



Session 3 – emergency management
*Establishment and implementation of criteria for
protective actions in an emergency and during
remediation*

The French CODIRPA approach
*Policy elements for post-accident management
in the event of a nuclear accident*

International Conference on
Effective Nuclear Regulatory Systems:
Transforming Experience into Regulatory Improvements
Ottawa, 8 – 12 April 2013



The French CODIRPA approach

*Policy elements for post-accident management
in the event of a nuclear accident*

1. Emergency management in France
2. The CODIRPA activities
3. Policy elements for post-accident management in the event of a nuclear accident
4. The main protective actions for the post-accidental phase
5. Conclusions



Emergency management in France: organization and ASN responsibilities

Organization – local level:

- **The operator** responsible for the crisis management on-site: on-site emergency plan
- **The Prefect** representative of the government advised by ASN; off-site emergency plan

Organization – national level:

- **The operator (national level)**
- **The ASN, with the support of IRSN**
- **An inter ministerial emergency cell** chaired by a minister or, in case of a major event, by the Prime Minister



Emergency management in France: organization and ASN responsibilities

In an emergency situation, ASN's responsibilities, with the support of IRSN:

- Control the licensee;
- Recommendations to the Government (national/local level) on emergency and protective measures;
- Information of the media and the public;
- Acting as competent authority according to international conventions



Emergency management in France: Emergency plans

On-site emergency plans :

- Objectives:

- ✓ to bring the installation to safe shutdown conditions
- ✓ to mitigate off-site consequences and estimate consequences

- Contents:

- accidental scenarios and their consequences
- list of actions for each actor

Off-site emergency plans :

- Objectives

- ✓ define the local crisis organization and prepare the population
- ✓ protect the public and the environment

- Contents

- ✓ scenarios, consequences and pre-determined actions



Emergency management in France: Emergency drills

National emergency drills

~10 exercises each year

- ✓ Involvement of the licensee, local and national authorities, ASN, IRSN
- ✓ Testing of both on-site and off-site emergency plans
- ✓ ~ 4 exercises include media pressure

- ➔ Definition of annual objectives
- ➔ National experience feedback

Operator exercises

On a regular basis; assessment of the on-site emergency plan

The CODIRPA:

- implemented in 2005
- to deal with a post-accident situation
- a structure involving relevant stakeholders
- thematic working groups (for example drinkable water, radioactivity measurements, remediation, waste management, compensation, radiation protection culture)
- two “transversal commissions” for transition and long term
- material produced is public (www.asn.fr)
- doctrine tested at local level
- 2 international seminars

- Two scenarios for NPP
 - immediate one hour release
 - 24 hour delayed release
- Various meteorological conditions
- Sheltering of population and iodine prophylaxis inside 5 km.
- Contamination levels of locally produced foodstuffs ~several tens of kilometres from the NPP.
- Post Accident main pathways of exposure:
 - Irradiation from radio nuclides deposited in the environment
 - Ingestion of contaminated foodstuffs
- Scenario with atmospheric dispersion of plutonium also studied

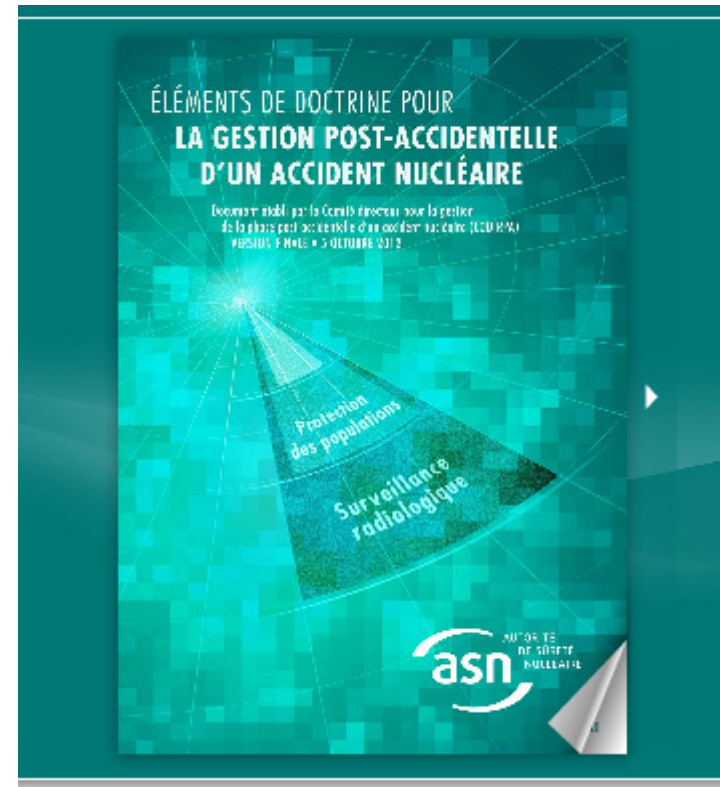
Policy elements for post-accident management in the event of a nuclear accident

Publication of “Policy elements for post-accident management in the event of a nuclear accident” grouping together

- Main document : objectives, principles, key actions and strategic orientations for the transition and long term phases
- Annex 1 : The first actions to be put in place at the end of the emergency phase
- Annex 2 : The guidelines for managing transition period (few months)
- Annex 3 : The guidelines for managing long-term period (several years)

Validation in 2012 by CODIRPA followed by publication in November (www.asn.fr) and wide dissemination to stakeholders

Traduction in English, Japanese and Russian (coming soon)





Policy elements for post-accident management in the event of a nuclear accident

3 fundamental objectives (strongly connected)

- protecting the population against the dangers of ionising radiations
- providing support for members of the population who have suffered the consequences of an accident
- preparing the social and economic recovery of the affected areas

4 principles (very closed to ICRP 103 and 111)

- Principle 1 : Anticipation
- Principle 2 : Justification
- Principle 3 : Optimisation
- Principle 4 : Co-construction and transparency



Policy elements for post-accident management in the event of a nuclear accident

6 Key points

- Immediate delineation of a PA zoning for the contaminated area, with an evolution during the transition period
- Medical and psychological care, radiation monitoring, financial support and compensation for those affected by the consequences of the accident
- Radiological characterisation and surveillance of the environment, foodstuffs and drinking water
- Rapid implementation of a specific approach to management of foodstuffs and drinking water
- Emergence of new forms of governance based on the vigilance and active participation of the affected population considered as a key point for economic recovery within affected areas
- Sustainable waste management solutions in response to the rapid increase of the volume of contaminated wastes

The main protective actions for the post-accidental phase

Public protection zone (ZPP)

Actions are needed to reduce
population exposure

food bans, radiological measurements,
health surveillance, decontamination
actions and specific wastes
management

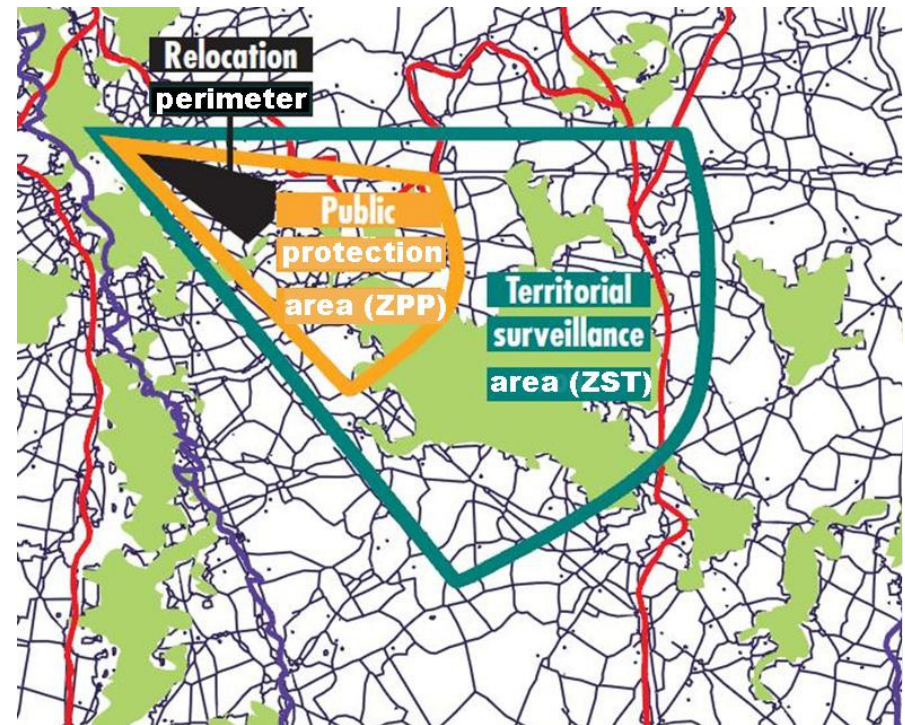
Guide value based on dose criteria

Effective dose (external + ingestion) $> 10 \text{ mSv} / 1^{\text{st}} \text{ month}$ or

Thyroid equivalent dose $> 50 \text{ mSv} / 1^{\text{st}} \text{ month}$

May include a Relocation perimeter

If effective dose from external
exposure alone $> 10 \text{ mSv} / 1^{\text{st}} \text{ month}$



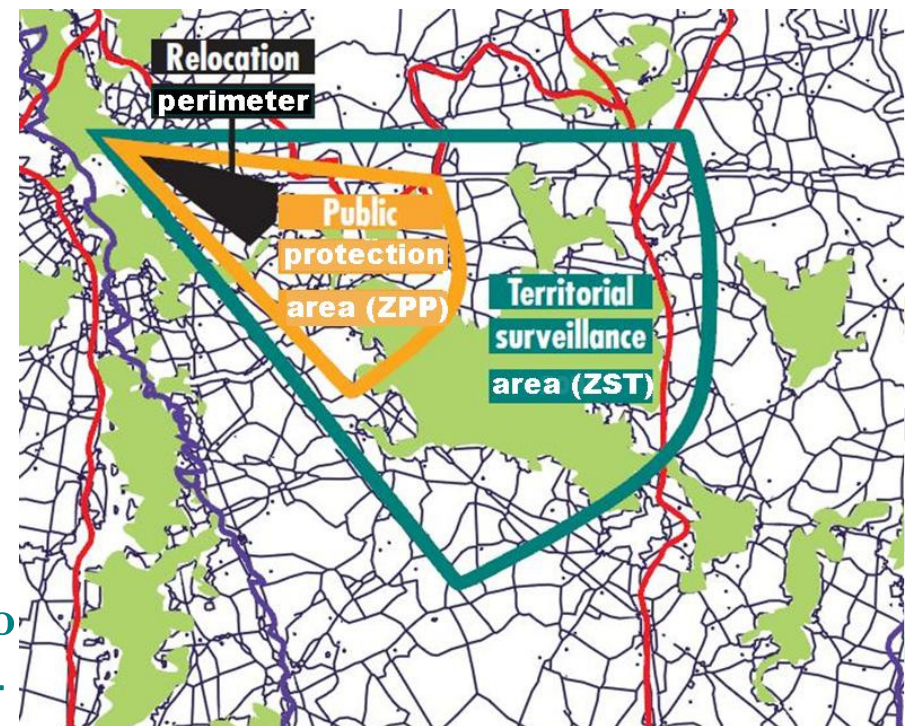
The main protective actions for the post-accidental phase

Territorial surveillance zone (ZST)

Contamination levels of locally produced foodstuffs > Council Food Intervention Levels (Council regulations Euratom n° 3954/87, n° 944/89 and n° 770/90)

Food bans based on an assessment of contamination levels of foodstuffs considered as the most sensitive to radioactive contamination (eg. milk, salads)

The extent of this area is however likely to decrease during the firsts months of post-accidental phase (decay of short-lived radionuclides, measurements results)





The main protective actions for the post-accidental phase

Immediate delineation of PA zoning: structural framework

Initial protection measures

- Long term evacuation and relocation
- Food bans of locally produced food and foodstuffs
- First clean-up operations (urban areas)

Organization of medical and psychological care, human radiation monitoring, financial support and compensation

- Information centres for the affected populations

Radiological characterisation

- Environment, foodstuffs, drinking water
- Wastes and manufactured products

“Policy elements for post-accident management in the event of a nuclear accident”

Important first step in preparing for the management of nuclear post-accident situation

What next?

1. Accompany the preparation of the post-accident management

Declination at the local level to prepare planning aspects for post-accident

2. Test and complete the post-accidental doctrine

Various accident scenarios (long-term release of radioactivity)

Feedback from real accidents (Fukushima, Chernobyl) and from emergency drills

Topics related to the beginning of the transition period (management of manufactured products, of low contaminated waste...)

3. Exchange with neighboring countries and international organizations (HERCA, IAEA, WHO, NEA...)

