HM Government

Strategic National Guidance

The decontamination of buildings, infrastructure and open environment exposed to chemical, biological, radiological or nuclear materials

January 2011

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Produced by the Food and Environment Research Agency on behalf of:
The Cabinet Office
Department for Communities and Local Government
Department for Environment, Food and Rural Affairs
The Home Office
The Northern Ireland Executive
The Scottish Government
The Welsh Assembly Government

January 2011

Contents

This guide has been produced for those in the public and private sector responsible for contingency planning.

Executive summary

This guide has been produced for those in the public and private sector responsible for contingency planning. It gives basic information on the decontamination and remediation that may be required following a deliberate or accidental release in the UK as outlined below. This document replaces guidance published in 2004 by the Department for Environment, Food and Rural Affairs, and the Office of the Deputy Prime Minister (now the Department for Communities and Local Government).

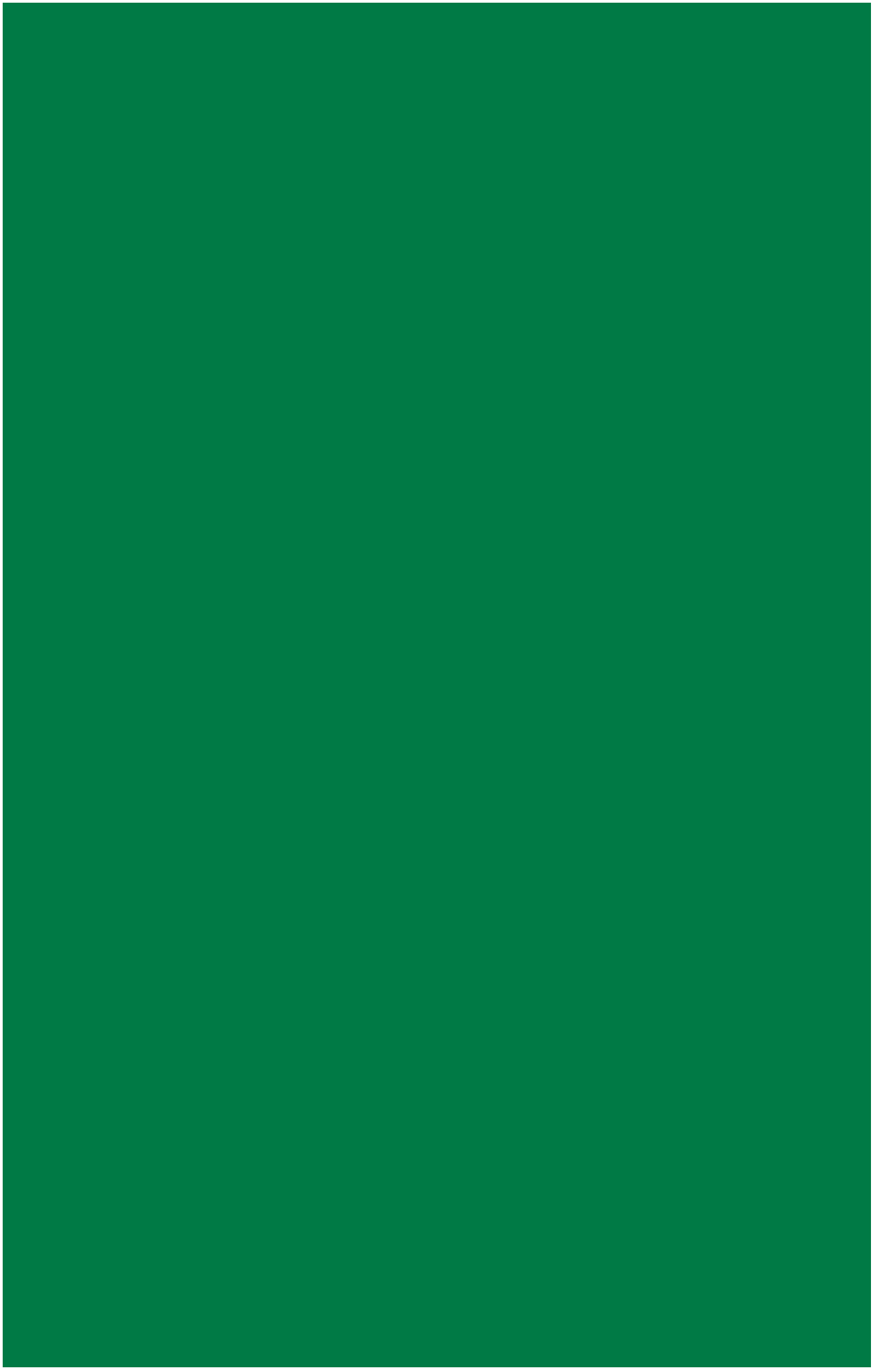
An incident, whether deliberate or accidental (HazMat), involving chemical, biological, radiological or nuclear materials can potentially lead to the loss of life, contamination of the built and open environment, disruption of society and consequential damage to the UK economy. It is therefore important that plans are in place to minimise the effects of such an event, and to plan for recovery following this type of incident.

This guidance builds on the 2004 documents, and offers improved signposting and updated information in a shorter and more accessible format. It also covers key elements in the decontamination process following an incident – from developing the initial recovery strategy through to managing waste and returning things to normal. The principal roles and responsibilities of key organisations have been identified and listed, and planning and precautionary measures have been highlighted to promote better preparedness.

In view of the different types of potential incidents, and the variety of buildings, environments and infrastructure that could be affected, the guidance in this document is necessarily generic. It provides a starting point for the development of more detailed contingency plans to deal with specific incidents. This document also describes the current legal powers available to local authorities in the event of such an incident.

The guidance is part of sensible contingency planning and does not mean that there is an increased risk of terrorist attack using CBRN materials.

This guide is available only in Portable Document Format (PDF).



Introduction

1. This guide has been produced to improve contingency planning to deal with decontamination and remediation following a deliberate (CBRN) or accidental (HazMat) release of chemical, biological, radiological or nuclear materials. There has never been a deliberate CBRN attack in the UK; however, a number of HazMat incidents have occurred. It is therefore sensible to be ready to handle contamination from these materials, whether the release is accidental or deliberate.
2. This document replaces guidance on the procedures for the decontamination of buildings,[1] infrastructure and the open environment in the event of contamination by CBRN materials published in 2004.[2] Guidance published by the Home Office in 2004 gives detailed information on the decontamination of people. These documents and others produced by government departments and the Devolved Administrations are listed in Appendix A. This guide does not repeat the information set out in those documents.
3. The focus of this guide is on the contamination caused by the deliberate release of CBRN material; however, many of the principles apply equally to HazMat contamination from spillages or leakages, contamination from overseas incidents or outbreaks of disease.
4. The guidance deals principally with events after the point at which an incident has been brought under control by emergency responders. However, it is important to stress that decisions and actions taken during the incident phase should be designed to limit the spread of contamination, and that planning for decontamination and waste disposal are considered from the outset.
5. The guidance is intended to provide a basis for the development of detailed contingency plans by organisations in the public and private sector responsible for buildings, infrastructure, transport and the open environment. These plans need to take account of the possible contaminants, and the diverse characteristics of the buildings, infrastructure and the open environment that could potentially be affected.

1. For the purposes of this guidance, 'building' includes 'infrastructure' unless the context otherwise requires. Infrastructure operators should consider how to apply the generic procedures in this guidance to the particular circumstances of their operation. Where appropriate, the procedures also apply to other fixed assets such as ancient monuments and statues.

2. *Strategic National Guidance: The decontamination of buildings and infrastructure exposed to Chemical, Biological, Radiological or Nuclear (CBRN) substances or material*, Office of the Deputy Prime Minister, ODPM, May 2004, and *Strategic National Guidance: The decontamination of the open environment exposed to CBRN substances or material*, Department for Environment, Food and Rural Affairs, 2004.

6. The possibility of exposure to chemical, biological, radiological or nuclear materials should be a key component of business continuity planning in order to maximise resilience, safeguard life and property, and minimise operational disruption. Those responsible for buildings should also consider taking steps to prevent contamination arising in the first place, and to minimise the impact of any releases that do occur. Basic advice on contingency planning and precautionary measures is given in this guide. Further guidance can be found on the Centre for the Protection of National Infrastructure[3] (CPNI) and UK Resilience[4] websites.
7. This strategic guidance covers England, Wales and Scotland. Different legislative and structural arrangements exist in Northern Ireland but the key principles covered in the guidance are applicable there. The devolved administrations have been involved in the production of this guide. Further information for Scotland, providing details of the groups and agencies involved in the response and recovery can be found in the *Preparing Scotland*[5] section of the Scottish Government website.
8. The guidance in this document will be kept under review by the Food and Environment Research Agency's (Fera's) Emergency Response and Recovery Programme. This process will take account of developments in policy and practice (including any changes in legislation), the outcome of exercises and experiences on the ground, and any feedback received (see paragraph 84). This edition of the guidance reflects the legislative framework current at the time of publication.
9. A glossary of terms used in this guidance is at Appendix B.

3. www.cpni.gov.uk
4. http://interim.cabinetoffice.gov.uk/ukresilience/response.aspx
5. www.scotland.gov.uk/Topics/Justice/public-safety/ready-scotland/Government/Preparing

Chemical, biological and radiological contamination

10. The scale and nature of any chemical, biological and radiological contamination will vary and call for a variety of responses, ranging from the relatively simple to the more complex.

Deliberate releases

11. Contamination may result from:

    - deliberate release and dispersion of chemicals, biological or radiological materials;
    - deliberate use of a nuclear weapon or improvised nuclear devices, or an attack on a nuclear facility.

Accidental releases

12. Although stringent safety precautions are required to be in place, contamination may also result from accidental releases of chemical, biological or radiological materials, for example:

    - industrial or agricultural sites handling or storing hazardous materials;
    - laboratories;
    - universities, colleges and schools;
    - hospitals;
    - nuclear sites (at home and abroad);
    - materials in transit.

    This is not an exhaustive list.

Further information

13. Further background information on chemical, biological and radiological contaminants is given in Appendix C.

Objectives of recovery

14. The aim of the recovery process is to rebuild, restore and rehabilitate the community following an emergency. Additionally, in the event of an incident leading to contamination, the key objectives for decontaminating buildings, infrastructure and the open environment are:
    - ensuring that risks to people and to the environment are kept to a minimum;
    - facilitating criminal and other investigations;
    - ensuring that further contamination is avoided or kept to a minimum;
    - setting levels for decontamination after full consideration of the acceptability of residual hazards;
    - ensuring, where possible, the preservation of high personal value items;
    - ensuring that the most appropriate method of decontamination or remediation is used;
    - returning buildings, infrastructure and the open environment to normality as soon as practicable;
    - facilitating reoccupation or reuse as soon as it is safe to do so;
    - ensuring that waste is safely disposed of.

The aim of the recovery process is to rebuild, restore and rehabilitate the community following an emergency.

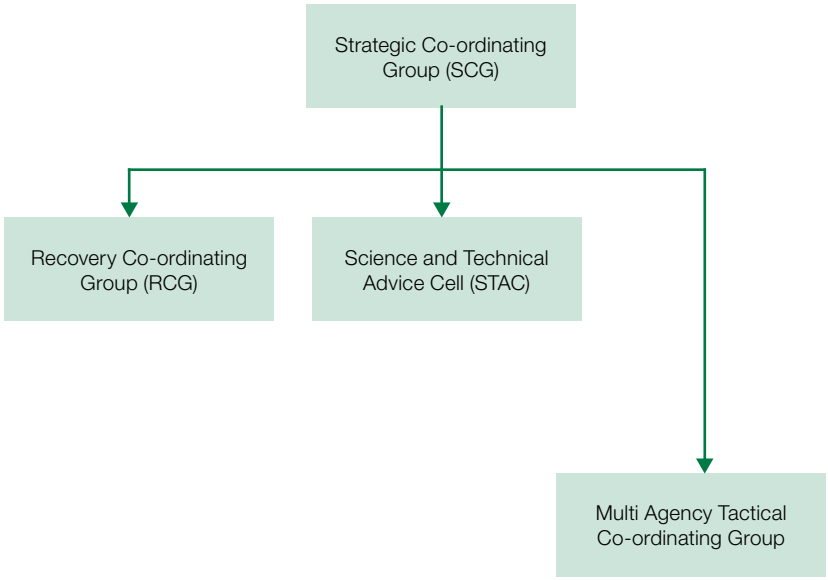
Co-ordinating the decontamination process

15. The immediate multi-agency response to the crisis or emergency phase of an incident will be co-ordinated by the Police Service with the Fire and Rescue Service taking responsibility for safety management within the inner cordon. Irrespective of the nature and scale of the release, there is a need to consider recovery-related issues from the outset of the incident response.
16. The local authority will normally be responsible for co-ordinating the recovery phase (usually as chair of the Recovery Co-ordinating Group (RCG)). Local authority planning is carried out in close co-operation with the emergency services, utilities, other industrial and commercial organisations, and government departments and agencies. The transition from crisis stage to recovery, and thus the change in lead authority, will be determined on a case-by-case basis.
17. Further details about planning and recovery management are set out in the Cabinet Office's National Recovery Guidance,[6] in the Preparing Scotland[7] section of the Scottish Government website, and in *The Release of CBRN Substances or Material: Guidance for Local Authorities*[8] (see **Appendix A** for further references). Decontamination work will normally take place in the recovery phase, but the immediate work of containing and evaluating the extent of the contamination is likely to begin in the crisis phase.
18. Local co-ordination will be handled through a multi-agency Strategic Co-ordinating Group (SCG) set up to take strategic decisions in relation to the response to the incident and providing information to the public and media. This group is sometimes referred to as Gold group. The SCG, which will normally comprise senior representatives of the key organisations involved, will initially be established by the Police Service. However, this group is likely to move to the local authority during the recovery phase (when the emergency services may have little or no further involvement) or, in some cases, to another agency. The basic structure for command and control is set out in the following diagram.

6 http://interim.cabinetoffice.gov.uk/ukresilience/response/recovery_guidance.aspx

7 www.scotland.gov.uk/Topics/Justice/public-safety/ready-scotland/Government/Preparing

8 http://interim.cabinetoffice.gov.uk/media/431400/cbrn-guidance.pdf

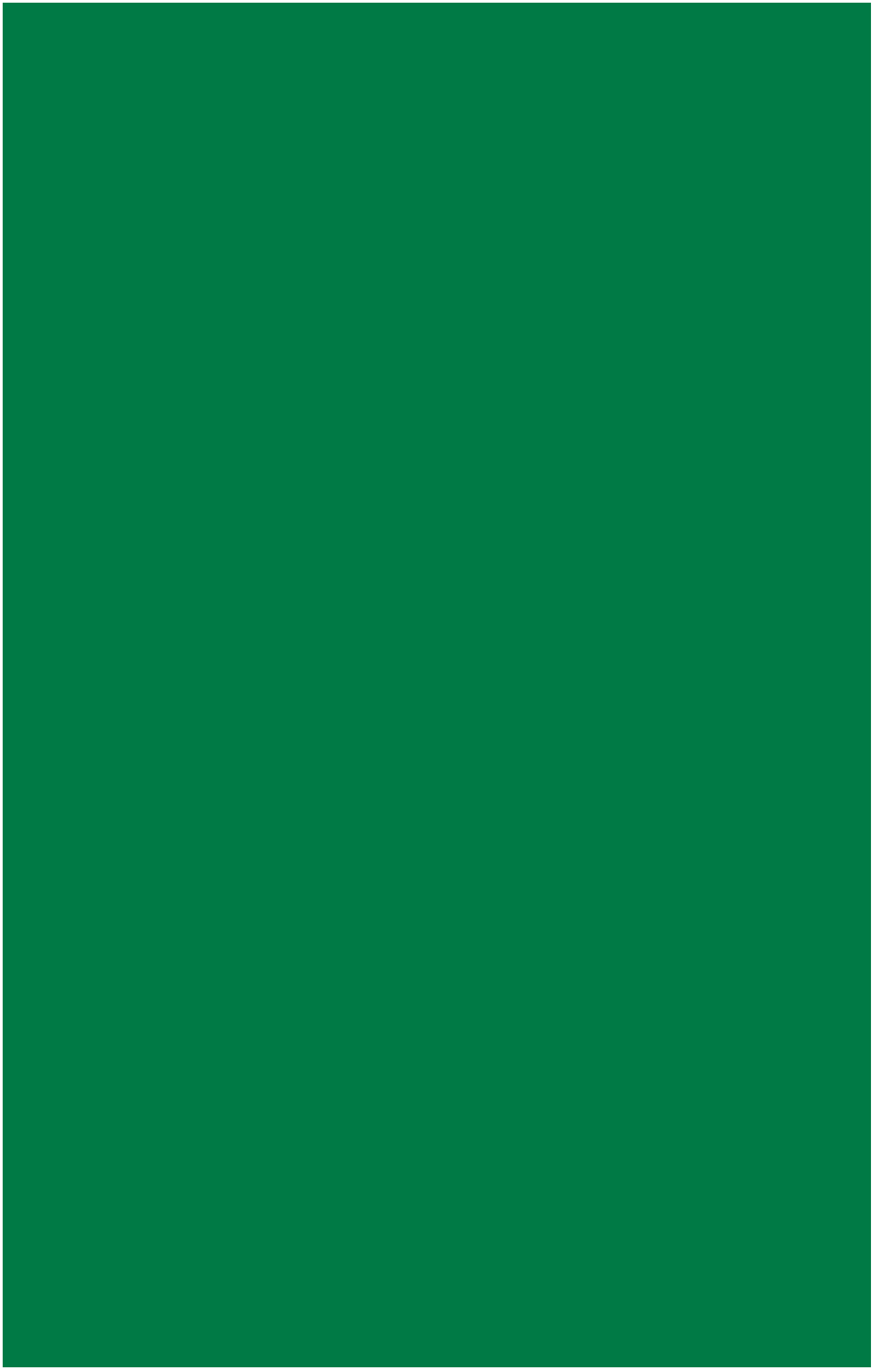


19. Where an incident affects one or more buildings, or significant parts of infrastructure or the open environment, the SCG may decide to co-ordinate recovery or set up subgroups. The Recovery Co-ordinating Group (RCG) can set priorities for the decontamination work, and/or co-ordinate the work of decontamination contractors, while the Science and Technical Advice Cell (STAC) provides strategic direction, co-ordination and assessment of health, scientific and environmental protection issues. The chairs of the RCG and the STAC would normally attend, advise and report back to the SCG.

20. Fera's[9] Government Decontamination Service (GDS) team are able to attend these multi-agency groups to give advice and guidance on the decontamination of buildings, transport assets and the open environment. This team can also facilitate access to the GDS Framework of specialist decontamination service providers. Further details on accessing CBRN remediation services are set out in **Appendix D**.

21. All contractors, whether drawn from the GDS Framework, or engaged independently, will work as required within the command and control arrangements established for the incident.

9 www.defra.gov.uk/fera



Meeting the costs of decontamination

22. In the case of an accidental release, the costs would normally fall on the party responsible for the release under the 'polluter pays' principle, whereby those responsible for causing the pollution are responsible for covering the costs of the associated clean-up and restoration. Further information is given in the legal references at Appendix E.

23. In the case of a deliberate CBRN attack, responsibility for meeting the costs would, in the first instance, fall to building owners or occupiers – as it would for dealing with other potentially serious incidents, such as fire or flooding. In the public sector, central and local government largely bear their own risk. Local government is expected to make contingency arrangements in respect of either reserves or insurance. Similarly, owners and occupiers of commercial property should consider reserves or additional specialist insurance to provide cover in the event of a CBRN attack, having regard to the risk of their property being affected by contamination, regardless of its origin.

24. Insurance for commercial property damage and consequent business interruption caused by CBRN contamination as a result of an act of terrorism (within the terms of the scheme) is available from insurance companies that are members of the Pool Re scheme. This has been extended from cover for 'fire and explosion' to an 'all risks' basis.[10]

25. In the case of domestic property, responsibility rests with the owner or occupier in the same way as it does for commercial property. Owners and occupiers should consider, with their insurance advisers, what cover to purchase.

26. Appendix E outlines the powers currently available to local authorities. These, including powers to recover costs, may assist authorities if an owner or occupier does not take action to decontaminate their premises.

10 See HM Treasury Press Notice 73/02 available at www.hm-treasury.gov.uk

27. In the event of an exceptional emergency, individual government departments will consider providing financial support for various aspects of the recovery effort. The Department for Transport, the Department for Communities and Local Government, the Department for Environment, Food and Rural Affairs and the Department for Education all have funding principles and arrangements in place, and other departments may consider providing additional funding as appropriate. For further information, see Appendix A.

Decontamination: planning and methods

28. The precise approach to remediation of any decontamination will need to be decided on a case-by-case basis, having regard to the risks posed. A range of factors will need to be taken into account, including:
    - the nature and extent of the contamination;
    - the characteristics of the building, infrastructure, environment, systems, equipment and other contents;
    - the contaminant involved;
    - the types of surfaces affected;
    - the level of tolerable hazard and the objectives of the decontamination plan;
    - the intended future use of the property;
    - the regeneration opportunities;
    - waste management requirements.

29. Design and contingency planning for buildings should take into account the possible need for decontamination. Pre-planning will provide the starting point for the response to any particular incident. This planning should form part of a robust business continuity plan, and might include consideration of issues such as decontamination options, management of contaminated waste and prioritisation of items to be retained. Guidance has been issued by other government departments on pre-planning measures (for further information see **Appendix A**).

Decontamination: the process

30. This part of the guidance outlines the main steps for planning the decontamination process, carrying it out and declaring decontaminated zones clear for reoccupation. It includes disposal of contaminated materials as well as other issues that need to be considered during the decontamination process.

31. The precise process and timetable will vary according to the nature and scale of the incident. In some cases, decontamination may not be necessary – for example, if the agent is not viable or persistent, or not present in sufficient quantity to cause harm or damage. In more serious or complex incidents, the process could be lengthy.

32. The specific objectives for decontamination will depend on the nature of the incident, the risks involved and whether or not the buildings are to be reoccupied or otherwise reused. In some circumstances, sealing the buildings or demolishing them may be the most appropriate course of action to protect public health. The special character or significance of a building will be an important factor. If a building is to be retained, the objective will be to ensure that decontamination is carried out safely and effectively with a view to allowing reoccupation of the building as early as is practicable.

33. The key stages in the decontamination process are:

    - sampling and monitoring to determine the extent of the contamination;
    - prioritising the appropriate resources and equipment for decontamination;
    - decontamination of the built and open environment, transport assets and other items;
    - sampling and monitoring to assess the effectiveness of decontamination for reoccupation or reuse;
    - managing contaminated waste (throughout).

34. A summary checklist of issues to be considered in planning the decontamination process is at Appendix F and a flowchart outlining the process is at Appendix G.

Determining the decontamination requirement and priorities

35. Depending on the nature of the incident, the emergency services are likely to be supported in their initial response by one or more specialist agencies, such as the Health Protection Agency (HPA),[11] the Defence Science and Technology Laboratory (Dstl) or the Atomic Weapons Establishment (AWE).

36. If persistent contamination is suspected, a detailed characterisation sampling and survey will be required. The extent of this would need to be determined on a case-by-case basis, taking into account the nature of the affected area (types of building, roads, parkland etc) and information about the nature of the hazardous material thought to have been released.

37. Characterisation sampling may need to take place before the crime scene has been released by the Police Service. This can only be determined by the circumstances of the incident. If characterisation sampling and crime scene investigation proceed in parallel, great care must be taken to preserve any evidence that might be needed for subsequent prosecution and/or inquiries.

38. The outcome of site evaluation and comprehensive sampling will inform decisions about the decontamination of the building, infrastructure, open environment, equipment, furniture and other contents. A plan will be developed by contractors engaged by, or on behalf of, the building owner/occupier, taking account of advice from specialist agencies and other key organisations. The plan will form the basis of a detailed specification for the work. It is important that all key organisations are agreed from the outset on the work to be done, the specific clean-up objectives, the methods involved and how the outcome will be assessed. This should include agreement on the process for sampling and analysis intended to validate the contractor's work, and on the laboratories involved.

39. The decontamination strategy into which the contractor's plan will feed, will need to reflect the specifics of the incident, including the nature and extent of contamination and any structural damage, the characteristics of the building, infrastructure, open environment, systems and contents (including any particular considerations where listed or otherwise historic buildings and/or valuable contents are involved), and the decontamination methods appropriate in the circumstances of the case. It should also set the levels for decontamination after full consideration of the acceptability of residual hazards and take into account the risks to those carrying out the decontamination. Detailed records of any contaminants and their treatment should be kept by both the contractor and the building's owner/occupier.

40. In developing the decontamination strategy, and before work begins, the advice of the relevant organisations

11 It has been announced that the HPA will cease to exist after April 2012. This document will be updated when new arrangements are introduced.

should be sought, and any necessary clearances or approvals obtained. These organisations include:

- the Police, Fire and Rescue and Ambulance Services for the handover of the site and any assets of the emergency services that may need special decontamination or safe disposal;
- the Health and Safety Executive (HSE) on health and safety issues;
- the local authority for development control, building control (for structural and building material aspects) and health and safety, where that falls to the authority rather than the HSE;
- the Environment Agency (EA) in England and Wales and the Scottish Environment Protection Agency (SEPA) for environmental and waste management aspects;
- water and sewerage authorities, where water is used in the decontamination process and disposal via the sewerage system is an option;
- English Heritage, Historic Scotland and the Welsh Assembly Government for consultation as appropriate on listed/historic buildings;
- when contamination of ancient monuments is involved, the Department for Culture, Media and Sport in England, Historic Scotland and the Welsh Assembly Government;
- Fera for advice and guidance on decontamination and related subjects.

41. Consideration should be given to the prior presence of contaminants, such as asbestos or lead, within the building, particularly if it has been damaged, or if the decontamination process would involve disturbing it – for example by drilling of walls. The relative merits of on-site or off-site decontamination for movable items should also be considered, as should the cost-effectiveness of their decontamination against disposal and/or replacement. On-site decontamination or destruction may reduce the risks inherent in the transportation of contaminated material, but this may not be possible in town or city centre locations where the size of the site needs to be kept to a minimum.

42. The decontamination plan should also address the mitigation of the health and environmental consequences of the decontaminants themselves, and the arrangements for managing, transporting and disposing of waste materials. Arrangements for transporting samples should also be considered. Where several contractors are engaged at the scene, they will need to exercise a consistent approach when removing contaminated material.

43. In planning the decontamination operation, account should be taken of the surroundings of the contaminated buildings or infrastructure. These may themselves be of particular historic, landscape, ecological or archaeological value. Temporary buildings may be required to accommodate contractors and others, together with ancillary facilities and infrastructure, such as storage of equipment and materials, storage of waste pending disposal and facilities for decontaminating people engaged in the work.

44. Where multiple sites are contaminated, it will be necessary to prioritise the decontamination work between premises. This would normally be determined by the SCG or the RCG. All interested parties, including building owners/occupiers and contractors, should be consulted in the process. Any buildings not considered

as an immediate priority will still require the contamination to be contained. The continuing effectiveness of containment measures would need to be monitored until the work of decontamination began. Further advice on setting priorities is contained in Appendix H.

Decontaminating buildings

45. The progress of the work will be carefully monitored by the SCG and/or the RCG. There should be regular progress reports to staff and to the public and neighbouring owners/occupiers: see paragraph 83 be low on public information. Particular considerations will be:
    - ensuring the continuing health and safety both of the people carrying out the decontamination work and of the wider public;
    - minimising the impact to the environment.

Assessing the effectiveness of decontamination

46. Before a building is reoccupied, or infrastructure is put back into use, the effectiveness of decontamination needs to be verified by reference to the agreed objectives set out at the outset of the work (see paragraph 39 above). Verification will involve sampling and analysis by an independent third party. Sampling and analysis will be carried out on the basis of a protocol, which should also be agreed by all the interested parties before the work begins.
47. Confirmation that decontamination has been effective will be given by the SCG or the RCG, taking advice from the specialist agencies and the body responsible for health and safety enforcement on the premises concerned, i.e. the HSE, the HPA and/or the local authority. Similar considerations apply to determining the effectiveness of the decontamination of items off-site.
48. In all cases, if the initial decontamination is not effective in meeting the agreed objectives, the process will need to be repeated until it is successful or another decontamination method will have to be applied.

Disposal of contaminated waste

49. Waste management considerations need to be included in the decontamination plan. These include: minimising, segregating, storing, transporting, treatment and disposal.
50. Reducing the quantity of waste by utilising the full range of methods available will help conserve raw materials, keep down disposal costs and reduce demand for landfill. Possible markets and recovery uses for the range of materials that may be generated will also need to be considered. Disposal of waste by composting, spread to land and incineration are options that may be appropriate, depending on the contaminant. The plan should cover responsibility for managing waste and identify disposal sites with the necessary facilities and capacity. Advice should be sought from the relevant bodies mentioned in paragraph 40.
51. Disposal of contaminated waste from buildings and infrastructure is only part of the waste management requirement potentially arising from an incident. The mass decontamination of people (usually at an earlier stage), and decontamination of the wider environment, will also generate waste material, including contaminated water, clothing and vegetation. Waste management planning therefore needs to be carried out on

a comprehensive basis to ensure that adequate facilities are available. Responsibility for this would normally fall to the responsible authority (usually the local authority). As far as is practicable, this planning should be carried out in advance on a contingency basis. This should help to avoid choosing unsuitable sites.

52. If there is contaminated water to be disposed of, reference should be made to Water UK's *Protocol for the Disposal of Contaminated Water*.[12] Run-off from sites, either as a result of rain or of site clean-up operations, will need to be properly managed in a manner similar to water affected by initial decontamination. The EA (or SEPA) and water and sewerage bodies would need to be involved.

12 www.water.org.uk/home/policy/positions-old/disposal-contaminated-water/2003-protocol-contamwater.doc

Limiting the spread of contamination, and managing decontamination of property will involve co-ordinated action by a range of organisations, either directly or in support.

Decontamination: roles and responsibilities of key organisations

53. Limiting the spread of contamination, and managing decontamination of property will involve co-ordinated action by a range of organisations, either directly or in support. Further advice on the individual roles outlined here is set out in the Cabinet Office's *National Recovery Guidance*.[13] In Scotland these are set out in a suite of documents available from the Preparing Scotland[14] section of the Scottish Government website.

54. Key organisations include:

- the Police Service;
- the Fire and Rescue Service;
- the Ambulance Service;
- the Environment Agency (EA)/Scottish Environment Protection Agency (SEPA);
- the building owner/occupier;
- the local authority;
- central government sub-national resilience;
- central government departments and agencies;
- the Devolved Administrations;
- decontamination contractors;
- the Armed Forces;
- the Food and Environment Research Agency (Fera), including the Government Decontamination Service (GDS);
- the Food Standards Agency (FSA);
- the Health Protection Agency (HPA)/ Health Protection Scotland (HPS).[15]

55. Specialist agencies (Fera, HPA and HPS) can provide expert advice, as necessary, throughout the process, and it is likely that private contractors will be closely involved in planning and doing the work. These roles are discussed above in the section on the decontamination process.

The Police Service

56. The Police Service will be responsible for the overall co-ordination of the emergency services, response during the incident phase of an event, including chairing the multi-agency Strategic Co-ordinating Group (SCG or Gold) if required to manage the incident. In responding to the incident, the strategic intention is to co-ordinate effective multi-agency activity in order to:

- preserve and protect lives;
- mitigate and minimise the impact of an incident;

13 http://interim.cabinetoffice.gov.uk/ukresilience/response/recovery_guidance.aspx

14 www.scotland.gov.uk/Topics/Justice/public-safety/ready-scotland/Government/Preparing

15 The Government has announced its intention to abolish the Health Protection Agency and the Food Standards Agency, with many of their functions being transferred to core departments. Full details have yet to be announced.

- inform the public and maintain public confidence;
- prevent, deter and detect crime;
- assist an early return to normality.

57. The Police Service response will not delay or interfere with the actions and priorities of the Ambulance Service and the Fire and Rescue Service in relation to the saving of life.

58. The Police Service will be responsible for establishing and chairing multi-agency groups at Tactical (Silver) and Operational (Bronze) levels as appropriate. The Police Incident Commander (Silver) is responsible for developing and co-ordinating the tactical plan in order to achieve the strategic intention of the Gold Commander.

59. Police Operational Commanders (Bronze) are responsible for the implementation of the Silver Commander's plan by the use of appropriate tactics within their geographical or functional area of responsibility.

60. In addition, the Police Service will:

- take initial responsibility for safety management within the inner cordon during the early stages of terrorist incidents;
- until it is determined otherwise, treat the scene as a crime scene;
- agree the location of the inner cordon in consultation with the other emergency services;
- Staff the inner and outer cordons and maintain the integrity of the scene and cordons;
- in consultation with the other emergency services, establish inner cordon gateway procedures and provide staff to record details of all police personnel entering the inner cordon;
- instigate measures to protect the health, safety and welfare of police responders and ensure that people who are unprotected by appropriate level personal protective equipment (PPE) do not enter the inner cordon;
- ensure that protected officers are deployed within the inner cordon only following task-specific risk assessment, in order to achieve specific operational objectives;
- decide whether or not to seek military assistance;
- establish safe undressing procedures, with support from the Fire and Rescue Service, in line with the current agreement to ensure that all police personnel deployed within the inner cordon undergo decontamination and follow the safe undressing procedures.

The Fire and Rescue Service

61. The Fire and Rescue Service will:

- assist with the initial containment of contamination and mitigation of the effects of hazardous materials (HazMat), in consultation with specialist advisers;
- remove CBRN or HazMat contaminants from people in the event of an emergency involving the release or potential release of such contaminants;
- contain, for a reasonable period, any water used for the purpose of decontamination;
- make arrangements for ensuring that reasonable steps are taken to prevent or limit serious harm to the environment;
- carry out search and rescue.

The Ambulance Service

62. The Ambulance Service will not normally have a role in the decontamination of buildings. However, either alone or with the assistance of other healthcare providers, the Ambulance Service will:
    - in the crisis phase of the incident, provide the necessary and appropriate medical and decontamination response;
    - decide whether or not to carry out mass decontamination of members of the public in consultation with the Fire and Rescue Service and the Police Service;
    - administer, where possible, the necessary treatments and antidotes to mitigate the clinical effects of the contaminant;
    - in partnership with local healthcare providers, give advice and guidance to those affected by contaminated materials.

The Environment Agency/Scottish Environment Protection Agency

63. The EA/SEPA will:
    - advise on any actual or potential environmental impacts;
    - advise on the environmental aspects of possible decontamination methods, including advice on the relative risks and benefits of particular options and on the location of decontamination facilities;
    - work with partner organisations to identify feasible remediation options and support the development of a multi-agency recovery strategy;
    - advise partners on the management and disposal of contaminated wastes and the treatment of liquid effluents. Where radioactive waste is concerned, standards would be set for storage, labelling and record keeping;
    - liaise with the relevant sewerage operator if it is proposed to discharge non-radiological contaminated waste water to the public sewerage system;
    - ensure that the waste management and environmental regulatory roles continue to function appropriately;
    - advise the Department for Environment, Food and Rural Affairs (Defra) and the Department of Energy and Climate Change on any need for a statutory instrument (SI) to exempt radioactive wastes from permitting under the Environmental Permitting Regulations 2010 (EPR10) (EA), and advise the Scottish Government on the need for an Exemption Order under the Radioactive Substances Act 1993 (SEPA).

The building owner/occupier

64. The focus of this section is on public and commercial owners/occupiers. Paragraph 16 indicates the circumstances in which the local authorities will normally take the lead in arranging decontamination, and Appendix E the legal powers available. Where a building is occupied by someone other than the owner, the formal division of responsibility between owner and occupier will depend on the terms of the occupation (such as the lease), but it is obviously sensible for the two to liaise closely throughout. If responsibilities are not clear in existing leases it is important that matters are clarified as soon as possible. In new leases, responsibilities should be made clear from the outset.
65. The relative roles and responsibilities of owner and occupier should be reflected in contingency planning arrangements. Particular care should be taken to ensure that there is a consistent and co-ordinated approach in multi-tenanted buildings whether mixed commercial occupancy (such as office blocks or

shopping centres), or mixed residential and commercial use. In particular, the arrangements will need to make clear who has overall responsibility for the actions set out below.

66. The owner/occupier will be expected to:

- co-operate with the local authority or other lead agency to fulfil their responsibility for co-ordinating the recovery phase;
- inform insurers and work with their appointed loss adjusters;
- be responsible for maintaining site security after responsibility has been relinquished by the Police Service;[16]
- be responsible[17] for commissioning contractors to carry out detailed site evaluation (including further sampling) and subsequent decontamination of buildings, systems and contents, and removal of waste;[18]
- be responsible for establishing that the building is safe for reoccupation by obtaining verification of the effectiveness of decontamination from the SCG (if necessary, ensuring that further decontamination work is carried out – see paragraphs 46, 47 and 48).

The local authority

67. Local authority will:

- lead the recovery phase in most cases and co-ordinate multi-agency support for the decontamination process;
- lead on contaminated waste management planning;
- as necessary, assess the structural stability of affected buildings and, if they appear to the local authority to be dangerous, exercise powers under the Building Act 1984 (for England and Wales) and the Building (Scotland) Act 1959 to take such steps as may be necessary to remove the danger;
- advise on the development control implications of any proposed work and supporting infrastructure (for example, temporary buildings and other structures);
- organise and manage the decontamination of the affected area and restore the environment to normal use, invoking any existing mutual aid arrangements with neighbouring authorities and contractors as appropriate;
- manage risks to the health and safety of workers undertaking decontamination of the environment and processing hazardous wastes;
- through environmental health departments, have a major input to the recovery process as they have the most legal responsibility;
- consider wider regeneration opportunities;
- have a vital role in local, public and media communication. Contingency planning is addressed in the Civil Contingencies Act 2004, which includes a duty for local authorities to promote business continuity management.

16 This could form part of a comprehensive contract with a decontamination contractor – even if the function is sub-contracted.

17 In consultation with their insurance company and loss adjustor.

18 In practice, it is expected that these would be progressed on the basis of an agreed specification in co-ordination with specialist agencies and other key organisations through co-ordination arrangements.

Sub-national resilience

68. The role of sub-national resilience is to:
    - help plan for and co-ordinate response and recovery efforts through sub-national response and recovery Resilience Forums and Co-ordinating Groups as appropriate, especially in the event of multiple incidents;
    - liaise with other areas and with central government when resources need to be shared across geographical boundaries.
69. This is delivered through the Resilience Division managed by the Department for Communities and Local Government (DCLG).

Central government departments and agencies

70. In the event of a CBRN incident in England and Wales, the Home Office would initially assume lead government department responsibility for dealing with the effects of the emergency. The Home Office would be supported by other departments including Defra, which also has the responsibility in England for co-ordinating the Government's contribution to the decontamination and recovery phases of CBRN emergencies, and in the open environment irrespective of the cause of the incident. At some point, to be determined on a case-by-case basis and once the crisis management phase is concluded, the lead department responsibility would be transferred to Defra. The Scottish Government has lead responsibility for consequence management for an event in Scotland.
71. When involved by virtue of the nature or scale of the incident, the Government will also (through the appropriate lead department):
    - co-ordinate the activities of departments involved;
    - collect information on the incident and its effects to provide information to the public and media at national level, to brief government ministers and to inform Parliament;
    - will co-ordinate (through DCLG) the information flows between central and local government through resilience teams using the established response and recovery reporting arrangements. DCLG also leads on support for communities and faith issues;
    - provide technical advice on chemical and biological substances from centres of excellence such as the Defence Science and Technology Laboratory (Dstl), the HPA and Fera;
    - provide technical advice on radiological substances from other centres of excellence including the HPA Radiological Protection Division (HPA-RPD) and the Atomic Weapons Establishment (AWE);
    - provide assistance to local authority emergency response teams under the provisions of Military Aid to the Civil Authorities (see paragraph 78);
    - provide specialist advice and/or additional assistance to local emergency teams (for example, Fera would, on request, provide advice and support, including facilitating the decontamination process).
72. Outside England, consequence management is the responsibility of the respective Devolved Administration (see paragraph 76).

73. The Health and Safety Executive will:
    - provide specialist advice on the risks to workers and others from contamination of a building, and on the measures to decontaminate it;
    - advise on decontamination plans, and systems of work proposed;
    - advise on safe systems of work for testing whether decontamination is successful;
    - take any necessary enforcement action.
74. The FSA will:
    - ensure that food contaminated to unacceptable levels does not enter the food chain;
    - provide advice and information on food safety issues;
    - ensure, in conjunction with the EA, safe disposal of contaminated food.
75. Fera will:
    - offer a wide variety of services, including applied research, incident response and impartial advice in relation to security of the food chain, and protection of the environment from global threats;
    - provide advice and guidance on the decontamination process, and facilitate access to the GDS Framework capability and capacity.

The Devolved Administrations

76. The Devolved Administrations have arrangements in place to co-ordinate the response to an emergency within devolved areas. The bodies co-ordinating the response fulfil the same roles as the Regional Resilience Forums in England. The Devolved Administrations will ensure effective communications with the central government response. See further references at Appendix A.

Decontamination contractors

77. Decontamination contractors will:
    - safely implement the phased recovery strategy under the direction of the local authority;
    - provide and operate the equipment necessary for decontamination and remediation;
    - train and equip their workforce with suitable personal protective equipment (PPE);
    - liaise with the local sewerage operator and the environment agencies to protect watercourses, sewage treatment works and surface and ground waters by intercepting water used in decontamination and directing it to containment areas for appropriate treatment;
    - manage solid hazardous waste streams in an environmentally acceptable and responsible way, minimising risks to the health and safety of workers, the public and the environment.

The Armed Forces

78. In the event of any incident that exceeds the capability or immediate capacity of the UK civilian response, the Ministry of Defence can provide support through the provisions of Military Aid to the Civil Authorities.

Contingency planning and precautionary measures

79. Employers have duties under health and safety law to ensure the health, safety and welfare of their staff and of members of the public. Duties include identifying and assessing risks, and preventing and controlling them. The Civil Contingencies Act requires Category 1 responders (such as the emergency services, local authorities and NHS bodies) to assess the risk of emergencies occurring and put in place emergency and business continuity plans. Under the Control of Major Accident Hazard (COMAH) Regulations 1999, the operators of sites covered by the regulations[19] and their local authority have duties to prepare on-site and off-site emergency plans respectively. Similarly, the preparation of emergency plans is a legislative requirement for civil nuclear sites.

80. Contamination arising from the release of HazMat or a CBRN attack is only one of the potential threats to a business. Apart from conventional forms of attack, there is a range of other possible emergencies – such as a serious fire, flooding or major IT failure – that could disrupt business operations. Business continuity plans should include the possibility of chemical, biological or radiological contamination along with other potential threats.

81. Plans should identify the nature of the threat, the level of the risk, the consequences for the business and the measures that will be taken to mitigate them. These include precautionary measures to prevent or limit the effects of an incident and measures to manage an incident that does occur. Designers of buildings potentially at risk and designers of critical national infrastructure should consider ease of decontamination when deciding what materials to use. The key aims should be to strengthen resilience to protect people and property, and to promote rapid recovery.

82. HM Treasury, the Bank of England and the Financial Services Authority have a website at **www.financialsectorcontinuity.gov.uk** providing information on activity under way to improve the resilience of the financial system in advance of possible disruption and to ensure an appropriate response should disruption occur. The Business Continuity Institute website (**www.thebci.org**) is a useful source of advice on business continuity management.

Public information

83. The arrangements for public information and media handling in the event of an incident in England and Wales are set out in chapter 5 and Appendix H of the *Strategic National Guidance – The decontamination of people exposed to chemical, biological, radiological or nuclear (CBRN) substances or materials*.[20] For Scotland, guidance can be accessed from the Preparing Scotland pages of the Scottish Government website. As noted above, the main focus of activity on decontaminating buildings and infrastructure is likely to fall in the recovery phase when the overall lead for media handling will have passed to the local authority. It is important that all public information, including progress reports to staff, is co-ordinated through the established media arrangements to avoid the risk of contradictory and confusing messages.

19 COMAH Regulations apply mainly to the chemical industry, but also to some storage activities, explosives and nuclear sites, and other industries where threshold quantities of dangerous substances are identified in the regulations.

20 http://umbr4.cabinetoffice.gov.uk/media/132883/peoplecbrn.pdf

Feedback

84. We would welcome views on this guidance, including on areas that are not covered but are relevant to decontaminating buildings, infrastructure and the open environment, so that we can take them into account when preparing the next version. Comments should be sent to **gds@fera.gsi.gov.uk**. Please head your email 'Decontamination of Buildings, Infrastructure and the Open Environment'. Written comments should be sent to:

SNG
Government Decontamination Service
MOD Stafford
Beaconside
Stafford
ST18 0AQ

Appendix A: Useful publications and websites

Publications and guidance

Name of document	Published by	Date	Web address
Emergency Financial Assistance Scheme	Welsh Assembly Government		new.wales.gov.uk/topics/localgovernment/finandfunding/emergency/?lang=en
Emergency Response and Recovery	Cabinet Office	April 2010	http://interim.cabinetoffice.gov.uk/ukresilience/response.aspx
Framework strategy for dealing with radioactive contamination arising from the circumstances surrounding the death of Alexander Litvinenko	City of Westminster		www.londonprepared.gov.uk/downloads/litvenenko.pdf
Guidance for Claiming Emergency Capital Highway Maintenance Funding	Department for Transport	August 2007	www.dft.gov.uk/pgr/regional/ltp/guidance/fltp/floodfundingguidance.pdf
Guidance on development of a Site Clearance Capability in England and Wales	Department for Communities and Local Government	October 2005	www.communities.gov.uk/publications/fire/guidancedevelopment
Guidance on Possible DCSF Funding for Recovery from Future Emergencies	Department for Education		http://interim.cabinetoffice.gov.uk/media/230802/dcsf-funding-guidance.pdf
National Recovery Guidance	Cabinet Office		http://interim.cabinetoffice.gov.uk/ukresilience/response/recovery_guidance.aspx
Nuclear Emergency Planning Liaison Group: Consolidated guidance	Department of Energy and Climate Change	Updated January 2010	www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/nuclear/issues/emergency_plan/neplg/guidance/guidance.aspx

Name of document	Published by	Date	Web address
Precautions to minimise effects of a Chemical, Biological, Radiological or Nuclear Event on Buildings and Infrastructure	Department for Communities and Local Government	May 2004	www.communities.gov.uk/publications/fire/precautionsminimise
Preparing Scotland – a suite of documents providing details of the groups and agencies involved in the response to an emergency	The Scottish Government		www.scotland.gov.uk/Topics/Justice/public-safety/ready-scotland/Government/Preparing
Protecting Against Terrorism	Centre for the Protection of National Infrastructure	3rd edition 2010	www.cpni.gov.uk/Docs/protecting-against-terrorism-3rd-edition.pdf
Recovery Guidance – Economic Issues: Financial Impact on Local Authorities	Defra		www.defra.gov.uk/corporate/about/with/localgov/indicators/documents/0907-guidance-note.pdf
The Release of CBRN Substances or Material – Guidance for Local Authorities	Cabinet Office	August 2003	http://interim.cabinetoffice.gov.uk/media/431400/cbrn-guidance.pdf
Strategic National Guidance: The decontamination of people exposed to chemical, biological, radiological or nuclear substances or materials	Home Office	May 2004	http://umbr4.cabinetoffice.gov.uk/media/132883/peoplecbrn.pdf
Support for Recovery from Exceptional Emergencies	Department for Communities and Local Government	August 2009	www.communities.gov.uk/publications/fire/recoveryfunding
UK Nuclear Recovery Plan Template	Nuclear Emergency Planning Liaison Group	March 2009	www.berr.gov.uk/files/file50461.pdf
UK Recovery Handbook for Radiation Incidents	Health Protection Agency (Emergency Response Department)	June 2008	www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1215416656061?p=1197637096018

Websites

Title and content	Organisation	Link
The Association of British Insurers is the trade body for UK insurance companies. The website provides information on all aspects of insurance.	Association of British Insurers	www.abi.org.uk
The Business Continuity Institute provides guidance and support for business continuity professionals.	Business Continuity Institute	www.thebci.org
The UK Resilience website provides government information and links on civil contingencies – includes recently issued guidance on recovery issues.	Cabinet Office	http://interim.cabinetoffice.gov.uk/ukresilience/response.aspx
The Centre for the Protection of National Infrastructure website provides advice that aims to reduce the vulnerability of the national infrastructure to terrorism and other threats.	Centre for the Protection of National Infrastructure (CNPI)	www.cpni.gov.uk
The Environment Agency website provides key information on environmental topics and its role as a regulator.	Environment Agency	www.environment-agency.gov.uk
The Food and Environment Research Agency and its Government Decontamination Service (GDS) team have websites that list the services available and provide advice, guidance, management support and contractual arrangements to support those responsible for decontamination.	The Food and Environment Research Agency (Fera)	www.defra.gov.uk/fera www.defra.gov.uk/gds

Title and content	Organisation	Link
The Health Protection Agency website provides advice on public health.	Health Protection Agency (HPA)	www.hpa.org.uk
Press notices from HM Treasury	HM Treasury	www.hm-treasury.gov.uk/press_notices_index.htm
The Home Office website	Home Office	www.homeoffice.gov.uk/
The National Counter Terrorism Security Office website provides advice about the security of explosives and precursor chemicals, pathogens and toxins, radiological sources and other toxic chemicals.	National Counter Terrorism Security Office (NaCTSO)	www.nactso.gov.uk
The Pool Reinsurance website offers information aout the Pool Re scheme that covers losses resulting from damage to commercial property caused by acts of terrorism.	Pool Reinsurance Company Limited	www.poolre.co.uk/
The Security Service (MI5) website provides information on the current major threats to UK security and offers expert security advice designed to help businesses and organisations protect against them.	Security Service (MI5)	www.mi5.gov.uk

Appendix B: Glossary

Building control

The regime governing construction standards for the erection, extension or alteration of buildings, including control of demolition and dangerous structures, under the Building Act 1984, the Building Regulations and associated legislation.

Business continuity management

Holistic management process that identifies potential **threats** to an organisation and the **impact** on business operations that those threats, if realised, might cause, and which provides a framework for building organisational **resilience** with the capability for an effective **response**.

CBRN

Chemical, biological, radiological and nuclear. Chemical, biological and radiological incidents involve both the release of the corresponding material and threats, hoaxes and false alarms. A nuclear incident would involve the detonation of a nuclear weapon or an improvised nuclear device.

Containment

Measures to limit or prevent the spread of contamination

Decontamination

The physical and/or chemical process of reducing contamination to minimise the risk of further harm.

Decontamination plan/strategy

A plan setting out the work to be done in decontaminating a building, the specific clean-up objectives to be met, the methods to be used and the way in which the outcomes will be assessed.

Development control

The regime under land-use planning legislation governing proposals for new buildings, alterations to existing ones, change of use and the erection of signs and advertisements. It controls when planning permission, listed building consent or conservation area consent should be sought, and provides enforcement powers against unauthorised development.

Enforcement

Action to ensure compliance with duties under health and safety, and environmental legislation.

Framework agreement

A general term for agreements with contractors setting out terms and conditions under which specific purchases (call-off contracts) can be made. Call-off contracts with an expiry date falling after the end of the framework period can be put in place. The GDS and Buying Solutions Framework Agreement for the Provision of Decontamination Services was awarded in October 2008 with a framework period of four years.

HazMat

HazMat (hazardous materials) includes solids, liquids and gases that can harm people, other living organisms, property or the environment. The term covers materials that are radioactive, flammable, explosive, corrosive, oxidising, asphyxiating, biohazardous, toxic, pathogenic or allergenic.

Loss adjuster

A chartered professional and independent expert who specialises in assessing the loss incurred, managing the mitigation of the loss and negotiating the amounts to be paid following an insurance claim. Loss adjusters are generally commissioned by an insurance company and co-ordinate the work of specialist contractors where needed in order to provide a speedy settlement at minimum cost.

Persistence

The length of time that a threat agent will remain at a contaminated location.

Recovery

The process of rebuilding, restoring and rehabilitating the community following an emergency.

Recovery Co-ordinating Group (RCG)

The decision-making body for managing recovery, the RCG decides the strategy and ensures that it is implemented.

Remediation

Remediation is the physical removal of contamination from a site to minimise the risk of further harm.

Resilience

The ability of community, service, area or infrastructure to detect, prevent and, if necessary, withstand, handle and recover from disruptive challenges.

Responsible authority

The term given to the organisation that is responsible for leading the recovery for the built and open environment, and critical national infrastructure. The responsible authority would normally lead the RCG through an incident and SCG during the recovery phase. This would normally be the local authority; however, for critical national infrastructure or large sites that are privately owned it could be the owners or managers of the site.

Sampling

Collecting a small amount of contaminant for analysis.

Science and Technical Advice Cell (STAC)

A group of technical experts from the agencies involved in an emergency response and recovery that provides scientific and technical advice to the SCG or RCG.

Site evaluation/classification survey

A detailed assessment of a building and its contents to establish the nature and extent of contamination.

Specialist agencies

These are bodies, such as the Defence Science and Technology Laboratory (Dstl), the Health Protection Agency (HPA), the Atomic Weapons Establishment (AWE) and the Food and Environment Research Agency (Fera), that contribute expert advice in their field.

Strategic Co-ordinating Group (SCG)

A multi-agency body responsible for co-ordinating the joint response to an emergency at the local strategic level (England and Wales). In Scotland, Strategic Co-ordinating Groups are the principal local forum for multi-agency co-operation in civil protection. The group has a role in both preparation and response to emergencies. As such, SCGs in Scotland effectively combine the role in England of the Local Resilience Forum in preparing for emergencies and of the Strategic Co-ordinating Groups in responding to emergencies.

Tactical Co-ordinating Group (TCG)

A multi-agency group of tactical commanders that meets to determine, co-ordinate and deliver the tactical response to an emergency. It includes the emergency services and local authority responders.

Viability

The capacity of a quantity of contaminant to cause harm.

Appendix C: CBRN and major HazMat materials

Introduction

C1. This appendix provides some background information on the nature of materials encountered in chemical, biological, radiological or nuclear (CBRN) and major HazMat incidents to provide a brief overview for the non-specialist. CBRN and HazMat incidents involve the accidental or deliberate release of C, B or R materials. N incidents refer to the detonation of a nuclear device, which would produce radioactive fallout and contamination over a wide area.

Chemical, biological, radiological and nuclear materials

C2. C, B and R materials vary widely in their properties and characteristics, the hazards and risks they present to health, and the challenges they present for the decontamination of people and environment. The examples of materials given are purely illustrative and do not represent any assessment of likely threats to buildings and infrastructure of deliberate release of CBRN materials.

C3. In broad terms, CBR materials give rise to five main type of hazard, from:

- contact;
- inhalation;
- injection;
- ingestion;
- proximity.

C4. Contact hazards can result from the agent attacking the skin directly or by absorption of the agent into the body through the skin and eyes. Inhalation hazards arise from breathing in vapour, aerosol or contaminated dust. The agent can either affect the lungs directly or can be absorbed into the body. Injection hazards arise from the entry of the agent into the body through abrasions, open wounds or contaminated shrapnel or debris cutting the skin. Ingestion hazards arise if food, or drinking water or milk is contaminated, or by transfer if people's hands are contaminated when they eat or drink. Proximity to radioactive materials can lead to radiation sickness, burns, increased risk of cancer and other long-term health problems.

Chemical materials

C5. Chemical materials give rise to inhalation, injection, ingestion and contact hazards depending on how the material is released into the environment. Some chemicals can be delivered as vapour or aerosol and are more likely to cause poisoning by inhalation, which can be relatively fast acting. Others may be delivered as a liquid, resulting in contamination and giving rise to ingestion, contact and inhalation hazards. Liquid chemical materials can evolve vapour and therefore pose a lasting contact and inhalation hazard. Effects can range from immediate harm to long-term effects such as causing cancer.

C6. Persistency is partly influenced by the delivery method, quality and quantity of the threat agent and the environment into which it is released. For example, a chemical gas can form a very persistent threat within a building although it is likely to have a lower risk of direct contact than a gross liquid contamination.

C7. Chemical materials can be divided into two broad categories: toxic industrial chemicals (TIC) and chemical warfare agents (CWA):

- TIC – commercially produced and used chemicals, such as chlorine, ammonia, hydrogen cyanide, phosgene, pesticides and other agricultural chemicals;
- CWA – chemical warfare agents, such as the nerve agents sarin, soman, tabun, cyclosarin and VX, and the blister agents mustard and lewisite.

Biological materials

C8. A release of a biological material will produce an outbreak of illness with strong similarities to a naturally occurring disease. It will take days or weeks before people start to become ill and progress of the disease over the following weeks or months may be similar to that of a natural outbreak. Consequently, biological attacks can be hard to detect and/or identify.

C9. Biological materials have the potential to produce severe disruption but they are comparatively difficult to deliver. Most are effective by inhalation or ingestion but do not pose a contact hazard unless the skin is cut or abraded.

C10. Materials are classed as:

- bacteria, such as Bacillus anthracis (anthrax) and Yersinia pestis (plague);
- viruses, such as Variola (smallpox), and filoviruses (Ebola and Marburg);
- fungi, such as Coccidioidomycosis (Valley fever);
- toxins, such as ricin and botulinum toxin.

Radiological materials

C11. The harmful effects of radiological materials result from exposure to the radiation they emit when they undergo radioactive decay. This gives rise to two types of radiological hazard: from external exposure to radiation and from internal exposure through absorption of radioactive material into the body. Exposure to radiation can produce both short- and long-term damage to health.

C12. Radiological materials emit three main types of radiation: alpha, beta and gamma. Each has a differing ability to penetrate matter.

C13. **Alpha** particles can generally be stopped by a sheet of paper or by several centimetres of air. The hazard is caused when taken into the body through inhalation, ingestion or a skin wound.

C14. **Beta** particles are more penetrating than alpha particles. They can penetrate the outer layers of skin and may penetrate a centimetre or so of tissue, depending on their energy. The main risk from beta particles is to superficial tissues of the body (skin and eyes) and internal organs if they are taken into the body (for example, through inhalation or ingestion). In general, beta particles can be absorbed by up to a few metres of air, depending on their energy, or by a thin layer of plastic or glass.

C15. **Gamma** rays are the most energetic of the three types of radiation and can pass through the body; so radionuclides that

emit them may be hazardous whether inside or outside the body. Gamma rays can penetrate most materials and require a substantial thickness of lead or concrete to provide an effective barrier. However, the exposure of the body to gamma rays from a point source reduces approximately with the square of the distance from the source. For example, the dose rate at 2 metres from a contaminated small object will be four times lower than it is at 1 metre from the object.

C16. A becquerel (Bq) is the unit for measuring radioactivity, and represents the number of atom decays per second. The half-life is a measure of the time taken for half the atoms of a given radionuclide to decay.

C17. The half-life of a radionuclide will influence decisions on decontamination. For example, for short-lived radionuclides, it may be better to prevent access to a building until the material has decayed away than attempt to actively decontaminate the building.

Nuclear incidents

C18. The detonation of a nuclear device would result in extensive physical damage from the blast along with intense thermal, gamma and neutron radiation. As well as contamination at the immediate location of the blast, long-lasting contamination from radioactive fallout would be spread a significant distance downwind. The hazards from radioactive fallout will be similar to those resulting from the detonation of a dirty bomb or accidental release of a radiological material. Radioactive fallout may affect large numbers of buildings over a wide area to the extent that they would require extensive decontamination. The Recovery Co-ordinating Group may therefore decide that relocating people, rather than attempting building decontamination, would be the preferred option.

Appendix D: Accessing remediation services

D1. The overarching purpose of the Food and Environment Research Agency (Fera) is to support and develop a sustainable food chain, a healthy natural environment, and to protect the global community from biological and chemical risks.

D2. This includes responding to requests for assistance when the unexpected occurs. A unique combination of plant health policy-makers and inspectorates, experts in the fields of analytical chemistry, micro- and molecular biology and wild animal biology all contribute to a key emergency response capability. With Fera's Government Decontamination Service (GDS) team supporting the environmental recovery phase of an incident involving chemical, biological, radiological or nuclear (CBRN) materials, Fera is able to maintain a dedicated emergency response and recovery programme.

- Fera's GDS team provides a 24-hour on-call CBRN recovery service that can be contacted to help deal with emergencies. Contact details have been supplied to the emergency services and other responders for inclusion in emergency contact lists.
- For non-urgent and general inquiries, Fera's GDS team can be contacted on 08458 501323 or by email on gds@fera.gsi.gov.uk.
- The GDS team will, on request, offer free advice and guidance to support those responsible for decontamination or wider remediation (usually central government, responsible authorities/ agents or the emergency services) following a deliberate or accidental release.
- The GDS team can also offer advice on:
  - remediation options (including whether or not to decontaminate, and what alternative options are available);
  - the capability, capacity and availability of GDS Framework specialist remediation services;
  - engagement of Framework suppliers.

Accessing Fera's Government Decontamination Service Framework

- Through its GDS team, Fera will support (and facilitate where necessary) the contractual relationship between the responsible authority (or agent) and the Framework supplier.
- Once engaged, the GDS Framework supplier(s) will, in accordance with the decontamination strategy, provide a decontamination plan which includes method statements and risk assessments.
- The services provided by the Framework companies are chargeable.
- To facilitate access to the Framework, Fera will need to know:
  - who the responsible authority is and whether they will accept responsibility for the engagement of Framework services (and if not, who will);
  - the specifics and extent of contamination (what it is, where it is, how much of it there is, and whether it is fixed or mobile contamination);
  - whether the contamination has been contained to prevent further spread;
  - whether forensic investigations have been completed by the police and specialist teams, and the site handed over for remediation;
  - whether a Recovery Co-ordinating Group (RCG) has been set up.

Appendix E: Legal references

Introduction

E1. This appendix outlines the powers which may be available to local authorities to arrange decontamination of domestic properties or to progress decontamination of commercial premises if it appears that the owner or occupier is unable or unwilling to do it. Authorities will need to satisfy themselves that the powers are appropriate in any particular case.

General powers

E2. Local authorities in England and Wales have power under section 138 of the Local Government Act 1972 to take action where there has been an emergency or disaster involving destruction of, or danger to, life or property. They may incur expenditure and make grants or loans under this power.

E3. Part 1 of the Local Government Act 2000 gives local authorities power to do anything they consider likely to achieve the promotion or improvement of the economic, social or environmental well-being of their areas. It includes power to incur expenditure and to give financial assistance.

E4. Where authorities have power to act but not to charge, section 93 of the Local Government Act 2003 enables them to charge if the receiver of services agrees.

E5. In Scotland, local authorities have similar powers under section 84 of the Local Government (Scotland) Act 1973 where an emergency or disaster occurs, is imminent or is reasonably apprehended, which is likely to affect the local authority's area or inhabitants. There are analogous powers in relation to well-being under section 20 of the Local Government in Scotland Act 2003 and local authorities are entitled, by virtue of section 22(8), to impose charges for anything done by them under section 20.

Building Act 1984 (England and Wales)

E6. Sections 77 and 78 of the Building Act 1984 contain provisions enabling an authority to take action if a building or structure is in a dangerous condition. Section 77 empowers the local authority to take steps to require the owner of the building to deal with the building, and section 78 empowers the local authority to take immediate action itself to remove the danger and recover the costs of so doing.[21]

21 Section 79 contains powers relating to removal of rubbish or other material resulting from the collapse of a building or structure if the rubbish is resulting in the state of the land being seriously detrimental to the amenities of the neighbourhood.

E7. Although only the courts can interpret the law, the Department for Communities and Local Government's view is that these sections would cover contamination of the fabric of a building or structure, since the danger would arise from their condition or state. However, these powers do not apply to services, fittings, equipment or other contents, though no doubt the presence of such contaminated items could give rise to a continuing danger to the fabric.

E8. Neither section applies to inner London[22] and section 77 does not apply to an outer London borough.[23] However, there are parallel, albeit not identical, powers in the London Building Acts (Amendment) Act 1939.

Building (Scotland) Act 2003

E9. Section 29 of the Building (Scotland) Act 2003 provides for local authorities to take such action as they consider necessary if a building is a danger to people in or around the building, to the public generally, or to adjacent buildings or places. Section 29 includes powers for the local authority to carry out works and recover costs for any such work.

Environmental Protection Act 1990

E10. There are powers to control statutory nuisances under Part III of the Environmental Protection Act (EPA) 1990, although this Part is disapplied (section 79(1A)) from land in a contaminated state by the Environment Act 1995, Schedule 22, paragraph 89.

E11. Section 79(1) defines a statutory nuisance to include 'any premises in such a state as to be prejudicial to health or a nuisance'. Radioactive contamination is not covered by virtue of being dealt with under section 40 and Schedule 3 of the Radioactive Substances Act 1993. Where a local authority is satisfied that a statutory nuisance exists, the authority must serve a notice requiring the abatement of the nuisance and the execution of necessary works. The notice is served on the 'person responsible', who is defined as the person to whose act, default or sufferance the nuisance is attributable.[24]

E12. Section 59(7) of the EPA does allow a local authority to remove unlawfully dumped waste where it could cause pollution or harm human health, and the local authority can recoup the cost from the person who dumped the waste (section 59(8)).

E13. Section 81(3) provides that where an abatement notice has not been complied with, the local authority may abate the nuisance and do whatever may be necessary in the execution of the notice and to recover the costs. Section 76 of the Building Act 1984 provides an additional route where the premises constitute a statutory nuisance but unreasonable delay in remedying the defective state would be occasioned by using section 80 of the EPA 1990. The Building Act 1984 applies only in England and Wales. Local authorities in Scotland may choose to exercise their powers in relation to defective buildings under section 28 of the Building (Scotland) Act 2003.

22 Building Act 1984, Schedule 3, paragraph 4.

23 London Local Authorities Act 2000, section 45(4).

24 Case law makes it clear that the occupier may be liable. See, for example, House of Lords judgment in Sedleigh-Denfield v. O'Callaghan [1940] AC 880, HL, at 913.

E14. To the extent that the contamination is radioactive, the Radioactive Substances Act 1993 is relevant. The Act (in particular, section 40 and Schedule 3) provides that, for the purposes of certain provisions, radioactivity is to be disregarded. The list of provisions includes Part 3 of the EPA 1990. The Radioactive Substances Act 1993 does, however, provide the Environment Agency and the Scottish Environment Protection Agency with powers of enforcement in relation to radioactive waste (see section 30 for all premises, and sections 21 and 22 for registered or authorised premises).

Public Health (Control of Diseases) Act 1984

E15. The Public Health (Control of Diseases) Act 1984, section 45C, confers powers on ministers to make regulations for the purpose of preventing, protecting against, controlling or providing a public health response to the incidence or spread of infection or contamination in England and Wales. The Health Protection (Local Authority Powers) Regulations 2010,[25] made under this power, confers powers on local authorities in England to impose requirements to keep an infected or contaminated child from school, to carry out decontamination and disinfection, to request co-operation from any person or persons, and to impose restrictions in relation to dead bodies. Section 45(l) of the 1984 Act, when it is brought into force, will confer powers on justices of the peace to make orders in relation to premises which are believed to be infected or contaminated, including orders for closure, disinfection or decontamination, or destruction.

Town and Country Planning Act 1990/ Town and Country Planning (Scotland) Act 1997

E16. Local authorities also have powers under section 226 of the Town and Country Planning Act 1990, and section 189 of the Town and Country Planning (Scotland) Act 1997, to acquire land compulsorily for planning purposes.

'Polluter pays' principle

E17. The 'polluter pays' principle has been established within the UK and the European Union (EU) over a number of years and is designed to ensure that those who cause pollution pay for clearing it up. It is legally put into effect by a variety of means, usually by specific mention in statutes and EU regulations. An example can be found in section 59 of the EPA 1990 which allows a local authority to clean up dumped waste which is likely to cause pollution or be harmful to human health and claim back the costs from the person who dumped it (the polluter). There are other examples, such as the power of the Environment Agency to serve a 'works notice' on the polluter of controlled waters in section 161 of the Water Resources Act 1991. There are also examples of the principle being applied under the Common Law in the past – see Rylands v. Fletcher,[26] the liability of a dam owner for damage caused by the breach of the dam and subsequent damage to neighbouring property.

25 Statutory Instrument 2010/657.

26 Rylands v. Fletcher (1868) LR 3HL 330.

Appendix F: Decontamination planning checklist

F1. The following is a list of issues for consideration when planning the decontamination process.

- Have sampling and a detailed evaluation been conducted to determine the exact nature and extent of the contamination?
- Is decontamination required?
- Are the buildings/items worth saving?
- Should the buildings be sealed?
- If the buildings are to be demolished, have specialist agencies and the local authority been consulted on how this will be tackled to limit the spread of contamination to surrounding buildings and areas?
- If the buildings are to be decontaminated, have specialist agencies been consulted on how the work will be carried out safely and effectively, so that the buildings can be reoccupied as soon as possible?
- Have contractors been engaged on behalf of the building's owner/occupier to carry out the decontamination?
- Has it been decided who will cover the cost of engaging any specialist contractors?
- Has it been decided who will monitor the progress of the work and compile regular reports to be circulated to staff, the public and neighbouring owners/occupiers?
- Has it been decided who will have overall control of the decontamination process, including health and safety issues?
- Based on the sampling and evaluation results, and advice from specialist agencies and advisers, has a detailed plan for decontamination been drawn up? If so, does it include:
  - the nature and extent of the contamination;
  - any structural damage to the building(s);
  - characteristics of each building, its systems and contents;
  - whether each building carries listed status;
  - whether the contents are valuable;
  - the precise objectives for decontamination of each building, its systems and contents;
  - whether decontamination of movable items is to be done on-site or off-site and the arrangements for moving them safely;
  - whether any items are to be disposed of and, if so, how;

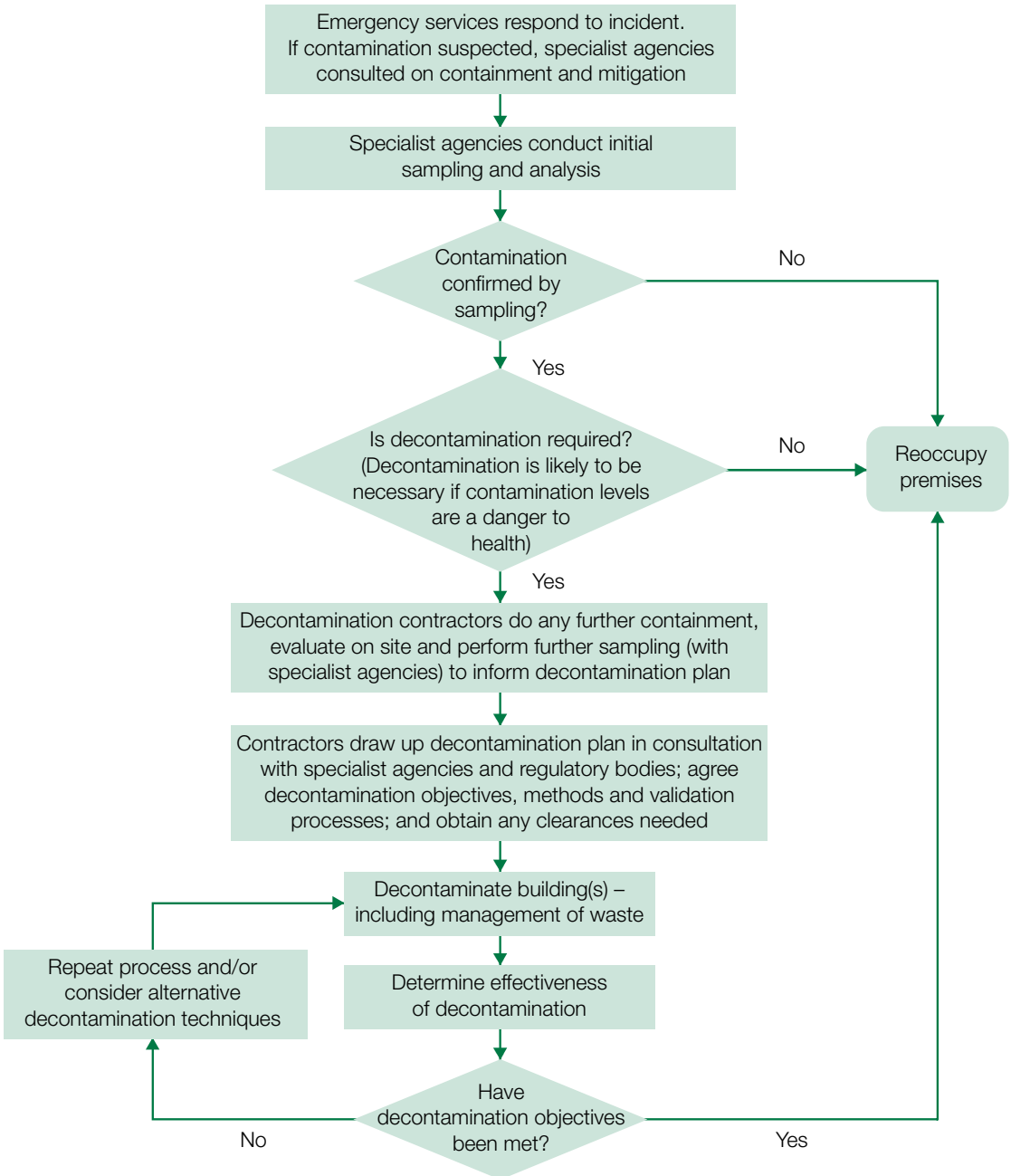
- the agreed methods of decontamination or remediation (detailed records should be kept of contaminants and their treatment);
- how the outcome of decontamination will be assessed to validate the process, including arrangements for sampling and analysis;
- whether there are any aspects of the building's age, location, surrounding environment, infrastructure or intended use that may affect the way decontamination is carried out (issues to be considered include the historic landscape and the ecological or archaeological value of the environment);
- whether it has been decided how the decontamination process will be prioritised if there is widespread contamination and if the building comprises several premises;
- whether checks have been carried out to establish if any contaminants already exist in the contaminated building (for example, asbestos or lead);
- whether suitable and secure temporary buildings will be provided to accommodate contractors and store equipment and materials;
- whether there are facilities for decontaminating the staff engaged in the work;
- whether the health and environmental consequences of the decontaminants or remediation options have been addressed;
- whether arrangements have been made to manage, transport and dispose of the waste material;
- whether, if more than one contractor is working on the project, plans have been made to ensure a consistent approach to removing contaminated materials?

- Have relevant bodies been consulted and any necessary clearances or approvals obtained?[27]
  - Have plans been made to decide when the building is safe for reoccupation?
  - Who will decide when the building may be reoccupied?[28]

27 The relevant bodies are the Health and Safety Executive (HSE) on health and safety issues; the Fire and Rescue Service on fire safety aspects; the local authority on development control, building control (for structural and building material aspects) and health and safety where that falls to the authority rather than the HSE; the Environment Agency/Scottish Environment Protection Agency on environmental and waste management aspects; water and sewerage authorities where water supplies may be used in the decontamination process and contaminated water will need to be disposed of (for example, if it is proposed to dispose to sewer); English Heritage on listed historic buildings in England; and the Department for Culture, Media and Sport for decisions affecting scheduled ancient monuments in England.

28 This will normally be the Strategic Co-ordinating Group (SCG) set up to handle the incident.

Appendix G: Outline of the decontamination process



Appendix H: Prioritising decontamination work

Introduction

In the event that more than one area or building requires decontamination or remediation, it is likely to be the responsibility of the Strategic Co-ordinating Group to prioritise the work. Although prioritisation will need to be decided on a case-by-case basis, the following checklist, developed from one originally designed by Westminster City Council,[29] provides areas for consideration.

Initial considerations

1. Is there credible evidence of a high and immediate risk to the public?
   - High contamination levels in venue: measurements already taken in venue may indicate immediate and high risk.
   - High levels in other, linked venues: the link between this venue and others should be of a nature that makes it likely that contamination in this venue will be at similar (high) levels to those already measured in other venues.
   - Specific, credible information that such an immediate and high risk exists: for example, witness statements, police information.
2. Can access to the venue/item/area be readily restricted?
   - Small objects, such as chairs, may be moved to a locked room.
   - Discrete areas, such as toilets, bedrooms, etc, may be locked or cordoned off with minimal disruption to the rest of the venue.
3. Is the venue/item/area in immediate need?
   - Use of transport assets to move people and casualties quickly.
4. What is known about the public health risk?

Contamination

- Is the contamination mobile or fixed? (Can it be easily spread around, resuspended or wiped onto skin, with the risk of subsequent intake?)
- What are the levels of contamination?
- What is the extent and pattern of the contamination? (Is it patchy, widespread, very variable in level etc?)

29 Annex I of *Framework strategy for dealing with radioactive contamination arising from the circumstances surrounding the death of Alexander Litvinenko*, Westminster City Council, 2007.

How likely are people to be exposed?

- What was the area/item used for (if a restaurant, play area for small children, toilet/bathroom or bedroom, people may be more likely to ingest or inhale the contaminant), and is it going to be returned to that use?
- How long are people likely to stay in or near the contaminated venue/item/area (the longer they stay, the more likely they are to be exposed, or the higher their exposure is likely to be)?
- Are vulnerable groups likely to use the area/item (young children, elderly people and disabled people are all more prone to the effects of contamination)?
- How many people are likely to use the area/item? Larger numbers of people generally increase the collective public health risk, but may either increase (for example, cause resuspension) or decrease (for example, provide shielding against exposure to the radiation) the individual health risk.

What are the implications for communication?

- What is likely to be the impact on the 'message' response agencies are trying to give out? (For example, if a complete venue is closed, will public knowledge of this closure, regardless of the public importance of the venue, undermine the message that the risk to the public is small?)
- How 'visible' is the area/item? (Closing a major public area, or prohibiting access to a well-known venue would be highly visible to the public and could raise anxiety, whereas closing off a hotel bedroom would not be noticed by the public.)

Additional considerations

Where there has been widespread contamination, remediation is likely to take considerable time and resources to complete. It will therefore be necessary to prioritise the longer-term recovery plans for the area, and in particular the remediation of places such as schools, infrastructure, housing and businesses, all of which have a significant impact on the community.

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This guidance has been prepared to help anyone involved in decontaminating buildings and infrastructure in the event of a release – whether deliberate or accidental – of chemical, biological, radiological or nuclear (CBRN) material. The guidance is part of sensible contingency planning and does not mean that there is an increased risk of terrorist attack using CBRN materials.

This document complements guidance by the Home Office on the decontamination of people.