

Twenty years after Chernobyl: The role of the European Union

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Background

The accident which took place on 26 April 1986 in the reactor of unit 4 of the Chernobyl nuclear power station was the most serious in the history of the civil nuclear industry. It led to the dispersion of the majority of the volatile radionuclides such as iodine and caesium and, to a lesser extent, strontium. An area of approximately 150 000 km² in Belarus, Ukraine and Russia were highly contaminated by the radioactive fallout. The radioactive contamination of land was directly related to the direction of the dominant wind and the intensity of rainfall at the time when the radioactive plume was passing. The radioactive plume which resulted from the Chernobyl accident first reached Scandinavia and Central Europe as far as Greece and Turkey. The plume then moved towards South-West Europe and part of it branched off towards the north, reaching the United Kingdom.

As there are networks in the Member States to monitor levels of radioactivity in the environment in accordance with Article 35 of the Euratom Treaty, and there is an obligation for the Member States to communicate to the Commission the results of measurements in accordance with Article 36 of the Euratom Treaty, the Commission's JRC in Ispra (Italy) established a database of radioactive caesium fallout throughout the European Union following the Chernobyl accident. The existence of this database enabled the Commission, in collaboration with the authorities of third countries and in particular Ukraine, Russia and Belarus, to publish in 1998 an Atlas of radioactive contamination in Europe following the Chernobyl accident¹.

During the first few weeks following a major nuclear accident, the radioactive contamination of vegetable and animal products mainly depends on the deposit of atmospheric radioactivity on the exposed parts of plants. Vegetables and milk account for the majority of the contamination of the population by foodstuffs. Amongst the different radionuclides which were dispersed into the atmosphere during the Chernobyl accident iodine contributed most to the incorporation by adults and in particular children during the first few weeks. Subsequently, caesium and, to a lesser extent, strontium gradually became the main contaminants of foodstuffs, as a result of the rapid disappearance of iodine by radioactive decay.

The Community system for the early exchange of information

Following the Chernobyl accident, in December 1987 the Commission established, by means of a Council decision, a system for the early exchange of information in the event of a radiological emergency². This system, known as "ECURIE"³, consists of a network for communications

¹ Atlas of caesium deposition on Europe after the Chernobyl accident, ISBN 92-828-3140-X, Office for Official Publications of the European Communities, 1998.

² Council Decision of 14 December 1987 on Community arrangements for the early exchange of information in the event of a radiological emergency, OJ L 371, 30.12.1987, p. 76.

³ European Community Urgent Radiological Information Exchange.

between the Commission and the Member States through which the first warning and further radiological information may be exchanged⁴.

As required by Article 35 of the Euratom Treaty, every Member State has on its territory a network of facilities for monitoring radioactivity levels in the environment which enable an emergency situation to be identified regardless of whether the accidental release of radioactive substances occurred on its territory or elsewhere. Hence, even in the absence of notification of the development of an accidental situation the source, as well as the position and extent of the radioactive plume can be identified only if the environmental monitoring network is sufficiently dense. It is to a large extent on the basis of the data provided by the environmental monitoring networks that the first assessment of the seriousness of the radiological emergency will be made and the first countermeasures will be determined, including those relating to the consumption and marketing of agricultural products. The European monitoring networks are now interconnected through a data exchange platform EURDEP.

Directive on the information of the public

In November 1989 the Council adopted a Directive on informing the public about health protection measures to be applied and steps to be taken in the event of a radiological emergency⁵. The population likely to be affected by the radiological emergency should be given in advance appropriate and continuing information on the planned health protection measures relating to them and the action they should take in the event of a radiological emergency. Moreover, efforts should be made to strengthen the measures and practices for informing the general public already in force at national level in the event of a radiological emergency,

Post-Chernobyl legislation on the import of agricultural products

At the time of the accident, there was no Community or national legislation that clearly indicated the levels of radioactive contamination below which foodstuffs could be placed on the market. This situation quickly created confusion, particularly following the adoption of different measures in some Member States of the Community.

The Community's initial reaction to the Chernobyl accident, based on the EC Treaty, was for the Commission to adopt a recommendation addressed to the Member States concerning the coordination of national measures for marketing agricultural products contaminated by fallout from the accident⁶. It was followed by a Commission Decision⁷, suspending the inclusion of certain countries on the list of countries from which the Member States authorise imports of live animals and fresh meat. On 12 May 1986, the Council adopted a regulation provisionally suspending the import of certain agricultural products originating in certain third countries⁸.

While these arrangements for banning imports were limited in time, the Council replaced them with a regulation authorising the resumption of imports subject to certain conditions. This regulation laid down maximum permitted levels for radioactive caesium in imported products⁹.

⁴ The International Atomic Energy Agency (IAEA), at about the same time, established its own system for the early transmission of information under the Convention on Early Notification of a Nuclear Accident. As the aims of both systems are similar, it was decided to harmonise the systems as much as possible so as to minimise duplication of effort.

⁵ Directive 89/618/Euratom, (OJ L-357 of 07/12/89 p. 31)

⁶ Commission Recommendation of 6 May 1986, OJ L 118, 7.5.1986, p. 28.

⁷ Commission Decision of 7 May 1986, OJ L 120, 8.5.1986, p. 66.

⁸ Council Regulation (EEC) No 1388/86 of 12 May 1986, OJ L 127, 13.5.1986, p. 1.

⁹ Council Regulation (EEC) No 1707/86 of 30 May 1986, OJ L 146, 31.5.1986, p. 88.

This was then extended on several occasions, with certain changes being incorporated. The latest extension of the Community system for controlling imports of agricultural products following the Chernobyl accident, for a period of ten years, dates from March 2000¹⁰. From the end of 1987¹¹ onwards, the Council introduced Article 133 (ex-113) of the EC Treaty as the legal basis for adopting regulations extending the period of validity of the control system.

Since then, several regulations have been adopted by the Commission to define the scope of the control system and the procedures for implementing it, and in particular the list of agricultural products originating in third countries which must be subject to checks at the borders of the European Union. This list has evolved over time and currently includes meat, dairy products, and wild mushrooms and berries. The Commission decided in 1999 that certain categories of products originating in third countries should be subjected to stricter controls¹².

The persistence of radioactive contamination in some regions of the European Union

Restrictions on the movement, sale and slaughter of sheep were introduced by the British authorities in June 1986 in the regions of England, Wales, Scotland and Northern Ireland that had been most affected by the fallout from the Chernobyl accident. Twenty years after the Chernobyl accident, they still apply in many holdings. The same type of phenomenon has been observed on a much smaller scale during *in vivo* monitoring campaigns of sheep carried out by the competent authorities of the Republic of Ireland. Similar situations exist in some regions of other Member States (Sweden and Finland) for other animals raised in natural and semi-natural environments, such as reindeer. Under Council Directive 96/29/Euratom of 13 May 1996, laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation¹³, as well as Articles 35 and 36 of the Euratom Treaty, it is the responsibility of the Member States to implement checks on agricultural products and identify areas subject to continuous monitoring.

In the framework of a survey carried out amongst the Member States in 2002, the Commission received confirmation that values exceeding several thousand Bq/kg of caesium-137 could be found in wild mushrooms and meat of wild boar in some regions in Germany, but also in wild mushrooms, wild berries and carnivorous lake fish in Finland and Sweden. It was mainly with a view to raising awareness amongst the population regarding the persistent contamination of certain wild products that the Commission adopted, on 14 April 2003, a recommendation on the protection and information of the public¹⁴. The recommendation also provides that the Commission is informed in cases of non-compliance with the maximum permitted levels for products of this type by means of the Community rapid alert system established by Regulation (EC) No 178/2002 of the European Parliament and of the Council of 27 January 2002¹⁵.

¹⁰ Council Regulation (EC) No 616/2000 of 20 March 2000, OJ L 75, 24.3.2000, p. 1.

¹¹ Council Regulation (EEC) No 3955/87 of 22 December 1987, OJ L 371, 30.12.1987, p. 14.

¹² Adoption in 1999 by the Commission of a regulation introducing stricter controls for non-cultivated mushrooms originating in 23 third countries, Commission Regulation (EC) No 1661/1999, OJ L 197, 29.07.1999, p. 17, as amended by Commission Regulation (EC) No 1627/2000 of 24 July 2000, OJ L 187, 26.7.2000, p. 7; Commission Regulation (EC) No 1621/2001 of 8 August 2001, OJ L 215, 09.08.2001, p. 18; and Commission Regulation (EC) No 1608/2002 of 10 September 2002, OJ L 243, 11.09.2002, p. 7.

¹³ OJ L 159, 29.6.1996, p.1.

¹⁴ Commission Recommendation No 2003/274/Euratom (OJ L 99, 17.4.2003, p. 55).

¹⁵ OJ L 31, 1.2.2002, p. 1.

Regulations applicable to a future nuclear accident

In 1987, the Commission began a detailed study of intervention levels for radioactive contamination of foodstuffs to be applied in the Community in the event of an accident. The group of experts referred to in Article 31 of the Euratom Treaty decided what methodology should be adopted and the Commission submitted a proposal for a regulation to the Council based on Article 31 of the Euratom Treaty¹⁶. This proposal laid down maximum permitted levels for contamination of foodstuffs and feedingstuffs which may be placed on the market after a nuclear accident. These pre-established maximum levels could be made immediately applicable through the adoption of a regulation by the Commission within the first few days after the accident.

Food controls as part of long-term rehabilitation of contaminated areas

Community provisions have ensured adequate protection of the public following the fallout from the Chernobyl accident. The Community has used this painful experience to create, within the framework of the Euratom Treaty, an original set of laws for taking action on the placing on the market of food, should another accident occur. To what extent these measures may be sufficient will depend on the nature and magnitude of the accident however.

The placing on the market of contaminated food is governed not only by this Community legislation, but also by international guidelines for trade (WHO-FAO CODEX Guidelines) and consumer preference.

The CODEX Guideline levels are currently being reviewed. They will apply to food contaminated following a nuclear or radiological emergency (including both accidents and malevolent actions) for an indefinite period of time. When the Guideline levels are exceeded, national governments shall decide whether the food should be distributed within their territory. National restrictions may be more severe. In the case of widespread radioactive contamination in a country, the assumption made for international trade with regard to the ratio of imported food (from contaminated areas) to the total amount produced or imported may not apply. It is understood that where national restrictions are more severe, they should apply without distinction between produce placed on the market for national consumption or for export. One would also imagine that, in the event of more severe national restrictions, these would also apply to food imported from other countries affected by the accident.

The overriding factor governing the distribution of contaminated food will be the attitude of consumers, however. Whenever consumers have a choice they will prefer uncontaminated food. The application of Guideline levels should build trust among consumers that they will not suffer health consequences. Food complying with Guideline levels should not be labelled as contaminated (neither with radioactive substances nor any other contaminant). However, most consumers may just look at the label with the country of origin and no longer purchase food from affected countries.

As a result of such restrictions and consumer preferences the food market and the agriculture may be severely disturbed outside the area most affected by deposition of radioactive substances. This may lead in the short term to discarding the entire production and managing an important volume of organic (radioactive) waste. In the long term agricultural countermeasures on arable land (e.g., deep ploughing) or on pastures (Prussian blue, etc) may be applied to reduce levels of

¹⁶ Proposal for a Council Regulation of 16 June 1987, OJ C 174, p. 6.

radioactivity, but especially in semi-natural environments and in case of Cs-contamination, the problem will persist for many years or decades. The future of an agricultural economy may to a large extent depend on a reorientation towards non-food produce (oil, bio-fuel, etc).

Nevertheless, the prospect for economic rehabilitation of the affected rural areas may be severely damaged by the absence of a market for the local produce. The preservation or restoration of consumer confidence is thus of prime importance. The general population of a country must be involved as a stakeholder in deciding whether their individual preferences should outweigh the rehabilitation of rural areas and a decent living for the local community. A thorough debate at national level is necessary to achieve a certain degree of solidarity within the country. This was achieved in Nordic countries with regard to reindeer meat produced by the Sami.

The Guideline levels for different radionuclides have been derived from an individual dose of 1 mSv per year. In the longer term, and for the general population, the dose will be much smaller, but it may take many years before doses could be called “negligible”. Many individuals may have higher doses, if they consume disproportionate amounts of specific food (e.g., mushrooms) or of food from contaminated areas.

The Guidelines distinguish between infant food and other (“adult”) food, especially for the category of actinides. Widespread contamination with actinides is not a likely accidental scenario, so this distinction may seem superfluous. Possible malevolent contamination of infant food nevertheless calls for lower levels.

Conclusions

The Chernobyl accident has prompted the European Community to adopt specific legislation with regard to preparedness for and response to radiological emergencies, in particular on the early exchange of information, on informing the public, and on foodstuffs. While this offers a comprehensive body of legislation, there is room for further developments.

The Basic Safety Standards (Directive 96/29/Euratom) are now subject to review in order to revise and strengthen certain requirements, in particular with regard to cooperation between Member States in emergency preparedness and response, to consolidate different pieces of legislation into a single Directive, and to allow for the forthcoming Recommendations of ICRP. The latter are expected to introduce a general system of dose constraints that would apply both to planned practices and to emergency situations.

This major revision, together with the likely adoption of new Codex Alimentarius Guidelines this year, will be an opportunity for adjusting and improving the legal framework. However, it is important to remain vigilant and to maintain a high degree of awareness both in Member States and within the Commission in order to ensure adequate response in a hopefully distant future. Bilateral and International exercises are an essential tool for this purpose.