

Chapter 16: Planning for Recovery

16.1 Scope

- 16.1.1 The procedures for recovery planning following a civil nuclear accident became prominent following the experience of the Chernobyl accident. The guidance in this chapter is based on the lessons of UK consideration and wider experience, with contributions from all the main responding organisations.

16.2 Summary

- 16.2.1 The chapter sets out some principles for consideration in planning the recovery phase. There is no attempt here to be prescriptive and individual plans should reflect local circumstances. The aim is to reach a point where additional demands on services have been reduced to the level at which they were before the incident occurred.
- 16.2.2 This chapter recommends that the principles which apply to planning for response to accidents at UK nuclear sites should apply also to the recovery (i.e. return to normality) phase. There is an expectation that recovery phase planning would remain the responsibility of the nuclear site operator working with a local authority, or several local authorities, and national bodies, as appropriate. NEPLG would also encourage extension to the recovery phase of the arrangement whereby local authorities produce coordinated plans.
N.B. In some locations, the terms used might be different from those in this chapter but the roles would remain very similar.
- 16.2.3 All contingency planning should be undertaken in accordance with the guidance on combined response contained in the Home Office publication "Dealing with Disaster - Third Edition" and the Scottish Executive publication "Dealing with Disasters Together". Similarly, "Civil Contingencies Act 2004: a short guide" provides a context for recovery planning. Other national level guidance includes the Home Office guidance to Local Authorities about the release of CBRN substances and the Home Office's Strategic National Guidance on the Decontamination Of People Exposed To Chemical, Biological, Radiological Or Nuclear (CBRN) Substances or Material. Finally the Recovery Handbook, produced by NRPB (now Health Protection Agency – Radiation Protection Division) in conjunction with FSA and others, looks at these issues more closely and is described at Annex 16.3.

16.3 Background

- 16.3.1 This chapter recommends procedures to be applied to planning for off-site recovery following UK civil nuclear accidents and recommends that, insofar as appropriate, the general principles of UK nuclear emergency response planning for intervention following nuclear accidents should apply equally to the recovery phase.

- 16.3.2 A study undertaken for NEPLG, has shown that, even for a UK nuclear reactor accident representative of the reference accident, the amount of decontamination and restricted access measures to safeguard the public from direct radiation exposure is likely to be limited. Some decontamination might be considered desirable to minimise short-term exposures, but in this case, relocation of the population for a few days, to allow decay of short-lived material, is also an option. Widespread decontamination is only likely to arise for accidents well in excess of the reference accident level. The chances of this occurring are extremely remote.
- 16.3.3 There may nevertheless be significant quantities of contaminated food arising from a reference accident which would need to be managed as waste. The study also showed, however, that a reference accident could have an impact on local agricultural produce. In such circumstances, European Union (EU) maximum permitted levels for radionuclides in foodstuffs are likely to be exceeded out to a distance of about 25km from the site. This would require statutory interdiction by the FSA in order to prevent contaminated foodstuffs entering public supply.
- 16.3.4 The principles applying to any recovery activities necessary as a result of a UK nuclear accident should also follow the international principles applying to intervention following nuclear accidents, as drawn up by the International Commission on Radiological Protection (ICRP) and recommended for use in the United Kingdom by the HPA-RP. Using this information, HPA RP prepared a paper on Intervention for Recovery after Accidents.
- 16.3.5 These recommendations state that:
- i. the proposed intervention should do more good than harm i.e. the reduction in detriment resulting from the reduction in dose should be sufficient to justify the harm and the costs, including social costs, of the intervention (the justification of intervention);
 - ii. the form, scale and duration of the intervention should be optimised so that the benefit of the reduction of dose i.e. the benefit of the reduction in radiation detriment, less the detriment associated with the intervention, should be maximised (the optimisation of intervention).
- 16.3.6 Two important points follow from these principles. The first is that radiation dose is not the sole determinant of action. Second, where decontamination or other measures (e.g. access controls) are applied to a contaminated area, the reduction of dose achieved must be suitably weighed against the other forms of detriment to those affected e.g. restriction of access or damage to properties, general disruption to everyday life.

16.4 Recommended procedures for planning for recovery

- 16.4.1 In the light of these general principles, it is recommended that there should be planning for recovery up to the reference accident level, where it is possible that this could lead to off-site contamination. It is accepted that such planning might be less detailed than is the case for the accident phase. This is because, unlike the accident phase where matters must be resolved quickly, during the recovery phase there would be more time for resolution of problems. The actual level of detail for recovery planning is a matter for local resolution in the light of local circumstances. For accidents above the reference accident level there should be outline planning only for the recovery phase.
- 16.4.2 The operator has responsibility under REPPiR (The Radiation (Emergency Preparedness and Public Information) Regulations 2001) to prepare an emergency plan and to supply information to the local authority to enable an off-site plan to be prepared. The duties on local authorities are placed on the most appropriate tier of the authority. Their duties are: to prepare, review, revise, test and implement an off-site plan for any premises with an operator's plan and prepare arrangements to supply information to members of the public in the event of a radiation emergency actually occurring, however it may occur. In the recovery phase planning remains the responsibility of the nuclear site operator, working in co-operation with a local authority or several local authorities, as appropriate.
- 16.4.3 Operators should review potential release scenarios to determine the scope of pre-planning for the recovery phase. Consequently, off-site plans should contain outline strategies for dealing with the recovery phase. Plans should include details of how any specialist resources and equipment needed might be either secured or brought in. Such plans may usefully be developed in conjunction with the existing nuclear response plans for the acute phase. Recovery phase plans should make clear that the same principles that apply to handling the media during the accident phase should also apply during the recovery phase.
- 16.4.4 The nuclear site operator, working in co-operation with the local authority/authorities, should ensure that the contingency plans maintained for the recovery phase have the buy-in of the organisations which would be involved in their implementation. This will in turn ensure that all are clear about their responsibilities and the tasks that they would be required to carry out. The plans should be reviewed and exercised periodically.

- 16.4.5 For a reference accident scenario, the lead department for the accident phase (DTI for an accident in England or Wales, and Scottish Executive for an accident in Scotland), as the sponsoring department for the civil nuclear industry and the Nuclear Installations Act, would retain its lead department status throughout the entire period of response, including recovery. On this basis, it would also retain responsibility for appointing the SGLR during the recovery phase to provide the necessary central/local Government interface. The lead department would aim to ensure, as far as possible, that there was continuity of personnel from central Government between the accident phase and the recovery phase, however, changes may be necessary in the composition of the GTA team, or in the GTA personally. If the GTA is to be replaced, this should be done in a managed way, taking account of the need to provide continuity at the point when strategic command is transferred from the police to the local authority, as well as for a period afterwards.
- 16.4.6 For a reference accident scenario, the recovery phase would be co-ordinated by the local authority. For very extreme accidents beyond the reasonably foreseeable accident scenario, where contamination effects are of such a scale as to affect a very large area (e.g. under the jurisdiction of a number of local authorities) or to demand the utilisation of large amounts of national or indeed international resource, the Civil Contingencies Committee (a Cabinet Committee, chaired by the Home Secretary, which meets in the event of an emergency having occurred) should have the task of deciding, once the accident is brought under control, whether the management and co-ordination arrangements based on the Off-Site Facility (OSF) continued to be appropriate. It would additionally be the role of the Civil Contingencies Committee to decide whether and at what level the Cabinet Office Briefing Room (COBR) should be activated. It would also review the OSF's location and representation, and consider whether the lead department, GTA and SGLR roles should be redesignated. The outline plans prepared locally should be capable of being extended to provide a basis for the necessary recovery activities.
- 16.4.7 There is a need for all involved agencies to consider their contribution to recovery (e.g. Environment Agency and Regional Resilience Teams) to consider their role in any recovery arrangements and to plan accordingly. The Government Decontamination Service (GDS) should be included in any plans. Chapter 4.25 gives additional guidance on GDS's role.

16.5 Planning for monitoring

- 16.5.1 Recovery plans should describe the arrangements for continuing monitoring of radioactivity deposited on the ground. Responsibilities for such monitoring, and the arrangements for co-ordination thereof, should be clearly identified so as to be in line with NEPLG principles. Those principles are set out in Chapter 15. In addition to ground-based monitoring, the possible use of airborne monitoring should also be considered.
- 16.5.2 Nuclear site operators have arrangements for other sites operated by them to provide additional monitoring teams, and national mutual aid agreements between the UK operators would also provide for monitoring assistance if this was required. MOD would also be able to provide monitoring support.
- 16.5.3 The plans should explain that responsibility for monitoring agricultural products falls to the FSA and Agricultural departments. It should also explain that Trading Standards Officers are responsible for monitoring consumer goods (non-food category) and Environmental Health Officers are responsible for monitoring edible products.
- 16.5.4 Arrangements for the co-ordination and recording of monitoring information both within and outside the area covered by the site emergency plan should be clearly identified.
- 16.5.5 The plans should also explain the arrangements for monitoring buildings, plant, vehicles and non-consumer products. These arrangements should be agreed locally by the organisations concerned.
- 16.5.6 Decontamination plans would also need to contain proposals for the monitoring necessary to demonstrate that decontamination to the level required had been achieved.

16.6 Planning Recovery Countermeasures

- 16.6.1 HPA-RP has reviewed the likely costs and dose-effectiveness of decontamination procedures. Using this information, they provided advice on the development of plans for intervention during the recovery phase of an accident. There are two types of recovery countermeasures; those involving the prevention of access to contaminated areas (restricted access countermeasures) and those involving the removal or treatment of the contamination itself (decontamination countermeasures). Appropriate recovery strategies may use these types of countermeasures singly or in combination.
- 16.6.2 Measures of both types include those that involve relatively limited disruption and resource, and those that involve a great deal of disruption and resource. HPA-RP advises that it is important to match the level of disruption and resource to the expected benefit of the strategy in terms of averted dose. In particular, HPA-RP advises that strategies involving major disruption and resource should not be considered for expected effective doses that are less than 10 mSv in the first year following the emergency phase of the accident. The guidance supplied by the Recovery Working Group (RWG) should address the issues raised by the HPA-RP advice, and enable decisions on an appropriate recovery strategy to be taken in the context of this advice.

Annex 16.1

RECOVERY PHASE: OPERATOR'S RESPONSE PLAN

The operator's emergency response plan should cover paragraph 16.4 above, plus:

- * provide resources (e.g. specialists, administration, long term location) to support the off-site multi-agency RWG which will evolve from the Strategic Co-ordinating Group (SCG) set up in the early phases of the event;
- * deal effectively and efficiently with compensation claims;
- * supply monitoring support to clean-up operation;
- * provision of advice – drawing on the guidelines set down by DfT - on the safe transport to and disposal or storage of radioactive wastes at its sites;
- * set up an internal organisation structure to support the requirements of both long term and short term Recovery activities (on and off site as necessary);
- * deal with internal and external committees of inquiry into the incident and the response;
- * activate the off-site (agencies) emergency response to any unauthorised release of radioactivity, as Recovery may be required even if urgent countermeasures may not.

Annex 16.2

RECOVERY PHASE: OFF-SITE EMERGENCY PLAN

1. The off-site emergency plan, co-ordinated by the local authorities, should cover the points listed in paragraph 16.4 above, plus:
 - * agency responsibilities specific to recovery phase activities, arising from planning consultation with all relevant organisations;
 - * recovery Working Group composition, chairmanship, terms of reference, relationship with off-site strategic co-ordinating group, and procedures;
 - * countermeasures, including relocation, decontamination, and food /water restrictions;
 - * on-going radiation monitoring programmes, and other monitoring activity;
 - * welfare and public information including community consultation and local democratic structures;
 - * personal compensation and corporate finance;
 - * waste disposal;
 - * mechanisms to consider long-term implications for economic development, tourism etc;
 - * stand down criteria.

2. In addition, the LA should plan to bring key local information to the table to help the multi-agency group explore the implications of recovery interventions and make informed decisions on what to do. LAs will have access to detailed geographical information/stats about the local population, businesses, infrastructure. They should also have information on the technical services, equipment and personnel that might be contracted in to assist with the recovery. They need to plan to have this information available and how they might share it with partners in the response.

3. LAs also need to plan to lead, participate in and support the RWG by identifying roles, establishing a competency framework, training suitable personnel and planning to participate in exercises so that staff are familiar with the RWG working arrangements.

Background

1. This handbook acts as a guide to decision-makers through the available recovery options following an incident dispersing radioactive material in the environment has been developed jointly by HPA Radiation Protection Division, DEFRA, DOE(NI), EA, FSA, SE and SEPA. It is designed for use in the UK. The handbook is available in interactive and pdf formats.
2. The main focus of the handbook is to give guidance that is relevant for an accidental release from a nuclear site or weapons' transport accident. However, many recovery options will also be relevant to other radiation incidents e.g., an improvised terrorist device, even though the pattern of contamination would be different. Therefore the Handbook has been extended to consider the radionuclides that could be involved in terrorist incidents. However, it should be remembered that the relevance of the guidance may be limited for these other types of radiation incidents.
3. Identification of the optimum strategy cannot be achieved by considering technical and radiological protection issues alone, and other factors such as the acceptance by the affected community, social and legislative issues, etc, must also be considered. Where information is available public acceptability has been taken into account, e.g. for stakeholders consulted in the discussions about food production recovery options.

Audience and Objectives

4. The audience of the UK Recovery Handbook for Radiation Incidents is expected to be primarily those organisations likely to be represented on the Recovery Working Group (RWG). The two objectives for the handbook are:
 - * to assist organisations that would be part of the RWG in planning how they would respond to an incident involving the dispersion radioactive material into the environment; and,
 - * to aid the RWG make early decisions on planning recovery in the event of an incident.

Contents of the UK recovery Handbook

5. The Handbook is divided into colour-coded sections, each representing a different topic area as follows:

Yellow	General introduction to recovery and radiation protection
Green	Agricultural food production
Orange	Domestic food production
Purple	Inhabited areas
Blue	Drinking water

6. Each colour-coded section contains text detailing legislative and radiological aspects, the options, a decision tree and a number of datasheets.

Annex 16.4

GUIDANCE ON EXERCISING THE RECOVERY PHASE

The design and management of exercises for recovery should:

- * reflect the methodology for recovery included in the UK Recovery Handbook. The starting point for this approach is to take a geographical look at the distribution of contamination in relation to the range of land uses e.g. residential areas, retail and business districts, urban open space, uninhabited areas with a range of agricultural land uses.
- * prioritise areas for action and consider the range of issues e.g. health, environment, economic development etc in each of those areas. (This approach is reflected in the tables in Annex 17.2);
- * cover the short term (days), medium term (weeks/months) and long term (years) issues associated with the affected area;
- * explore the organisational frameworks for managing recovery i.e. the decisionmaking process and implementation of the recovery strategy;
- * explore and develop arrangements for engaging stakeholders in decision-making;
- * involve representatives from participating organisations at the appropriate level of seniority;
- * test recovery plans of the operators, local authorities and other participating organisations;
- * test the effectiveness of communications and interfaces between the recovery plans of participating organisations.

Annex 16.5

GOVERNMENT DECONTAMINATION SERVICES –BACKGROUND NOTE TO AN ANNOUNCEMENT JANUARY 2005 BY ELLIOTT MORLEY, ENVIRONMENT MINISTER

1. Ministers set up a cross-Government study in April 2003 to assess the UK's ability to deal with the recovery phase of an incident where chemical, biological, radiological, or nuclear materials were released, whether deliberately or accidentally. The study team reported in December 2003. The study concluded that there was a case for improving the arrangements for decontamination of the built and open environment (including transport infrastructure and assets) and considered various options for putting suitable arrangements in place. Ministers asked for work to meet this need to be taken forward, and agreed that any new arrangements should build upon what already existed or was planned and should harness the relevant resources available within the UK's economy.
2. The Government subsequently announced on 25 March 2004 that it was actively considering establishing a UK-wide service to provide advice and assistance to authorities responsible for decontamination after a chemical, biological, radiological, or nuclear (CBRN) event. Since then, the project team, under the guidance of an interdepartmental Steering Group, has made considerable progress towards setting up an executive agency within the Defra family. Establishment of the GDS is part of the much wider CBRN Resilience Programme, led by the Home Office, which is ensuring that the UK is capable of responding quickly and effectively to deal with and recover from the consequences of CBRN incidents, particularly those caused by terrorism.
3. The choice of an executive agency follows the recommendations of the Gershon Report, which advocated the separation of service provision and policy formation. In accordance with the recommendations on the Lyons Report, it will be sited outside London, probably in the Midlands. The service will be small: we estimate about 20 permanent staff. Defra will provide it with many of the corporate services (such as human resource support, accounting services) it will need.

Functions of the GDS

4. The exact remit of the GDS will be further developed in consultation with stakeholders but it is clear that it will fulfil several functions:
 - * it will provide advice and guidance to responsible authorities during their routine emergency planning work, and will regularly help test the arrangements that are in place; this will build on the Strategic National Guidance for the decontamination of the built and open environment which the Office of the Deputy Prime Minister and Defra (respectively) issued in 2004;

- * it will rigorously assess the ability of companies in the private sector to carry out decontamination operations, and ensure that responsible authorities have ready access to those services if the need arises. If required, the Service may also help co-ordinate decontamination operations; and
 - * it will advise Central Government on the national capability to decontaminate after a CBRN emergency and on operational matters during an emergency.
5. The GDS will not:
- * be an executive body or assume responsibility for the decontamination process, which will remain with the responsible authority;
 - * provide funding to responsible authorities to undertake decontamination; or
 - * deal with the decontamination of humans and animals or their remains.

Advice and guidance

6. Authorities (such as local authorities) responsible for clean up after a CBRN incident are required to make appropriate contingency plans. There are elements of this specialist field where a national centre of expertise and advice could significantly help responsible authorities meet their obligations, at least cost to the taxpayer. The GDS would act as a focus for such advice and help ensure consistency of approach. Part of the role of the service will therefore be to provide strategic guidance on assessing risk and vulnerability, the prevention and limitation of contamination, the decontamination options and methodologies available and their approximate cost, and advance preparation for decontamination.
7. In addition, the service may need to provide ad hoc advice on specific issues. It will also be able to undertake a limited amount of casework, though the service will not act as an emergency planning consultancy for individual responsible authorities.
8. Testing contingency arrangements is an integral part of the preparation cycle, and the service will regularly take part in regional, national and international exercises. This will ensure that responsible authorities and other stakeholders understand the remit of the service and the capability it has available. It will also help the service become integrated into others' CBRN contingency plans and make working together more effective.

Ensuring access to decontamination services

9. One of the key functions of the service will be to make sure that if an incident did occur, the authorities responsible for decontamination would be able to obtain the services they would need to fulfil their obligations, and at a reasonable cost. The service will therefore invite specialist companies to tender for places on a panel of specialist suppliers who could carry out the actual decontamination work. Each applicant company will undergo a rigorous assessment of its capabilities and capacity before being accepted onto the panel. The capability of companies on the panel will be reviewed regularly.
10. The service will then organise a framework of agreements with the registered companies so that if they wish, responsible authorities can call upon their services. The contractual and financial relationship will be between the responsible authority and the contracted specialist company/(ies). The GDS will not be liable for, or provide funding for, any costs incurred during the decontamination period. It may, however, be possible for the responsible authority to reclaim costs through the Bellwin Scheme or insurance.
11. If required, the service will also help responsible authorities to select and engage appropriate contractors.

Advice to Central Government

12. The service will also advise Central Government on the country's state of preparedness, and highlight any action Government may need to take to improve it.
13. Following a CBRN incident, the service will provide ministers and officials in the relevant Central Government departments and Devolved Administration's with advice and options on operational matters.

Interim resilience

14. The project team has completed a significant programme of work
15. to build on the UK's existing capability to carry out decontamination of buildings and the open environment. The work has included assessment of and engagement with a range of specialist suppliers and the identification of appropriate technologies. This will form the foundation for further enhancing and building the permanent capability over the coming years. This work has necessarily been given priority over the administrative task of setting up the new agency, which is why it has taken longer than might have been expected to set up the new organisation.