EC SAGE Project

"STRATEGIES AND GUIDANCE FOR ESTABLISHING A PRACTICAL RADIATION PROTECTION CULTURE IN EUROPE IN CASE OF LONG-TERM RADIOACTIVE CONTAMINATION AFTER A NUCLEAR ACCIDENT"

FINAL REPORT

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DECEMBER 2005

CEPN-R-294

This project is part of the 5th Framework Nuclear Energy - Research and Training Programme of the European Commission (EC), contract number: FIKR-CT2002-00205.

Project co-ordinator:

- Centre d'étude sur l'évaluation de la Protection dans le domaine nucléaire (CEPN) (France)

Partners:

- Forchungszentrum für Umwelt and Gesundheit (GSF) (Germany)
- Health Protection Agency (HPA) (United Kingdom)
- Brest Branch of the Research Institute of Radiology (BB-RIR) (Belarus)
- Institute of radiation Safety BELRAD (Belarus)

FINAL TECHNICAL REPORT

CONTRACT N°: FIKR-CT2002-00205
PROJECT N°: FIS5-2002-00040

ACRONYM: SAGE

TITLE:
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REPORTING PERIOD: From 1st October 2002 to 31st March 2005

PROJECT START DATE: 1st October 2002
DURATION: 30 months

Project funded by the European Community under the 'Research & Training' Programme (1998-2002)

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ABSTRACT

The topic of “rehabilitation of living conditions in contaminated territories” is a reality that overhangs widely the territories of Belarus, Ukraine, and Russia affected by the catastrophe of Chernobyl. Thousands of people in Europe live in territories considered as contaminated areas. The SAGE project has contributed to the development of strategies and guidance for implementing and disseminating a practical radiation protection culture in Western Europe required for the management of contaminated areas following a nuclear incident or any accident having long term radiological impact. Moreover it highlighted that the involvement of stakeholders is an innovative approach that can significantly improve the quality of the answers and actions. Such an approach is pertinent and could be applied to any situation of long-term contamination at a local or national scale, in parallel to the countermeasures implemented by public authorities.

The present final technical report presents the main results of the project and describes its fifth deliverables.

EXECUTIVE SUMMARY

Background and objectives

In the development of adequate strategies to address a long-term radioactive contamination resulting from an accident or a malevolent act, the involvement of non-traditional stakeholders can significantly improve the quality of the actions usually proposed (cf. the ETHOS experience). The involvement of the population in the day-to-day management of the radiological situation can be indeed a key element to complete the rehabilitation policy developed by public authorities. The efficiency and sustainability of this inclusive process rely, among other elements, on the dissemination of a practical radiation protection culture within the population.

Starting from these elements and considering the growing involvement of the representatives of the civil society in such thematic, the objective of the SAGE Project was to contribute to the development of guidance and tools to implement and share a practical radiation protection culture in Western Europe in case of long-term radioactive contamination after a nuclear accident.

Brief description of the research performed and approach adopted

A specific feature of the SAGE Project was the participation of "national stakeholder panels" in the four countries implied in the project: Belarus, France, Germany and United-Kingdom. These panels were composed of professionals involved in the public health domain (such as nurses, midwives, medical doctors, radiation protection experts and medical social workers) as well as representatives of the civil society (environmental NGOs, teachers, students, firemen…). According to the country, the national panels met from one to three times per year. In spite of the strong opposition of some participants to nuclear technology, the meetings constituted a place of dialogue where fruitful exchanges on questions raised by a long-term radioactive contamination took place.

The key output of the project is a handbook on radiation monitoring and protection of the population (Work-Package 4). It was co-developed by the partners and the panels based on both a detailed analysis of the current strategies, guidance and organisational arrangements that have been implemented in France, Germany and United-Kingdom to cope with long term radioactive contamination in case of a nuclear accident (Work-Package 2) and the extended experience gained in Belarus associated with the practical management of the consequences of the Chernobyl accident over the last years (Work-Package 3). All along the project, the handbook was developed and adapted according to the concerns and expectations of the stakeholders (Work-Package 5). It was elaborated to provide elements of answers and guidance on their questions and preoccupations regarding radioactivity in the environment, its effects on the health and the means to keep vigilant. The elaboration of the handbook also offered the opportunity to discuss about the roles of representatives of the civil society in case of an accident (specialists of measurements, centre of information…). Thus, the panels highlighted that, in a situation of long-term radioactive contamination, the involvement of local stakeholders would be essential and would allow to implement more adapted and effective actions, especially at a village level.

Main achievements

The final version of the handbook includes elements of guidance for the health care professionals and the general population on practical advice to follow in a contaminated territory in order to reduce exposures in the course of day-to-day activities and to adopt a responsible and prudent attitude with regard to the protection of health.

As some sections of the handbook are more particularly addressed to health professionals and professionals of measurements, a tool for the interpretations of results of whole body measurements was developed in parallel to this document. It is a calculation software that allows to easily interpret results of whole body measurements according to foodstuffs measurements data. This tool facilitates the work of the health professionals and the professionals of measurements and promotes dialogue between them and the population of a contaminated territory.

Exploitation and dissemination

The results of the SAGE Project were presented during the final workshop "Radiation Monitoring and Radiation Protection Culture for People Living in Long-term Contaminated Areas", held in Paris on March 2005. The workshop had sixty of participants from about 10 European countries. Representatives of the European Commission, IAEA and OECD/NEA were also present. The workshop provided the opportunity for the five partners of the SAGE Project to present the results of their work to interested parties and to discuss ways for further possible developments at the European level. This workshop was successful at initiating dialogue and exchanges between international radiation protection professionals and representatives of the civil society. A specific room was also given to professionals from Belarus to present the health situation in their country and the actions that are implemented today to improve the living conditions in the affected territories. Moreover, invited presentations of other experiences in managing long-term contamination were given. A representative of Norway dealt with the management of long-term radioactive contamination and a representative of Wales presented a case of a chemical contamination. Thus, the workshop favoured exchanges and the emergence of a shared culture among the participants regarding the rehabilitation of the living conditions in contaminated territories by chemical or radiological products.

The web site (www.ec-sage.net), made available in October 2002, was largely used for the interaction between the partners of the project. Publishable deliverables are now accessible on it. It also gives access to articles and oral presentations that were published or performed during national and international reviews or congresses.

The web site will be maintained during a period of at least two years. It is planned to establish a closed link with the NERIS web site which has been developed in the framework of the European project EURANOS (www.eu-neris.net). NERIS provides information on nuclear and radiological emergency management and rehabilitation strategies. A link to the SAGE web site could appear on the home-page of the NERIS web-site. It could offer the opportunity to

deal with the importance of the involvement of stakeholders to address a long-term radioactive contamination resulting from an accident or a malevolent act[1].

Further developments

The SAGE Project allowed to prepare a handbook that would provide the populations living in contaminated territories with elements to mitigate the potential adverse effects of long-term contamination. It can be considered as a generic template showing the areas to be addressed in case of large-scale radioactive contamination. Although it was developed in a European perspective, it was recognised by most of the involved stakeholders that further specific documents should address different territories (urban context for instance) and target audiences (mothers, farmers…).

The stakeholders particularly appreciated the approach developed in the SAGE Project. Most of them would be ready to go further. They recommended for instance to constitute such groups to work together with national authorities on the preparedness and the management of nuclear emergency situations. They also highlighted that it is important to go on developing tools such as handbooks or software to favour deliberation, debate and dialogue between the civil society and the professionals in specific contexts dealing with a long-term contamination of the environment.

[1] It is also planned to establish such a link between the FARMING web site and the NERIS web site.

RESUME

La réhabilitation des conditions de vie dans les territoires contaminés est un sujet qui dépasse largement les territoires de Biélorussie, de Russie et d'Ukraine affectés par la catastrophe de Tchernobyl. En Europe, des milliers de personnes vivent dans des territoires considérés comme des zones contaminées. Dans l'ensemble de ces territoires, la mise en œuvre du principe de précaution apparaît impérative et se traduit dans le domaine de la radioprotection par une démarche de prévention visant à réduire le plus possible les expositions externes et internes reçues par la population.

Le projet SAGE s'inscrit dans ce domaine et répond à la volonté de diffuser, en Europe de l'Ouest, les principes de base d'une démarche de prévention au cas où il faudrait faire face dans l'avenir, à une nouvelle situation de contamination durable résultant d'un accident nucléaire ou d'un acte de malveillance impliquant des produits radioactifs. Son objectif était de contribuer au développement d'outils méthodologiques, conceptuels et pratiques pour mettre en œuvre et partager en Europe de l'Ouest une culture pratique de la radioprotection.

Au travers de cinq activités différentes, le principal objet du projet SAGE était ainsi le développement d'un guide pratique pour le suivi et la protection radiologiques des populations. Ce document a été co-développé par les différents partenaires du projet et par quatre groupes d'acteurs nationaux.

Dans chaque pays participant au projet SAGE – Allemagne, Biélorussie, France et Royaume-Uni -, des « groupes d'acteurs nationaux » ont en effet été constitués, rassemblant une dizaine de personnes parmi lesquelles des représentants de la population, des administrations, des élus, des professionnels (médecins des secteurs public et privé, instituteurs) et des représentants d'associations non gouvernementales.

La version initiale du guide a été préparée à partir de deux rapports : une revue des infrastructures et des moyens de mesures radiologiques existants en Allemagne, au Royaume-Uni et en France et une synthèse de l'expérience biélorusse acquise au cours des 18 dernières années qui ont suivi l'accident de Tchernobyl, notamment en ce qui concerne l'implication de la population et des professionnels locaux dans la gestion du quotidien. Les groupes d'acteurs

nationaux ont ensuite été sollicités. Ils ont exercé une revue critique du guide et l'ont confronté à leurs attentes. Le document a donc été adapté et modifié en fonction de leurs préoccupations. Ce processus de consultation, relativement original, a été évalué tout au long du projet. Un rapport est ainsi consacré à l'efficacité et la pertinence de l'implication des acteurs dans l'élaboration de nouvelles stratégies. La version finale du guide a été présentée lors du séminaire de clôture du projet en mars 2005.

Le présent rapport décrit les différentes activités entreprises dans le projet SAGE ainsi que les principaux résultats.

Le projet SAGE a contribué au développement de stratégies pour mettre en œuvre et diffuser, en Europe de l'Ouest, les principes de base d'une culture de protection radiologique pratique. L'ensemble des acteurs du projet et des participants au séminaire final ont souligné que la mise en place d'une démarche participative est une approche innovante qui permet d'améliorer la qualité des réponses proposées. Une telle démarche est pertinente et pourrait être appliquée dans toute situation de contamination durable à une échelle locale ou nationale, en parallèle des contre-mesures mises en œuvre par les pouvoirs publics.

1. INTRODUCTION

The evaluation of the rehabilitation strategies implemented in the contaminated territories of the CIS countries affected by the Chernobyl catastrophe pointed out the need and importance of involving the population in the day-to-day management of the radiological situation to complete the rehabilitation programme developed by public authorities. The ETHOS experience in Belarus has revealed that to be effective and sustainable, this involvement must rely on the dissemination of a practical radiation protection culture within all segments of the population and especially within professionals in charge of public health. The development of such a culture requires several factors to be combined. These include a basic knowledge about the mechanisms through which man is exposed within a contaminated environment associated with direct access to practical means by which the radiological quality of this environment can be evaluated and the levels of internal and external exposures of individuals and the whole population controlled. The establishment of such a shared culture also implies the setting up within the contaminated territories of a specific infrastructure related to the health care and education system. This infrastructure must bring together public and non-governmental organisations to implement the necessary management procedures. The involvement of non-governmental organisations and representatives of the public in the practical implementation of rehabilitation strategies has proved to be a key factor in the enhancement of public trust and confidence. It also offered the opportunity for the civil society to take part in the decision-process and to benefit from means to evaluate one's own situation.

The objective of the SAGE Project was to contribute to the development of guidance and tools to implement and share a practical radiation protection culture in Western Europe in case of long-term radioactive contamination after a nuclear accident.

2. OBJECTIVES AND STRATEGIC ASPECTS

The aim of the project was to develop procedures, tools and guidance that could be used by health professionals and the population in the event of a long-term radioactive contamination situation. These would concern the following:

- Organisation of health care activities to take account of this situation within day-to-day practice, particularly through the implementation of a radiation monitoring system involving citizens and local professionals to measure external and internal exposures of the population and the contamination of foodstuffs.
- Advice for the health care professionals and the general public on the various aspects of the practical radiation protection culture needed in a contaminated environment resulting from a nuclear accident.

The key output of the project is a handbook on radiation monitoring and protection of the population. In the handbook, professionals can find guidance on the setting up of the basic infrastructure and procedures to operate an inclusive radiation monitoring system; they can also find advice to help them in having an efficient dialogue with their patients. The general public can find comprehensive practical information on ways in which exposures can be avoided or reduced when using or living within a contaminated area on a day-to-day basis. Advice can be also provided on the adoption of a responsible and prudent attitude in regard to the protection of health, particularly for children or other critical population groups.

A final workshop was organised in Paris in March 2005. It offered the opportunity to the project partners to bring their views and interact with relevant European stakeholders (health professionals, public health authorities, NGOs, etc).

3. SCIENTIFIC AND TECHNICAL DESCRIPTION OF THE RESULTS

3.1. Review of infrastructures in France, Germany and United Kingdom (WP2)

The overall objective of WP2 was to evaluate the state of preparation in France, Germany and the United Kingdom in facing the situation in case of long term radioactive contamination of the environment after a nuclear accident, as far as the radiation monitoring of the situation and the involvement of stakeholders are concerned.

The final version of the WP2 report entitled "*Review of Infrastructures and Preparedness Systems in France, Germany, and United Kingdom for Potential Releases of Radioactivity into the Environment*" (SAGE deliverable no 1) was edited by GSF.

The report includes:

- A description of the national regulatory frameworks (France, Germany and the United Kingdom) (in 2002).
- An overview of the existing organisations (in 2002) at the local and national levels who are responsible for the implementation of countermeasures during the emergency phase and if any, during the post-accidental long term phases; the inventory of the technical capabilities of measurements, analysis and dose assessments and medical support; a description of the existing measurement programmes to monitoring nuclear facilities and environment.
- The list of professionals training related to post-accidental management (especially for professionals from the medical sector).

The review clearly shows *"that the infrastructure in all these three countries regulates the situation during and shortly after a nuclear accident but not in case that a radioactive contamination will last for long time. For that situation, it is necessary to install local information centres in the affected area with sufficient trained staff. To improve the trust of the population in possible measures implemented by the authorities copious and understandable information and education must be provided. The concerned population must*

be able to control the own radiological situation by measuring their environment and their food and by reducing food contamination by appropriate reasonable measures."

Beyond this conclusion, it was also underlined that, in case of an accident, the concerned people should have the means to evaluate the situation at the local level in order to decide more objectively whether or not they want to stay in the affected territory.

3.2. Feedback experience in Belarus, including ETHOS (WP3)

The objective of WP3 was to draw the lessons from about 20 years of practical experience in Belarus in the management of long term contamination of a territory after the Chernobyl accident, specifically by pointing out the monitoring experiences, as well as the involvement of a non governmental organisation (the BELRAD Institute) and other stakeholders in the rehabilitation of life conditions process.

The final version entitled *"Belarusian Experience In The Field Of Radiation Monitoring And Radiation Protection Of Population - Role Of Governmental And Non-Governmental Structures In Solving These Problems"* (SAGE deliverable n° 2) was edited by BELRAD and BB-RIR.

In this report, the first two parts describe what USSR authorities and then Belarus ones have implemented to reduce the radiological burden of the population. The historical evolution of laws and countermeasures is presented and criticized by the authors. The third and the fourth parts present the contribution of Belarus and international organisations in the rehabilitation of living conditions in the affected territories: the participation of the BELRAD Institute (NGO) is detailed, the ETHOS project is summarized and analysed. Finally, the last two parts try to give recommendations for the management of a situation of long-term contamination, especially as far as organisation of health care activities is concerned.

This deliverable can allow to draw lessons and to give recommendations for the management of a long-term contamination after a nuclear accident. In countries having their NPP and in contiguous countries, systems for monitoring the environment and foodstuffs should be organised beforehand. In all European countries,

- A national system of radiation control of foodstuffs should be organised rapidly.

- The national system should be completed by an independent network of local centres of radiation control of foodstuffs (LCRCs).
- A network of fixed and mobile radiological laboratories (including Whole Body Counters) should be created to determine the Cs-137 internal contamination (especially for children).
- Reserves of food additives allowing the decontamination of the organism should be constituted in advance.
- A specific guide on specific agro-industrial techniques should be written and distributed in order to inform and help farmers in producing clean agricultural products on slightly contaminated soils (adapted to the local productions).
- A dynamic system of permissible levels of contamination of foodstuffs and agricultural products, which operatively reflects the up to date radiological situation should be envisaged in the laws.

3.3. Running of stakeholder panels in France, Germany, United-Kingdom and Belarus (WP5)

The objective of WP5 was to involve European panels in the project, particularly to develop and validate the proposed scheme for the handbook. From 2002, in each of the country, panels were constituted. They were composed of professionals involved in the public health domain (such as nurses, midwives, medical doctors, radiation protection experts and medical social workers) as well as representatives of the civil society. According to the country, the national panels met from one to three times per year. The meetings constituted a place of dialogue where fruitful exchanges on questions raised by a long-term radioactive contamination took place. Thus, all along the project, the handbook was developed and adapted according to the concerns and expectations of the stakeholders.

The Belarus panel was particularly active in evaluating the practicability of the proposed strategies and guidance. They expressed the wish to see in the future a Belarus version of the handbook taking into account more specifically the peculiarities of the Belarus situation. Otherwise, the health professionals of the Brest Branch of the Research Institute for

Radiology (BB-RIR) who took part in the Belarus panel have developed a specific document to help mothers to deal with long-term contamination and to look after their young children. It is considered by the authors as a direct output of the SAGE Project (this document, published in Russian, is available on the SAGE web site).

This WP5 final report (SAGE deliverable n° 4) describes the stakeholder consultation process that was undertaken in three countries of Western Europe. 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.

This report (SAGE deliverable n° 4) entitled *"The role of western European stakeholder panels in the development of a handbook for living in long term contaminated areas"* was edited by HPA (ex-NRPB)[2].

3.4. Preparation of a handbook on practical radiation protection culture (WP4)

The Work Package 4 was exclusively devoted to the preparation of a handbook on radiation monitoring and protection of the population. The aim of the handbook was to show that the development of a radiation protection culture could contribute to the improvement of living conditions in long-term contaminated territories.
It has been realised through an iterative approach in co-operation with four groups of stakeholders (Belarus, France, Germany and UK). It was elaborated to provide elements of

[2] For the moment, the circulation of this deliverable is restricted until it is reformatted and given HPA approval to publish.

answers and guidance on their questions and preoccupations regarding to radioactivity in the environment, to its effects on their health and to the means to keep vigilant.

The report (SAGE deliverable n° 3) entitled *"Guidance on Practical Radiation Protection for People Living in Long-Term Contaminated Territories"* was edited by CEPN.
It is addressed mainly to the population and health professionals primarily. Nevertheless, it can serve all other professional bodies that may be directly requested in case of contamination of the environment, particularly for educational purposes for example.

The handbook is composed of six sections:

- *General questions* - this section aims at answering the main concerns of people. Transfers of the radioactivity into the environment, exposure routes and means to measure individual doses are presented.
- *Who can answer?* - in case of a long-term contamination, a new organisation will be needed. This section describes the role of local health professionals and specialists of radiological measurements in educating and informing people about the encountered risks. It proposes as well the set up of a "local advisory board": this structure would be a local point of information that would collect, centralise and diffuse all data and that would coordinate the actions.
- *How to monitor the situation?* - this section presents all available measurement tools and for what kind of measurements they are useful (ambient dose rates, foodstuffs contamination or body contamination).
- *How to interpret results of measurements?* - this section presents several examples of interpretation of results of measurements. It gives elements of comparison (reference situations, regulatory limits) in order that people can evaluate their own situation.
- *How to improve the situation?* - this section presents corrective actions that can allow to reduce doses.
- *Annex on radioactivity and health effects.*

This document is not exhaustive: it is mainly adapted to a rural area and refers only to a long-term contamination with caesium-137. It is explained by the fact that the document had been elaborated from the experience of Belarus after the Chernobyl accident.

The document aims at raising people's awareness on new risks and behaviours linked with radioactivity. The methodology and the principles presented in this document could be further adapted to any other situation with long-term radioactive contamination of various origins.

As some sections of the handbook are more particularly addressed to health professionals and professionals of measurements, a tool for the interpretations of results of whole body measurements was developed in parallel to this document. It is a calculation software that allows to easily interpret results of whole body measurements according to foodstuffs measurements data. This tool facilitates the work of the health professionals and the professionals of measurements and promotes dialogue between them and the population living in a contaminated territory. Today, the software needs to be further developed in order that it can be easily used by health professionals: for instance, it would be relevant to develop a user-friendly interface. It would be also useful to adapt the software to other radionuclides than caesium. Finally, its translation in several languages (especially, in Russian for being used in contaminated territories: Belarus, Russia or Ukraine) would constitute another asset.

3.5. Final Workshop (WP1)

The final SAGE workshop on "Radiation monitoring and radiation protection culture for people living in long-term contaminated areas" was held in Paris on 14-15 March 2005.
The workshop was kindly hosted by the Conservatoire National des Arts & Métiers. It was partly sponsored by the French Nuclear Safety and Radiation Protection Authority (DGSNR) and by the French National Institute of Radiation Protection and Nuclear Safety (IRSN). It was also supported by the French Embassy in the Belarus Republic.
The workshop gathered a sixty of participants from about 10 European countries. Representatives of the European Commission, IAEA and OECD/NEA were also present. The workshop provided the opportunity for the five partners of the SAGE Project (BELRAD

Institute, BB-RIR, HPA, GSF and CEPN) to present the findings of their work to interested parties and to discuss ways for further possible developments at the European level. Moreover, invited presentations of other experiences in managing long-term contamination were given: representatives of Belarus and Norway dealt with long-term radioactive contamination following the Chernobyl catastrophe, a representative of Wales presented a case of long-term contamination by chemical products.

The programme of the workshop is given in annex.
The proceedings of the workshop constituted the SAGE deliverable n° 5 and was edited by CEPN. The results of the workshop and the recommendations from the round table are taken into account into the next part “Assessment of results and conclusions”.

4. ASSESSMENT OF RESULTS AND CONCLUSIONS

The main output of the SAGE Project is the handbook (Deliverable n°3). This document can be considered as a first attempt to elaborate a framework on strategies and guidance for establishing and disseminating a practical radiation protection culture in Western European countries.

Although this first handbook was developed in a European perspective, it is mainly applied to rural areas and refers only to caesium-137. It was also recognised by most of the involved stakeholders that further specific documents should address different territories (urban context for instance) and target audiences (mothers, farmers...). Otherwise, short reports on specific aspects, such as pregnancy and infant protective measures, would be quite helpful as well.

Nevertheless, all participants appreciated the co-development of the handbook and enjoyed the originality of the participative approach. They emphasised the lack of a common language between experts and the civil society as well as a lack of tools and structures for informing dialogues and debates. They also encouraged the development of approaches similar to the SAGE one, especially in the context of protection of the environment.

The three Member States of the project worked from the experience gained in Belarus and reported it to the national stakeholders panels. The SAGE project also favoured exchanges and the emergence of a shared culture among the participants regarding the rehabilitation of living conditions in contaminated territories. It has thus initiated the elaboration of new common projects on the post-accidental management between the partners (for instance, new projects in the framework of the CORE Programme). The SAGE Project also offered the opportunity for the Western European authorities to discuss with the Belarus authorities about the day-to-day management of situations of long-term contamination. After the SAGE workshop, the French authorities organised a meeting with the Belarus officials to initiate a dialogue on questions on post-accidental management. They also got in touch with the Norwegian Radiation Protection Authority who took part in the Seminar. New co-operations could also emerge thanks to the SAGE Project.

Otherwise, the simultaneous presence of people from Norway and Belarus in the final seminar showed that problems related to the long-term contamination have been treated in a similar way in both countries. This demonstrated that West European authorities should also become aware that they can use the Belarus and Norwegian experiences to prepare at best a situation of long-term contamination and abandoned the idea that both situations are too specific to be generalised.

Beyond the concrete results of the SAGE Project, the closing workshop offered the opportunity to discuss several important issues.
During the final round table, several participants, especially from Belarus, expressed concerns about the potential health impacts associated with a situation of long-term contamination. This point should also be taken into account by radioprotection experts and other professionals in a broader public health dimension without remaining blocked on the topic of low doses and radiation protection.

The SAGE workshop was one of the first occasions to gather experts and representatives of the civil society to discuss about the rehabilitation of living conditions in contaminated territories. All the participants agreed on the importance of the participative approach developed in the project and the need to implement a pluralistic co-expertise in the field of preparedness and management of a radiological accident. These points were underlined by most of the lecturers, especially by the representatives of NGOs. Nevertheless, they also insisted on the fact that their participation raised difficult questions and was in any case an endorsement without critics of the approach. The round table was the occasion to discuss these points and the members come to the conclusion that it would be worth developing in the future a political framework for the involvement of stakeholders. This “political agreement” could gather states, national authorities, local governments, NGOs who could sign a common declaration. This will enable to create a framework that will secure the interventions of all the stakeholders. This sort of document has already been developed in the CORE Programme (“Cooperation for Rehabilitation”) developed in Belarus, allowing all participants to the project to act together to rehabilitate the contaminated territories. It was also emphasised that

the question of rehabilitation cannot be addressed with the normal modes of coordination and governance and that common efforts have to be triggered to design new approaches. It is envisaged to develop such “political frameworks” in the second phase of the EURANOS Project in which the SAGE experience will be of great interest.

5. ACKNOWLEDGEMENTS

The contribution made by members of all the stakeholder panels is gratefully acknowledged. The stakeholders gave of their time and expertise with enthusiasm, without which the development of the SAGE project would have not been possible.
The Belarus panel is particularly acknowledged: indeed its members accepted to take part in the project freely:

Raissa Missura:	Chief paediatrician of the Stolyn regional hospital
Alexandre Kutsy:	Head physician at the Belaoucha village polyclinic
Anna Kutsaya:	Physician at the Belaoucha village polyclinic
Svetlana Sapun:	Physician at the Retchissa village polyclinic
Vassili Kosul:	Dosimetrist at the Terebejov village
Svetlana Pachko:	Dosimetrist at the Belaoucha village
Svetlana Kulik:	Nurse at the Terebejov kindergarten
Praskovja Poluloshko:	Dosimetrist at the Olmany village
Valentina Vaschenko:	Antropogammametrist at the Stolyn regional hospital
Luba Oglachevitch:	Director of the Olmany village kindergarten

The Research Institute of Radiology of Gomel is acknowledged for its strong collaboration, especially its director, Mr Vladimir Ageets.
Mrs Tatiana Kotlobai, from the NGO “Sprout of Life” is also acknowledged for her presentation during the final workshop. She presented her experience in the framework of the CORE Programme and insisted on the importance of involving local stakeholders in rehabilitation strategies.

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ANNEX 1

Programme of the SAGE Workshop

FIRST DAY

Session 1: Introduction to the project

- Welcome address by the Deputy Director of the French authority of Nuclear Safety and Radioprotection (Michel Bourguignon)
- Introductory address by the general coordinator of the SAGE project (Jacques Lochard)
- Video presentation "The rehabilitation of living conditions in contaminated territories: the ETHOS Project in Belarus" (Sylvaine Dampierre)
- Paper n° 1: Management of the contaminated territories in Norway since the Chernobyl accident (Tone Bergan, NRPA, Norway)

Session 2: Results of the SAGE Project (Chair person: Michel Hugon, Scientific Officer, European Commission)

- Paper n° 2 –The Chernobyl radiation monitoring system in Belarus today (Vassily Nesterenko, BELRAD, Belarus)
- Paper n° 3 – Post accident radiation monitoring management in France, Germany and UK : strengths and weaknesses (Irene Fiedler - GSF, Germany)
- Paper n° 4 – Dynamics of stakeholder involvement in the development of a handbook on practical radiation protection for areas contaminated for prolonged periods (Anne Nisbet, HPA, UK)
- Paper n° 5 – Presentation of the SAGE Handbook: " Practical radiation monitoring and radiation protection culture for people living in a long-term contaminated area" (Pascal Croüail, CEPN, France)

SECOND DAY

Session 3: The way forward (Chair person: Michel Hugon, Scientific Officer, European Commission)

- Paper n° 6 – A non-governmental organisation's perspective on citizen vigilance (Jean-Claude Autret, ACRO, France)
- Paper n° 7 : Dealing With Chemically Contaminated Land: The Welsh Experience (Mark Temple - National Public Health Service, Wales)
- Paper n° 8 : Implementation of an inclusive radiation monitoring system in the Bragin District in Belarus (Tatiana Kotlabai, "Sprout of Life" NGO, Belarus)
- Intervention of stakeholders:
  - Anita Villers (French group)
  - Sarah Harrison (British group)
  - Raissa Misiura (Belarus group)

Session 4 (Chair person: Anne Nisbet, HPA, UK)

- Round table: the way forward