

Stakeholders and radiological protection: Lessons from Chernobyl

BY DICK KOVAN

ON APRIL 11, in time for the 20th anniversary of the Chernobyl accident, the OECD Nuclear Energy Agency (NEA) released a report on the development of “stakeholder involvement” in the rehabilitation of regions contaminated by the disaster. The report, *Stakeholders and Radiological Protection: Lessons from Chernobyl 20 Years After*, also focuses on the relationships between the radiation protection (RP) experts and local stakeholders and other professionals in dealing with the aftermath of the event, which affected virtually every aspect of life in those areas.

The effect of the Chernobyl disaster on the lives of the people in many regions of Belarus, Russia, and Ukraine will continue for generations to come. For good reason, the populations of these areas not only felt that those who were supposed to be in charge had lost control, but that they themselves had no way to regain control of their daily lives. This added to the unprecedented problems faced by RP professionals, who found themselves unprepared for the complexity of the radiological situation and for dealing with a population that had lost trust in the authorities charged with dealing with such events.

The NEA report is based on a study of the experience of RP professionals working with Chernobyl-affected populations in contaminated regions of Belarus, as well as of Norway and the United Kingdom. It describes how these professionals engaged with the local people and other stakeholders in the contaminated areas in a very different way from the top-down approach usually taken by central authorities. The goal was to help the local people gain the knowledge needed to manage their own radiation exposure and regain a sense of control over their daily lives and future.

Long-term response to the 1986 accident showed the need to involve affected populations in decisions for rehabilitation.

For the radiation protection profession, this new approach—“stakeholder involvement”—is now a key tool in establishing a more inclusive and open process of decision-making under extreme conditions, leading to much more sustainable results. The report demonstrates how radiation protection has become more effective in meeting the needs of ordinary people forced to live in extraordinary circumstances.

The report makes use of other work by the NEA on the role of stakeholders in radiological protection, which was the subject of a series of workshops held in Villigen, Switzerland, beginning in 1998. (The reports are available on the NEA Web site at <www.nea.fr>.) A key conclusion of these workshops—that stakeholder involvement is central to the resolution of complex radiological protection situations—was clearly illustrated by the ETHOS Project, which was undertaken in the late 1990s in a village in Belarus (see accompanying sidebar), and a much larger follow-up program called CORE (Cooperation for Rehabilitation), which is now under way in several regions of Belarus. Experience from both of these projects was made available for the NEA’s new report.

Prepared for the NEA’s Committee on Radiation Protection and Public Health by the Expert Group on Science in the Service of Stakeholders, with the active support of the NEA secretariat, the report is designed to assist national governments in preparing for any future large-scale and long-lasting contamination event that could occur, be it from industrial accident or terrorist attack. It also describes key lessons for emergency

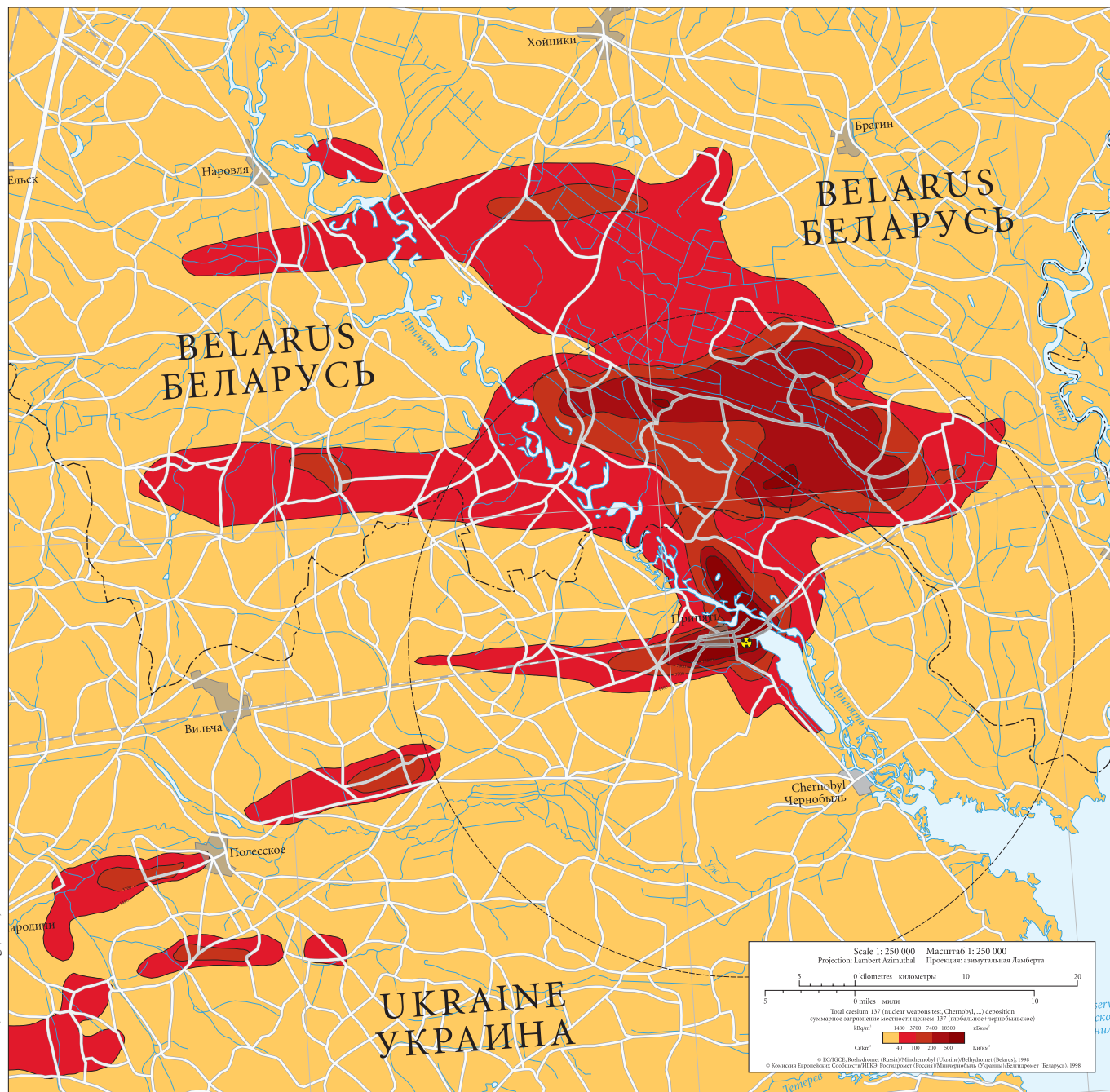
preparedness and crisis management.

Approaches to rehabilitation

In the immediate aftermath of the accident, it was clear that drastic actions had to be taken without delay, such as creating the exclusion zone around the reactor and evacuating other contaminated areas. In such circumstances, a top-down approach was indispensable. In fact, there has been recent praise from the International Atomic Energy Agency’s Chernobyl Forum for the emergency response by the Soviet authorities.

As the report makes clear, however, within a few years, the radiation protection authorities realized that their centrally driven top-down approach was not working. At first, confronted with the complexity and diversity of the problems on the ground, the authorities naturally sought a global view, making some broad-brush assessments and then handing down information and solutions to the population. This approach to rehabilitation, which includes organizing public health efforts, radiation measurement, and agricultural countermeasures, did not take adequate account of the complex pattern of the fallout or the array of interdependent problems. The approach might have been more successful if it had been complemented by sufficient flexibility to allow for specific local conditions, but because it was not, the implementation of central decisions at the local level led to inefficiencies and even absurdities as officials sought to deal with a wide variety of situations with a far-from-adequate model of the variables involved.

Map: M. De Cort, G. Dubois, Shi. D. Fridman, M. G. Gernemenchuk, Yu. A. Izrael, A. Janssens, A. R. Jones, G. N. Kelly, E. V. Kvasnikova, I. I. Matveenko, I. M. Nazarov, Yu. M. Pokumeiko, V. A. Sitak, E. D. Stukin, L. Ya. Tabachny, Yu. S. Tsaturov, and S. I. Avdyushin, *Atlas of Caesium Deposition on Europe after the Chernobyl Accident*, EUR report nr. 16733, EC, Office for Official Publications of the European Communities, Luxembourg (1998)



Cesium-137 deposition around Chernobyl following the accident

For example, increasingly complex social assistance schemes were introduced that in some cases ended up providing more money for people in less-contaminated areas than for those in more contaminated ones. The fact that benefits were linked to levels of exposure led people to increase their exposure deliberately in order to receive higher-level benefits. In the end, these costly efforts were regarded by those they were supposed to benefit as exacerbating rather than solving the problems.

This central approach also led to the delivery of health care based on ill-defined risk rather than on appropriately measured need. Furthermore, the lack of adequate links to the local level meant that the resources available there, in terms, for exam-

ple, of local knowledge and the willingness of people to help themselves, were frequently underutilized or left entirely untapped.

As the crisis of confidence grew, local people were the first to perceive the shortcomings of the top-down approach to rehabilitation and to see that a new way was needed. They realized that the measurement and consultation procedures being used gave them no real voice and produced an inadequate picture of the local situation. In this regard, local people complained that RP experts visiting the contaminated areas (including those from abroad) made insufficient efforts to understand what actually concerned them or to explain themselves. This problem was particularly acute with

regard to radiation measurement. People were frequently confronted with inconsistent and even contradictory measurements emanating from various agencies and groups of experts, with no attempts made to reconcile the contradictions.

The local people were concerned that the range and complexity of the problems facing them—social and economic, as well as purely radiological—were not really understood or addressed. They felt helpless and that their quality of life had been irreversibly reduced. This in turn had an impact on the ability of society as a whole to function, leading to a spiral of decline.

The authorities and RP professionals faced a hostile population and were unable even to respond to the need of the locals for

knowledge about living with long-lasting contamination. It was evident to many that a profound shift in approach would be required. The experts could no longer simply hand down information and solutions, but instead had to use a more inclusive approach, a partnership with stakeholders in order to better understand the scale and scope of the problems and to develop workable solutions.

Faced by this situation, those entering the field a decade after the accident placed the engagement of the local population at the heart of their efforts to reestablish trust and confidence.

“The emergence of the stakeholder involvement approach,” the report explains, “was marked by the priority accorded to local people to help them regain a belief that they had control over their lives and that they could contribute to their own protection. The focus, accordingly, was on helping people characterize their situation, rather than being subject to an inevitably cruder centralized assessment; on the development of solutions that responded to local problems and were sensitive to the availability of local resources, rather than their being subject to inevitably less well-focused and often less efficient centrally determined strategies; and on an ongoing meaningful dialogue with stakeholders, rather than on the well-intentioned risk communication efforts whose apparent failure has so exasperated RP experts and authorities.”

While those who initiated this new ap-

proach are convinced of its efficacy, even more important is that the local people who have participated in these initiatives are similarly positive.

Radiation monitoring

Establishing a local radiation monitoring capability was realized as being critical. While it was possible for central authorities to produce quite detailed contamination maps, at the local level, areas in close proximity can show significant differences in levels of contamination. This in turn can lead to situations where individual exposures—both internal and external—can vary widely within the same village. Knowledge of this local variation is vital for people to be able to take steps to reduce exposure. With such knowledge, people were in a position to make informed decisions on critical local concerns, such as where livestock is pastured, where children play, where food is gathered, and so on.

Providing local people with simple equipment and basic training transformed their knowledge and understanding of local conditions and in many cases produced the first accurate and adequately complex characterizations of those conditions. In other words, responding to the stakeholders’ need to be involved and to understand has the added advantage of more effectively utilizing radiation protection resources, which are inevitably in short supply and thinly spread in the context of a major contamination event.

Thus, with comparatively little effort or

expense, a clearer understanding of the contamination was obtained, laying the foundation for practical rehabilitation tasks that stakeholders could identify and act upon. It has also helped in developing a radiation protection culture and has gone a long way toward addressing the trust problems that beset the top-down approach.

According to the report, “In some areas of Belarus and Norway, for example, simple and robust monitoring equipment in the hands of appropriately trained local people has been a key component in transforming the lives of communities, which now have ready access to reliable, accurate, and trusted information with which to inform their decisions. They are no longer passive recipients of data emerging from processes they frequently found opaque, but rather active participants in a transparent measurement process where they can, for example, witness the measurement of foodstuffs they have grown or gathered and relate the results to their own experience. This has been an important part of people regaining a sense of control over their lives, as they are empowered to make a valuable contribution to local decision-making.”

This marked a step change from simple information-giving—something that had characterized the top-down approach and that had, at best, only a very limited impact. RP professionals certainly have knowledge to contribute, but this is in the setting of a joint effort with other stakeholders, including other professionals, where all are playing roles in defining the problems and de-

The ETHOS Project

Despite an extraordinary expenditure of resources to rehabilitate contaminated regions, it became apparent that the type of centrally driven approach that was necessary at the time of the accident did not work well in managing the aftermath. The actions taken by the authorities in many regions were inefficient and resulted in a crisis of confidence for the people living there. The problem of managing the rehabilitation became an important area of investigation in order to find a more effective way to move forward.

It was into this context that a European Union-funded team of French radiologists and other specialists arrived in Belarus in 1996. The ETHOS Project proposed a new approach, which focused on long-term social and economic aspects, as well as radiological safety. The recovery of self-confidence and control among the population, as well as the restoration of social trust, were also key objectives. The ETHOS Project took place in Olmany, a village of 1300 inhabitants situated in the District of Stolyn, about 200 km (about 124 miles) from Chernobyl. Operating at the local level, the aim of the team was to understand the impact of the accident and its aftermath from the perspective of the local people and to implement a stakeholder involvement approach to manage the rehabilitation.

According to John Paterson, a member of the expert group that produced the NEA stakeholders report, the ETHOS team was very much aware that there were issues that both the authorities and the population of contaminated areas faced. The team

had seen surveys of the populations in these areas that revealed the following:

- Widespread social and psychological effects arising from concerns about their environment and the health of the children.
- A perception that quality of life was irreversibly reduced.
- A feeling of helplessness regarding their ability to avoid radiological hazards.
- A general feeling of a loss of control because of a lack of trust in the authorities and experts.
- A feeling that experts and authorities who downplayed the risks were actually denying them.

Paterson, who is now at the School of Law at the University of Aberdeen in Scotland, explained that the team took the view that these were not simply side issues to the main task of post-accident rehabilitation, but rather fundamental problems that were intimately bound up with that task. In short, they believed that the failure of authorities and experts to build trust in the aftermath of the accident was actually standing in the way of reconstruction and rehabilitation. However well-informed or well-intentioned the authorities might be, the people they were attempting to help simply did not trust them.

The view of the French team was that the population needed to feel that they had some control over their lives and to enjoy a level of protection that they could regard as acceptable. Nevertheless, the unprecedented nature of the situation that had posed such problems for the authorities also meant that there was no ready-made methodology for how the team should proceed. Therefore, it set about developing the methodology in part-



Mothers in Belarus planning their children's diet to reduce radiation dose from food intake (Photo: ETHOS Project)

veloping solutions in a specific context.

All of this certainly presents the RP community with new challenges in terms of its relationship with those it serves. But as the report shows, if these challenges are met, the rewards can be significant.

Involvement, in practice

To further illustrate how life-changing this new approach has been, the report gives specific examples of how stakeholder involvement has worked in practice. Having

local radiation measurement capability was crucial in all of these cases. For example, physicians' having access to trusted dose information—and knowing that the people they serve also have such access and actively utilize it—has helped them transform their approach to health care. They have been able, for example, to monitor children's individual doses and assist mothers in developing strategies to reduce their children's exposure. Under the top-down approach, doctors found themselves essen-

tially telling patients what they were forbidden to eat based on the centrally published lists of the most seriously contaminated products. The problem with these lists was that although the information contained was not wrong, they did not account for local conditions or circumstances—for example, the inability of people to afford alternatives.

Being able to engage with RP professionals has also helped doctors become an integral part of the effort to develop an RP culture that has the potential of greatly enhancing public health.

Experience has also shown significant benefits from involving farmers directly in the process of dose measurement at the local level. Insofar as the top-down approach tended simply to zone land as contaminated and therefore incapable of producing marketable food, this approach failed to recognize local particularities in terms of varying degrees of contamination, the varying effects of different production strategies given the same level of contamination, and, indeed, the absence of realistic alternative sources of food. As a consequence, farmers tended to adopt a fatalistic attitude that their produce could not be improved and could not be marketed, but that they and their families would nevertheless have to eat it themselves.

The stakeholder involvement allowed farmers to understand the radiological condition of their land in finer detail and the radiological quality of their produce. They could then make informed decisions about where to plant and which fields to leave fall-

nership with the people.

The ETHOS Project aimed to understand the impact of the accident and its aftermath from the perspective of the local people, whose key question was simply whether it was possible to stay in the area and to raise their children there. Despite years of interventions by the authorities, this was not something the people felt they had a clear answer to. The team explained that this was not a question that it could answer for them, but it could help those who wanted to stay improve safety and quality of life. On that basis, it became clear that anything the project did must have practical objectives. Consequently, six working groups were established to develop solutions to problems that the people themselves had identified. These were:

- Radiological protection of children.
- Production of clean milk.
- Marketing of privately produced food.
- Radiological culture through education in the schools.
- Involvement of young people in rehabilitation.
- Management of domestic radioactive waste.

In each case, the groups, which consisted of local volunteers and experts from the French team, embarked on a process of collective learning about the nature and extent of the problems they faced. The process began with the radiological measurement of the situation, but not by the experts. Instead, they trained and assisted local people in carrying out the measurements themselves and in developing an accurate characterization of the contamination of their area. This comparatively small effort had a fundamental and profound effect, as people now understood and

believed the data relating to their situation and could immediately grasp that the potential existed to continue to live in the village.

One of the working groups involved mothers in the radiological protection of their children. The team discovered that even 10 years after the accident, the mothers were unable to characterize the levels of contamination or the mechanisms of exposure. The information that undoubtedly existed had not been presented in a manner or form that promoted understanding. The team then adopted the radical approach of involving the mothers directly in the measurement and characterization of their local environment, beginning with their own houses and gardens, as a means of improving their understanding, first of all, of the external exposure of their children.

The principal finding was that practically all measurements taken inside houses fell below the reference value, except for those taken near stoves, because of the presence of ashes. Half of those taken in gardens fell below the reference values; the others related mostly to contaminated woodpiles and manure heaps.

Furthermore, in recognition of the way in which an overly rigid approach on the part of the authorities had failed to recognize follow-on effects of policies on other sectors (or opportunities for more efficient or effective action resulting from a coordinated approach), the working groups informed each others' work, with the mothers' group, for example, feeding its findings into the work of the groups dealing with clean milk and meat production.—D.K.

low, and in due course see the tangible results of such countermeasures.

One of the first problems that local people identified when their views were sought was the need to provide their children with clean milk and other food and to know whether the environment in which they were growing up was safe. The top-down approach informed mothers of the need to avoid certain foods. And so, while they could be aware that they were feeding their children contaminated milk or other food, they were unable to buy clean products from outside. Similarly, mothers were aware that the places where their children played, including forests and lakes, might increase their exposure, but they had no way of checking the actual amount of exposure.

In this context, mothers frequently expressed despair at their helplessness to do the best for their children.

Mothers were accordingly enthusiastic about taking part in measurement and mapping activities, deriving a clearer picture of their immediate environs—from house and garden to the surrounding countryside. They were also eager to be involved in initiatives to bring together doctors and other professionals with the aim of ensuring that children's intake of more contaminated foodstuffs was minimized and that more contaminated areas were avoided. Because of the ability of this approach to focus down to the level of individual families, it was possible for parents to see the tangible effects of these efforts in the form of reduced dose readings for their children. The net effect of this approach was that families felt they had regained some control over their lives and were in a position to play a role in managing their exposure to radiation.

Lessons learned

The report provides a number of lessons learned and guidance for stakeholder involvement. Through these experiences, it notes, the authorities and RP experts came to see the advantages of greater engagement with populations they may previously have seen as merely passive recipients of the services and expertise they had to offer. They also saw how this approach could grow and adapt organically, allowing the more effective and efficient use of scarce resources in achieving the aims of radiation protection.



Local residents mapping contamination in Belarus (Photo: ETHOS Project)

In terms of the relationship that exists between RP professionals and the communities they serve, stakeholder involvement clearly has made a difference. There has been a striking change in attitude, with the population moving from a view of the experts as being remote to one where they are seen as having a stake in and a commitment to the community.

The report notes that stakeholder involvement approaches have emerged because of the need to build a picture of the problems facing a local community from the bottom up and to place the members of the community in a partnership with RP and other professionals. Thus, the local community is intimately engaged in the effort to understand the situation and respond to it.

This raises further challenges for radiation protection. Not only is it a question of engaging local populations, but of doing so in collaboration with other specialists to produce solutions that take into account the complexity, as well as the constraints, of locally available resources. The benefit of the shift in approach is that radiation protection becomes everyone's concern, rather than someone else's responsibility. Integrating radiation protection in this way empowers people to take care of themselves rather than wait for help from central authorities, who, in the context of contamination on this scale, cannot provide that degree of assistance.

The report is available online at <www.nea.fr/html/rp/reports/2006/stakeholders_preprint.pdf>. **NW**