

## Focus 08

## Is France prepared for a major accident?

France has chosen nuclear weapons and nuclear electricity generation, and has maintained that choice. As a result, France's territory contains over 35 nuclear sites<sup>58</sup> and is criss-crossed all year long by numerous consignments of radioactive material being transported by rail or road.

Safety and security systems invariably have limitations. So one question remains, which we could put like this: "What if there was an accident?" Though the authorities have long considered this question at best preposterous, at worst seditious, nonetheless we believe that it is worthy of attention. Indeed, one is entitled to believe that a country that opts for nuclear has a duty to adopt appropriate emergency and public security measures. Since the chance of a major accident occurring is not zero, one must be prepared for it. So, what do the authorities have to say on the subject?

The official plan is explained on the website of the Autorité de Sûreté Nucléaire (the French Nuclear Safety Authority) – [www.asn.fr](http://www.asn.fr). Unfortunately, this does not appear very up-to-date, as the institutional changes which gave rise to the ASN in 2006 are not taken into account. The key measures and above all the 'doctrine' for the management of a crisis have barely evolved at all.

According to the plan, if a major event occurs, the operator is to alert the prefect of the *département* concerned and the ASN. The ASN will evaluate the situation and "advise" the prefect, who will take the decisions. He or she is the keystone of the plan.

The population, once alerted by a special siren, is supposed to follow these rules: take shelter (there is no longer any mention of containment), listen to the radio, do not use the telephone too much, leave the children at school and await instructions. The prefect, meanwhile, activates the Plan Particulier d'Intervention (PPI, specific intervention plan) for the nuclear site concerned. Of course, this PPI is supposed to have been prepared in advance and updated at least every five years. Simulations are sometimes carried out in order to test the arrangements.

### From theory to practice...

The management of a nuclear crisis thus relies essentially on advance preparation, flagging up of the actions to be undertaken by the various actors, and prior information. However, the doctrine has many intrinsic weaknesses; in particular it is a long way from reality.

*The 10km rule.* PPIs are drawn up on the basis of a zone within a 10km radius of the nuclear installation. The ASN explains that this limit was set on the basis of a range of accident scenarios, and that beyond the 10km limit the authorities would be able to organise a second line of response when needed. However, the few accident scenarios published by independent experts call this rule into question. Weather conditions are a major factor in the speed of dispersal of radioactivity. The least that should be done is probably to take account of the geographical locality and observed weather patterns.

*Preparing the inhabitants.* People living within the aforementioned 10km limit should normally all have received a leaflet telling them what to do in case of an alert: shelter indoors, do not flee, do not go to pick up one's children, listen to the radio in order to hear instructions. Depending on the *département*, leaflets are distributed more or less regularly and new arrivals are thus not necessarily informed. In the case of tourists, visitors etc, it is up to their hosts to convey the information – which does not generally take place. The PPI is a public document, theoretically available at the prefecture to citizens who want it. Those who have tried to obtain a copy can bear witness to the difficulties encountered.

*Warning sirens.* Each nuclear site is equipped with sirens to warn of accidents. The inhabitants are supposed to recognise the signal and act accordingly. However, during simulations organised by the

<sup>58</sup> Counting only the principal sites. In particular, France has 58 pressurised water reactors on 19 sites, several nuclear research centres comprising numerous industrial and research installations, plants such as La Hague, and waste storage centres. The total count runs to over 200 installations.

authorities, it is regularly noted that the sirens are not audible far enough away and do not really cause any reaction.

### The Flamanville PPI

The 1998 Flamanville PPI (which was the one available to the public in 2007 – it should normally be revised every five years) offers a good illustration of the difference between doctrine and operational reality. A PPI describes the area, the number of inhabitants, the factories, schools etc, and lists the available means for potential evacuations, the roads to be used or to be blocked, the assistance that can be mobilised, the reception centres and so on.

Quite apart from the generally outdated nature of this PPI, however, the bizarre approximations that it contains are astonishing. For example, the tourist coach companies are duly listed along with the number of vehicles they possess – all assumed to be available. But at any normal time, of course, the coaches are not in the garage awaiting the alert with a driver alongside. Moreover, a few discussions with the employees concerned make it clear that they do not consider themselves to be ‘requisitionable’ and that their first instinct would be to go to fetch their families.

Again, people seriously contaminated as a result of an accident are supposed to be transported to Cherbourg hospital, which has a specialist unit – with only a few beds. For a *département* which includes a nuclear power station and the plant at La Hague, this is clearly inadequate. Moreover, the PPI does not mention which personnel will be sent on site like the ‘liquidators’ at Chernobyl. Would it be the fire service? The army?

### What about iodine tablets?

Everybody has heard of the need to take iodine tablets in the event of a nuclear accident where radioactivity has been dispersed. The taking of stable iodine, to saturate the thyroid gland and prevent it from fixing the highly volatile radioactive iodine (iodine 131) released during an accident, is one of the measures used to protect populations. But this policy has some limitations:

- Firstly, only residents of the 10km zone around sites are supposed to keep iodine at home.
- Stocks of iodine tablets are obtainable from pharmacies but will only be distributed on the order of the authorities. It is easy to imagine the resultant panic and the queues at dispensaries. We can only hope that an accident will not be so ill-mannered as to happen in August.
- People will probably have difficulty taking the pills at the right time, and in the correct dosage, although these are important parameters and an overdose can be harmful.
- Finally, and above all, iodine merely protects the thyroid from iodine 131 – and if there is an accident many other radioactive elements will be released into the environment.

### Post-accident management

After a major accident, and the implementation of the first emergency measures, comes the post-accident period, with the need for radiation protection and public health measures, bans on food or water consumption, evacuations, decontamination and so on. On this topic, the special dossier in the ASN journal *Contrôle*, published July 2008 (issue 180), makes interesting reading.

The editorial by the Director-General of the ASN is crystal clear: “In order to carry out the mission entrusted to it on the instructions of the Prime Minister in June 2005, the ASN has established the steering committee (CODIRPA) to manage the post-accident phase of a nuclear or radiological accident. [...] This committee has the mission of developing a national doctrine on this subject – a doctrine which is still lacking not only in France, but also in most countries with nuclear energy.”

One could go on adding examples and illustrations showing that in France today too little account is taken of the possibility of a major accident to enable serious preparation. It is of course a complex and costly undertaking to be permanently ready for a situation considered to be very unlikely. But the discussion about our country’s level of preparation must take place, because ‘improbable’ is not synonymous with ‘impossible’.