise the benefits of establishing training programmes under non-crisis conditions that will enable the strategies and guidance outlined in the SAGE handbook to be enacted without delay. In the meanwhile, stakeholder panels in France, Germany and the UK will prepare leaflets for members of the public on what they can do to protect themselves from long-term contamination.

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APPENDIX A

A1 Reservations of ACRO on its participation to the EC SAGE Project

ACRO accepted to be consulted in the framework of the EC SAGE Project. It was one of the members of the working group that was composed by representatives of associative and institutional structures. ACRO took part to a collective thought on the long-term management of the consequences of a durable contamination of the environment. This work was based on the return of experience from the inhabitants of the contaminated territories in Belarus who live today near to the exclusion zone around the Chernobyl nuclear power plant. Our involvement in the preparation of the SAGE handbook amounts to a simple consultation. The final content of the document and the topics that were treated during the process exceed widely the objectives that our association had. Under no circumstances can ACRO be regarded as a co-author of the handbook. The topic of this document, the uncertainties on its destination and on its future use, the lack of sufficient data and more largely of knowledge to envisage the problem with lucidity, the non exhaustiveness of considered radionuclides are so many elements that can make this document completely unsuitable to a post-accidental crisis.

Nevertheless, we admit that this work underlines the important lack of knowledge and studies on the right consequences of a major nuclear accident. It will allow the heightening of Western Europe authorities' awareness on the topic of the long term contamination of a territory and on the importance to consider this potential risk before an accident. This work has allowed as well to involve the civil society and to put the citizen at the centre of the debate.

To endeavour such an awareness (individual or collective) will be done only through a better information on the topic, followed by adapted trainings of professionals who will have to intervene on prevention plans, monitoring and sanitary protection. This project has reinforced the opinions on the importance of the pluralism of information sources and on the necessity to develop information and investigation means.

A2 Reservations of EDA on its participation to the EC SAGE Project

The "non profit making association EDA (Environnement Développement Alternatif) was created in 1990. It is one of the hundred associations that is hosted in the House of Nature and Environment of the Lille city.

The **aim** of EDA is always to link Health and Environment, to promote a less destructive and more harmonious development, to inform as widely as possible in order that everyone feels responsible at his level.

EDA is a **registered association** which provides it an official scope and a juridical weight. Since 1983, EDA has been confronted to the management of risks suffered by a whole population around a highly polluted chemical plant, Metaleurop. Twenty years as well as a lot of conviction have been necessary to end up with the official recognition by the firm of its responsibility in the ground pollution by heavy metals and in the consequences on the health of workers and inhabitants. However, in spite of the official involvement of the plant to take part in the cleaning (signature of a convention in January 2002), the procedure has not succeeded because of the sudden closing of the installation of Noyelles-Godeault. Consequently, local authorities and populations still have to manage this huge environmental problem.

A2.1 EDA always highlights:

- The prevention of human and environmental long-term risks: it is obvious that the zero risk does not exist but impact studies have to be undertaken with every concerned person before each project. What is an admissible risk? Who decide it and what is the purpose of the activity generating it?
- The weight of our ways of life in comparison with the living conditions of the rest of the world: solidarity, respect of humane rights are factors of peace.
- The justification of some productions: do we need them? Can they be replaced by other products?
- The respect of French and European laws that are often well elaborated but that are not well implemented.

A2.2 EDA asks several questions as well:

- What development of the territory can reduce harmful release in atmosphere mainly due to transports and can meet with the priorities of the Kyoto protocol?
- What sources of energy do we want to develop for the next thirty years?

Many efforts have been done between Rio and Johannesburg: minds have changed, the world solidarity has become an obvious fact that we have to favour. The associative movement is a positive element in the emergence of a development that meets the needs of most people: to reduce risks, to always favor decisions that respect the sustainable quality of life. Our main priority is to stimulate debates on serious topics like energy choices.

Our participation to the elaboration of this handbook on the long-term management of a nuclear accident reinforces our refusal to see the development of such a dangerous and disastrous technology. A single accident caused the death of too many people and impressive damage whose consequences are still lasting. Our wish is that any handbook never be used.

We appreciated the exchanges and the work realised in the group. We had accepted to take part in this challenge. If a second project was implemented, we would accept again to take part in it because the issue needs to be looked at further respecting the opinion of each participant. The diversity and the positions are a rich and useful input.

APPENDIX B QUESTIONNAIRE

Occupation: _____

Postcode: _____

A. General applicability of the Handbook to the UK

1. Do you agree with the idea that the key to dealing with long term contamination in an area is to provide local people with the tools and knowledge to be able to measure their own radiation exposures?

2. Does the proposed system of 'radiation monitoring and protection' fit in with current ways of working in the UK?

3. Do you foresee any difficulties implementing this type of system, in terms of infrastructure etc?

4. The Handbook is focussed on contamination with caesium-137 and the consequences of a nuclear accident. Do you think this will limit the use of the Handbook?

5. Do you feel that this Handbook could usefully be adapted for the UK to consider a range of contaminants?

B. Practicability and appropriateness of information/guidance provided

1. Do you agree with the Handbook being aimed at four groups of people – the household, the health professionals, the measuring professionals and the stakeholder advisory board? Are there other groups that should be addressed specifically in the UK - for example, local authorities, the emergency services, relevant government agencies such as the Environment

<p>Agency and the Food Standards Agency?</p>	
<p>2. Is the level of information and the topics covered under each of the four sections, relevant to the types of audience?</p>	
<p>3. Is more help needed on how to interpret measurements, estimate radiation doses and get a feel for what they mean?</p>	
<p>4. Is sufficient guidance given on what people can do to reduce their radiation exposures and how effective different actions might be?</p>	
<p>5. Will it be possible to provide enough instruments to measure external radiation and to train people to use them?</p>	
<p>6. Will it be possible to provide a very localised service to measure radioactivity in foods? Will there be enough equipment available, people available to provide training and people who are prepared to be trained?</p>	
<p>7. Is it practicable to provide training for the health professionals to enable them to provide the appropriate help and guidance for the local population? Do health professionals feel that with appropriate training they would be able to provide the necessary support for the local population?</p>	
<p>8. Is it possible to provide a localised service to measure radioactivity in people? Will suitable equipment be available, are people available to provide training and people who are prepared to be trained?</p>	

<p>9. Is a diagram and explanation on the relationship between different units used for radioactivity necessary and is the one given under radioactivity in the technical sheets helpful?</p>	
<p>C. Adapting the Handbook for use in the UK</p>	
<p>1. Are there any other topics/issues that you think should be addressed in this Handbook with regards to the UK situation?</p>	
<p>2. Is there any information/guidance given in the handbook that you think would be unsuitable for dealing with long term contamination in the UK?</p>	
<p>3. Is there any extra information/guidance that should be included for dealing with long term contamination in the UK?</p>	
<p>D. Format of the Handbook</p>	
<p>1. Is the current structure of the handbook helpful or is there an alternative structure that you would prefer?</p>	
<p>2. Does the main body of the handbook contain language that is too technical, not sufficiently technical or is it generally clear?</p>	
<p>3. Are the technical sheets helpful and again is the language too technical, not sufficiently technical or generally clear?</p>	