

What are the health consequences of Chernobyl?

The International Chernobyl Forum (September 2005) assessed the exposures and health consequences of the accident.^{1 2} The results of the forum were also reviewed by the National Council on Radiological Protection and Measurement (NCRP) of the United States in its April 2006 meeting.

According to their reports, of the 600 000 or so “Liquidators” who worked to put out the fire at the reactor or to clean-up afterwards, a total of 138 were seriously exposed. Of these people, 28 died within a short period, and 19 others died between 1987 and 2005.

Out of the general public, there have been approximately 5000 cases of thyroid cancer among those exposed as children in 1986. Of these, 15 have died. Although it might be expected that exposures from the accident would cause some increase in risk of other forms of cancers, the reports found that thus far there is evidence of slight increases in leukaemia, breast cancer, other solid tumours, cataracts and cardio-vascular disease, although these occurrences are not statistically significant at this point. Current estimates of future impacts suggest that up to several thousand cancers may occur in the most exposed population in the CIS.

What were the environmental consequences of the accident?

The Chernobyl accident caused extremely wide-spread contamination, which can be measured, although most generally in tiny amounts, throughout the northern hemisphere. In total, over 200 000 square kilometres of land were contaminated with Cs-137³, the most prevalent, long-lived radionuclide that was emitted. Over 70% of these contaminated

¹ WHO05. Health Effects of the Chernobyl Accident and Special Health Care Programmes Report of the UN Chernobyl Forum Expert Group “Health” (EGH), to be published, draft of August 31, 2005 (http://www.who.int/entity/ionizing_radiation/a_e/chernobyl/EGH%20Report%20in%20PDF.zip)

² IAEA05. Environmental Consequences of the Chernobyl Accident and Their Remediation: Twenty Years of Experience Report of the UN Chernobyl Forum Expert Group “Environment” (EGE), to be published, draft of August 2005 (http://www.iaea.org/NewsCenter/Focus/Chernobyl/pdfs/EGE_Report.pdf)

³ By contaminated we mean land with over 37 kBq/m² of Cs-137 contamination, which is far in excess of normal background levels.

lands are in the three countries most affected by the accident; Belarus, the Ukraine and Russia. Two countries that experienced contamination outside the CIS, where measures are still in place in some areas, are Norway and the UK.

Because soil and river sediments tend to hold the Cs-137 in a fairly stable fashion, it is not expected that contamination will migrate significantly into the water table (with consequences for the water supply and the food chain), or far from where it is currently. As such, the removal of Cs-137 from the environment will primarily be through its physical decay. In that Cs-137 has a half-life of 30 years, it will remain in small but measurable quantities for up to 300 years.

The NEA study analyses the benefit of stakeholder involvement vs. top-down approach in improving the living conditions in Chernobyl contaminated areas. On what experience is this analysis based?

The analysis is largely based experiences surrounding two projects sponsored by the European Union (and others) in the contaminated areas 'ETHOS' and 'CORE'. It also draws on examples from Norway and the UK.

The ETHOS project was set up as an alternative approach that recognized the holistic nature of the post-accident situation for the local population. The first phase, sponsored by the European Union, took place from 1996-1998) and was carried out in the village of Olmany (Stolyn district). Following its success, it was extended (with additional sponsors) to cover other villages in the area and ran from 2000-2001.

The CORE programme was built on experiences from ETHOS and other projects based on grass-roots level approaches to tackling complex issues. Its main objective is to facilitate the development and implementation of local initiatives in 4 contaminated Districts of Belarus (Bragin, Chechersk, Slavgorod and Stolyn) to support rehabilitation of the living conditions, with a particular focus on engagement of the local population and professionals. The programme was initiated in 2003 and has a wide range of partners. More information can be found at <http://www.core-chernobyl.org>

Who are the stakeholders in the NEA study?

The population, the local authorities and professionals, the national authorities and experts, in particular people outside the normal decision-framing process. (More generally, a stakeholder is anyone with a 'stake' in a problem and so the term is context-specific)

In Belarus the ETHOS project took place in 5 different villages with a total of about 10 000 inhabitants. About 200 to 250 individuals involved themselves in the project.

What is the benefit of the stakeholder involvement approach in the contaminated area?

On average, individual dose reduction can be estimated as a factor 2, but were much higher in some specific cases. Improvements in health were focused on individuals, not on the population as a whole, and as such the results were quite varied. However, these efforts did address the concerns of the individuals affected, and thus in general were successful in rebuilding personal confidence and a sense of the value of initiative.

The new approach to recovery for the contaminated areas was founded on stakeholder involvement. It established social structures that had not previously existed, and built into community life a practical radiation culture including health monitoring and education. The resulting optimism and confidence, together with health improvements, have led to improvements in the quality of life. This holistic improvement is a key benefit of the stakeholder involvement approach and is associated with empowerment of civil society more generally.

When will the people in the Belarus villages be able to carry on the process without help of the international RP community?

To a great extent, they already are – the UN has recently shifted its focus from directly examining issues surrounding radiation to re-development.

When is it advisable to use a bottom-up rather than top-down approach?

The bottom-up approach uses the 'customers' of the rehabilitation – the people themselves – to identify the problems that need to be tackled and taps their expertise in solving these problems. It is now largely recognized that the resilience of the society to cope with widespread and long lasting consequences is mainly driven by the level of preparedness to face the associated problems. The ETHOS experience, and now the CORE programme have clearly demonstrated that the involvement of the population and the local authorities and professionals in the rehabilitation process is feasible and effective. The challenge now, is to extend this involvement in the preparation of emergency management and rehabilitation strategy in other countries to be ready in case of an accident. In fact the top-down approach is generally only effective in the early emergency phase (the so called reflex phase).

The report talks about reindeer being slaughtered in Norway, why is this?

For the Sami people, the reindeer is a staple food and source of other commodities, such as clothing. So the slaughtering of reindeer is a normal feature of Sami life. Contamination from Chernobyl was deposited on the reindeers' food, leading to contamination of the reindeer, raising questions about the safety of using them for food. The slaughtering of the reindeer shows that satisfactory solutions have been found, drawing on the Sami's specialist knowledge and on radiation protection. This example shows how stakeholder involvement can bring insight into finding solutions: the real problem was not just a supply of a clean resource (since alternative sources of food, clothing etc. could be supplied) but how to maintain the traditional way of life for the Sami.

So unusually, the slaughtering of the reindeer is the *outcome* of a successful solution rather than a measure taken *as* a solution, which might be the case for infectious animal diseases, such as bird flu or foot and mouth disease.

What role should the stakeholders play in planning an emergency response when they do not have any technical expertise?

They bring the knowledge about the local conditions, habits, culture, mentality that technical experts do not have and this can inform emergency-planners in deciding how to prepare for accidents. It means the responses they plan can be fitted to the local situation and peoples' behaviour. The NEA's international emergency exercise programme ('INEX') is actively investigating this area.

How is the experience from the Chernobyl accident applicable to other large scale disasters?

As far as stakeholder involvement is concerned it is obvious that the lessons learnt with Chernobyl can be applied in other situations i.e. the key importance of involving the local stakeholders in the preparation phase then in the post-event management phase if there was any accident leading to widely spread, long-lasting contamination. Again, the NEA's international emergency exercise programme is using lessons from Chernobyl to improve Member States' preparedness for accident response.

Can this bottom –up approach be useful for clean-up in OECD countries?

The experience that the NEA has gathered through a series of three workshops (the Villigen series) shows that the stakeholder concerns in the Chernobyl-affected areas are very similar to those found in OECD clean-up projects. There are of course variations, for example the OECD clean-up projects do not generally involve populations who subsist on agricultural products (milk, meat, crops, forest mushrooms and berries, etc.) grown on the contaminated lands. However, the reaction of populations towards improving living conditions, both in Belarus and in OECD project areas are very similar. Both would like to better understand their specific situations, would like to be involved in discussions of “what to do”, to be kept up-to-date with results and information, and to share their views and experience with others affected in the same way.

This points to an increasing empowerment of civil society in areas that were previously the exclusive preserve of technical experts.