



**THE DECONTAMINATION OF PEOPLE EXPOSED TO
CHEMICAL, BIOLOGICAL, RADIOLOGICAL OR
NUCLEAR (CBRN) SUBSTANCES OR MATERIAL**

STRATEGIC NATIONAL GUIDANCE

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Home Office

Foreword

By John Denham, Minister of State, Home Office

Releases of CBRN material can occur without warning as a result of a wide range of events including industrial accidents, terrorism and natural outbreaks of disease. The most serious CBRN incident affecting the United Kingdom in recent years was the release of radioactive substances following the accident at the Chernobyl nuclear power station in 1986.

The emergency services and other responding agencies have always worked closely together to deal with the scene of a disaster. They have carried out their roles in accordance with a range of guidance issued by government departments, specialist agencies and by the emergency services themselves.

This document is not meant to replace that existing guidance but brings the main areas together and builds upon emergency procedures that we use to respond to industrial accidents and civil emergencies. It is designed to enable the emergency services, the military, local authorities, health professionals, and government departments and agencies to work together more effectively at an incident. The guidance provides an agreed set of principles, common terminology, and a shared understanding of each organisations' roles and responsibilities to help responders deal more effectively with deliberate releases of dangerous material.

The Government has engaged in an extensive period of consultation for the agreement of this guidance to make sure it is an authoritative source for use in planning for the decontamination of people exposed to releases of chemical, biological, or radiological material.

As the guidance is put into practice we will subject it to rigorous review and keep it up to date to reflect any developments or further lessons learned on the ground.

I am grateful to all the individuals and organisations who have contributed to this document. It has been particularly helpful to have received the input of colleagues in the Association of Chief Police Officers, the Chief & Assistant Chief Fire Officers Association, the Ambulance Service Association, the Local Government Association and the Emergency Planning Society.

A handwritten signature in black ink, appearing to read 'John Denham', with a long horizontal flourish at the end.

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Introduction

- 1.1 In this document the term CBRN is used to describe the whole range of incidents that can occur as a result of a release of chemical, biological, radiological or nuclear materials.
- 1.2 The scope of this guidance is not confined to the deliberate release of CBRN material by terrorists. Accidental releases, outbreaks of serious communicable diseases, contamination from overseas incidents, even domestic spillages also represent real threats.
- 1.3 Accidental releases of hazardous materials (HazMat) tend to occur either at industrial locations which have already been identified as posing a particular risk and where there are associated safety measures and emergency plans in place, or within the national transport infrastructure where vehicle plating and signage assists the emergency services. In these cases, members of the public are better prepared for possible incidents and are more likely to co-operate with responders.
- 1.4 Incidents involving the accidental release of CBRN material or cases of naturally occurring disease outbreaks are likely to be on a more manageable scale than terrorist incidents, because of the lack of intent, the limited nature of sites at risk and safety systems.
- 1.5 Clearly there are similarities between routine HazMat incidents and CBRN crime. However with CBRN terrorism the public may not readily understand that they are involved in a serious emergency. It is likely that a terrorist attack would involve a specific target such as a VIP, critical or iconic location, or high profile event. Consequently victim management requires careful consideration by responding agencies.
- 1.6 As with other types of terrorism, the multi-agency response to a CBRN incident will be co-ordinated by the police, particularly around issues connected with explosive and ballistic safety at the scene, and the concurrent investigation. HazMat incidents will normally be co-ordinated by the fire service.
- 1.7 For this reason this document assumes the worst case scenario of CBRN terrorism but recognises that much of this tactical doctrine can be applied to industrial HazMat releases.

2. Purpose of guidance

- 2.1 The purpose of this document is to provide strategic guidance on decontamination upon which all responding agencies can base plans and Memoranda of Understanding (MOUs) for on-site management of CBRN incidents. It also provides advice on decontamination methods based on lessons learned from previous incidents and exercises and drawing on current research projects.
- 2.2 As set out in the introduction, this guidance is intended to encompass all hazardous materials incidents, not simply the deliberate release of CBRN material by terrorists.
- 2.3 It is intended to provide all those involved in the decontamination of people exposed to CBRN substances or materials with a common set of principles, using common terminology, and with a shared and agreed understanding of each others' roles and responsibilities.
- 2.4 Previous advice on CBRN and decontamination has been issued through individual emergency services, agencies or departments. The need now is to ensure that these strands are amalgamated and that procedures are aligned. The guidance has been prepared with input from a wide variety of specialist and professional sources.
- 2.5 A CBRN release may quickly spread across a number of administrative and geographical boundaries, including the boundaries of the devolved administrations within the United Kingdom. Reinforcement and regional mutual aid will feature as a key consideration. Clearly, commonality of procedures and inter-operability of equipment is critical to the successful delivery of mass decontamination. This guidance has been produced with contributions from the devolved administrations and is for use across the whole of the United Kingdom.
- 2.6 This document should be read in conjunction with other national level guidance, e.g. *Dealing with Disaster* (and equivalent publications in the devolved administrations), departmental guidance and specialist publications such as the Home Office Counter Terrorism, Contingency Planning guidance manual.

3 Types of incident

3.1 Deliberate releases

3.1.1 Deliberate release incidents will generally fall into one of two categories:

3.1.2 Intelligence led – device not yet actuated: warning of a terrorist attack has been given, although this may or may not include details of the type of the CBRN material, allowing the opportunity to pre-deploy assets against the device.

3.1.3 No notice – device actuated: an incident (or suspected incident) has occurred without any prior warning.

3.1.4 Indications that an incident has taken place might be the presence of suspect packages, damage to the environment, or people or animals showing distress.

3.1.5 In the case of unheralded biological, radioactive and some chemical contamination, members of the public are unlikely to show any symptoms for hours or possibly days, depending on the strength or efficacy of the agents. Appendix C contains information on the signs and symptoms of chemical contamination or poisoning. This is to enable first responders to make a rapid assessment of the likelihood that people are suffering as a result of a chemical release.

3.1.6 Contamination may result from:

- Deliberate release of biological material
- Deliberate release of chemicals
- Improvised Radiological Devices ('Dirty Bombs')
- Deliberate release of radioactivity
- Deliberate use of nuclear or improvised nuclear devices
- Other terrorist acts

3.2 Unintentional releases

3.2.1 Although stringent safety precautions are in place, contamination may also result from accidental releases from:

- Industrial and commercial sites¹
- Laboratories
- Universities, colleges or schools
- Hospitals
- Materials in transit
- Nuclear sites (at home or abroad)

¹ Two of the most common sources of chemical contamination are dry cleaners and swimming pools. The threat is not simply from large industrial sites or tankers. (source: London Ambulance Service)

- Incidents at sea
 - Domestic spillages
- 3.2.2 The existence of well-rehearsed emergency plans and associated safety measures will usually assist responders dealing with accidental releases at industrial sites.
- 3.3 Where there is a suspicion of terrorism, the very real possibility that the terrorists may still be at the scene or that secondary devices may be present should always be considered. The immediate and surrounding area must be checked for the presence of secondary devices (either CBRN or explosive) before any decontamination point is set up. While this will normally be a police responsibility, all responders must remain vigilant to this operational threat.

4 Planning Assumptions & Communications Issues

- 4.1 The purpose of this section is to set out the planning assumptions for a CBRN incident, which should be common to all responding agencies.
- 4.2 Planning, response and recovery should take place within the emergency planning structures set out in the existing national guidance, *Dealing with Disaster* (or equivalent guidance issued in the devolved administrations) and the Home Office Counter Terrorism Contingency plans (a confidential document). It is a fundamental aim of these arrangements that they should be co-ordinated across authorities and organisations, in accordance with the integrated emergency management methodology set out in *Dealing with Disaster*.
- 4.3 Most emergencies in the United Kingdom are handled at a local level by the emergency services and by the appropriate local authority or authorities with no direct involvement by central government. Where central government does become involved because the incident is of a scale or complexity to require central co-ordination or support, there will be a lead government department in charge of handling the emergency².
- 4.4 Post September 11, the enhanced threat of a terrorist attack producing mass casualties justifies a new dimension to planning, including planning for CBRN releases.
- 4.5 Organisations need to plan for the **possible** decontamination and evacuation of people after incidents where:
- (a) the threat of a release has been anticipated through intelligence and
 - (b) where a device has been activated, or an accidental release has
- 4.6 taken place, with no notice.
Organisations have normally planned on the assumption that they have adequate resources to handle one incident at any time. The experience of September 11 has shown that multiple incidents may have to be handled simultaneously, perhaps within the boundaries of a single authority.
- 4.7 It may not therefore be possible to rely on traditional mutual aid arrangements, as a number of adjoining authorities may all be fully stretched. An individual agency may be unable to fulfil all of its mutual aid agreements where several authorities have been affected simultaneously.

² The paper, *The Role of Lead Government Departments in Planning for and Managing Crises*, was placed in the library of the House of Commons in July 2002. The full text can also be found on the CCS web site www.ukresilience.info

- 4.8 The amount of damage resulting from a major incident or series of incidents could far exceed the levels of damage produced in previous disasters.
- 4.9 Dependent on the conditions and the efficacy of the contaminant, the numbers of people exposed and requiring decontamination from chemical or biological terrorism may grow swiftly to many more than anything experienced or planned for following conventional disaster or naturally occurring outbreak. But it is not inevitable that CBRN terrorism will always lead to high levels of contamination.
- 4.10 The number of people seeking medical advice will be substantially higher than the numbers exposed or affected. There is previous evidence for a rate of 5 to 1.
- 4.11 Incidents involving the accidental release of CBRN material or cases of naturally occurring disease outbreaks are likely to be on a more manageable scale than terrorist incidents, because of the lack of intent, the limited nature of sites at risk and safety systems.

Communications Issues

- 4.12 Any significant incident involving the release of CBRN materials will attract massive domestic and foreign media attention, and strong public and political interest. There could be adverse effects on public confidence. Depending on the nature of the contamination, this could cause difficulties at the scene and/or significant public disorder. There will be an early demand for information from the public and the media about how people can protect themselves, their families and their property.
- 4.13 Although in some cases government may receive the first threat alert, information will usually be provided by the emergency services in the first instance. They will issue public statements, provide advice and action to take, hold media briefings and conferences. Under existing protocols in counter-terrorist incidents, outputs to the media are made jointly by the police and the Government Information and Communication Service (GICS).³
- 4.14 In a major CBRN incident strategic guidance will become available from Ministers or senior officials in COBR. The Civil Contingencies Committee will provide direction and co-ordination of the Government's support to responders and to those responsible for managing its consequences.

³ Chapter 5 of *Dealing with Disaster* gives detailed guidance on co-ordinating a multi-agency approach to media handling in emergencies. See also Appendix G and Section 5.3.4 (iii) below.

5. Roles and responsibilities

5.1 Strategic Objectives for a Combined Response to a CBRN incident

5.1.1 Irrespective of the particular responsibilities of organisations and agencies responding to the incident, the strategic intention is to co-ordinate effective multi-agency activity in order to:

- (a) preserve and protect lives
- (b) mitigate and minimise the impact of an incident
- (c) inform the public and maintain public confidence
- (d) prevent, deter and detect crime
- (e) assist an early return to normality (or as near to it as can be reasonably achieved)

5.1.2 Other important common objectives flowing from these principles are:

- (a) to ensure the health and safety of all those responding to a CBRN incident
- (b) to safeguard the environment
- (c) to facilitate judicial, public, technical, or other inquiries and
- (d) to evaluate the response and identify lessons to be learned

5.1.3 Where the multi-agency response requires organisations to share responsibility on key tasks, these are shown in the section below in the roles of the lead agency but not repeated in the roles of the collaborating service.

5.2 Generic key roles of the principal services and authorities

5.2.1 The Police Service

- Save lives
- Co-ordinate the work of the emergency services
- Protect and preserve the scene
- Ensure the health and safety of police responders
- Investigate the incident
- Collate and disseminate casualty information
- Identify victims

- Liaise with families
- Secure and make safe the inner cordon during terrorist incidents
- Chair the multi-agency strategic co-ordinating group established to respond to the incident (Gold command)

5.2.2 The Fire Service

- Save life
- Urban Search and Rescue
- Fight and prevent fires
- Manage hazardous materials and protect the environment
- Mitigate damage from fires or fire fighting
- Ensure the health and safety of fire service responders
- Safety management within the inner cordon, other than during the initial stages of terrorist incidents

5.2.3 The Ambulance Service

- Save life
- Provide a focal point for initial medical resources
- Treat and take care of injured people
- Ensure the health and safety of health service responders
- Determine priorities for evacuating the injured
- Determine the main receiving and supporting hospitals
- Arrange and ensure the most appropriate means of transporting the injured

5.2.4 The National Health Service

- Save life
- Protect the health of the population
- Support the Ambulance Service
- Plan for the treatment and care of people who have been affected by the incident

5.2.5 The Local Authority

- Support the emergency services
- Co-ordinate the response by voluntary agencies
- Support the local community
- Lead the long term recovery process⁴

⁴ The term "recovery" is as defined in the Home Office publication *Recovery: An Emergency Management Guide*. See Section 10.

- Work towards the restoration of normality
- Maintain normal services

5.3 Detailed roles and responsibilities at a CBRN incident

5.3.1 The Police Service

The Police Service will:

- (i) be responsible for the overall co-ordination of the emergency response to any incident,
- (ii) take initial responsibility for safety management within the inner cordon at terrorist incidents⁵,
- (iii) agree the boundary of the inner cordon with the Fire Service and determine the boundary of the outer cordon, subject to the best scientific and other inter-agency advice available,
- (iv) until it is determined otherwise, treat the site as a crime scene,
- (v) maintain the integrity of the scene and cordons,
- (vi) ensure that people who are unprotected by appropriate level PPE, do not enter the inner cordon,
- (vii) ensure that, where the contamination is the result of a suspected criminal act, correct evidence collection, labelling, sealing, storage and recording procedures are carried out in respect of property,
- (viii) identify and supervise a safe holding place for this property,
- (ix) be responsible for deciding at what point it may be safe to return property to its owners, provide hospital security and documentation team (in PPE if appropriate)
- (x) decide whether to seek military assistance.

⁵ This refers to police co-ordinated activity to secure the scene, disarm the terrorists, identify and make safe secondary devices.

5.3.2 The Fire Service

The Fire Service will:

- (i) carry out scene assessment in consultation with the police,
- (ii) perform urban search and rescue,
- (iii) establish an inner cordon and determine initial access arrangements,
- (iv) co-ordinate hazard assessment in consultation with the police,
- (v) within the terms of the MOU between the Office of the Deputy Prime Minister and the Department of Health (and equivalent agreements or protocols in the devolved administrations), work with the ambulance service to provide a mass decontamination service,⁶
- (vi) in accordance with locally agreed arrangements, assist the ambulance and health services in providing casualty decontamination,
- (vii) take responsibility for safety management within the inner cordon⁷,
- (viii) supply personnel with PPE and equipment for activity inside the inner cordon,
- (ix) assist with the mitigation of the effects of hazardous materials,
- (x) minimise the impact on the environment during the emergency phase of an incident, in liaison with the Environment Agency (and equivalent authorities in the devolved administrations).⁸

5.3.3 The Ambulance Service

The Ambulance Service will:

- (i) co-ordinate all health service activities on site
- (ii) assume responsibility for casualty decontamination – requesting fire service assistance where required
- (iii) decontaminate other victims together with the Fire Service in accordance with the Memorandum of Understanding between the Office of the Deputy Prime Minister and the Department of Health (and equivalent agreements or protocols in the devolved administrations),

⁶ see also Sections 6 & 7 below

⁷ other than the initial securing of the site at terrorist incidents, described in the footnote to section 5.3.1 (ii) above,

⁸ includes taking all practicable steps to contain the decontamination run-off or to direct it to a containment area, and informing the Environment Agency, Scottish Environment Protection Agency, local authority and local water and sewerage undertakers of possible pollution

- (iv) treat and reassure any patients or potential patients at the scene
- (v) notify the relevant Accident & Emergency departments that a CBRN incident has occurred and advise of the potential for self-presenting patients,
- (vi) arrange the provision of clinical advice and assistance to support on-site decontamination,
- (vii) provide limited patient triage and treatment at the inner cordon prior to decontamination,
- (viii) provide subsequent assessment, treatment and patient transport.

5.3.4 The National Health Service (NHS)

The NHS will:

- (i) liaise with the Ambulance Service about the level of resources needed as a result of the incident,
- (ii) where practicable, provide a site medical officer to liaise with the emergency services, oversee the administration of antibiotics and/or nerve agent antidotes at the scene and make arrangements for the certification of death,
- (iii) on request, set up a Joint Health Advisory Cell (JHAC) to offer advice to the multi-agency strategic co-ordination group about public health issues, including information which is suitable for distribution to the public⁹,
- (iv) monitor the health of all responders and those affected and implement measures to ensure the general public are kept informed and as safe as possible,
- (v) provide medical assistance and follow-up advice at survivor reception centres and holding areas to treat, monitor and reassure casualties (including those who self-present)
- (vi) liaise with the Food Standards Agency (FSA), the Environment Agency or SEPA on all relevant aspects of the release of contaminant
- (vii) monitor the symptoms of people self-presenting at hospitals and GPs' surgeries, to ensure that medical evidence of biological releases is identified as quickly as possible
- (viii) monitor the medium and long term health of those in affected communities as part of the recovery process.

⁹ Details about the role of the JHAC are set out in the document 'Deliberate Release of Biological and Chemical Agents' published jointly by the DH and NHS in March 2000.

5.3.5 The Environment Agency (EA) and Scottish Environmental Protection Agency (SEPA)

The EA/SEPA will:

- (i) assist with the risk assessment, helping to identify where material might disperse to via environmental pathways, who might be at risk and, where practicable, give advice about the location of decontamination facilities,
- (ii) in cases where flushed materials and contaminated waters cannot reasonably be contained and stored, identify the watercourses and drainage systems at risk and warn sewerage undertakers, water abstractors and relevant local authorities
- (iii) help the police and other services to identify storage, transport and disposal facilities and contractors,
- (iv) make staff available at command centres or decontamination sites to assist the continuing hazard and risk assessments,
- (v) help identify facilities and contractors for the storage, transport and disposal of contaminated waters or bagged solid waste materials,
- (vi) where appropriate, investigate breaches of environmental regulation and report these for consideration of prosecution,
- (vii) support the emergency services, local and water authorities and the Food Standards Agency in dealing with all environmental issues.

5.3.6 The Local Authority

The Local Authority will:

- (i) provide, staff and equip survivor reception centres to accommodate people who have been decontaminated at the scene and who may be awaiting further medical examination,
- (ii) provide, staff and equip rest centres to deal with the appropriate numbers of non-contaminated evacuees, invoking mutual aid arrangements with neighbouring authorities if necessary¹⁰,
- (iii) lead the work of voluntary agencies in response to the incident,

¹⁰ Survivor reception centres and rest centres should be staffed and equipped to accommodate friends and relatives of victims or evacuees who have travelled to the area to locate loved ones.

- (iv) lead the recovery phase.

5.3.7 HM Coroner (England & Wales and Northern Ireland)

The coroner for the district where the bodies are lying¹¹ will:

- (i) in consultation with his relevant council (in Northern Ireland, the state pathologist) and chief officer of police, initiate the establishment of the emergency or temporary mortuary;
- (ii) authorise the removal of bodies;
- (iii) authorise the examination of bodies to find a cause of the death;
- (iv) chair the identification commission and take all reasonable steps to identify the deceased;
- (v) where necessary, organise the collection of data concerning those bodies which may be irrecoverable but who are believed to have died in the event;
- (vi) liaise and co-operate with other coroners who may also have, in their districts, bodies from the same event,
- (vii) authorise the disposal of those bodies after appropriate examination and documentation is complete,
- (viii) at all times, liaise with the relevant emergency services and government departments

Scotland

- (ix) In Scotland the Crown Office and Procurator Fiscal Service is the sole prosecution authority and is responsible for the investigation of all sudden and unexpected deaths, regardless of whether criminality is involved. Procurators Fiscal have powers of direction over the police and others, which are generally greater than those of the Crown Prosecution Service or the Coroner. In particular they:-
 - (x) direct the police involved in the investigation
 - (xi) instruct the pathologists involved in the investigation
 - (xii) Choose the experts to be involved in the investigation

¹¹ In cases of multiple jurisdictions, a lead coroner may be appointed

- (xiii) Control the disposal of the bodies of those who have died within the jurisdiction
- (xiv) Determine the required standard for the identification of the dead.

5.3.8 Health & Safety Executive

- (i) provide specialist advice on the risks to workers and others as a result of an incident;
- (ii) give specialist advice on appropriate control measures to prevent or reduce the risks of exposure. For example, on engineering controls and personal protective equipment.
- (iii) for accidental releases, HSE carries out its prime role of investigating the causes of the incident under health and safety legislation.

5.3.9 The role of the armed forces

- (i) Under established arrangements the military provide a national immediate response to police dealing with conventional ordnance, unsafe munitions, improvised explosive devices and CBRN terrorism. They are a key partner in the multi-agency response and provide police with safety advice, render safe options and limited mitigation capabilities.
- (ii) Details of the enhanced technical assistance that the military can provide during a counter-terrorist incident under existing arrangements for Military Aid to the Civil Power (MAC-P) are set out in the Home Office Counter Terrorist Contingency Planning guidance.
- (iii) Arrangements for obtaining assistance from the armed forces to help deal with a civil emergency are set out in the MoD publication, Military Aid to the Civil Community. The general principles are covered in *Dealing with Disaster*, chapter 2.

6. Decontamination - Issues for consideration

- 6.1 Decontamination is not an automatic or inevitable response to CBRN incidents. Whether or not to initiate decontamination procedures will depend on the assessment of the nature of the incident by first responders.
- 6.2 Once the decision to decontaminate has been made, the principle is that all casualties, whether injured or not, that are suspected of being contaminated will receive decontamination at the scene. Although this will reduce the number of people self-referring to medical centres people will self-present for decontamination off-site. Medical centres and hospitals should be prepared for this.
- 6.3 If decontamination procedures are initiated, the first objective is to remove the contaminated person from the area of greatest contamination. Usually this will be to the open air and upwind of the incident. If the CBRN release is still in progress and airborne, a risk assessment should be carried out to determine if removing people to a closed area may be more appropriate.
- 6.4 Particular consideration should be given to minimise the exposure of pregnant casualties and carers when the incident involves radiological or nuclear material.
- 6.5 It should be remembered that potential witnesses or suspects might be amongst those being decontaminated.
- 6.6 The careful removal of contaminated clothing will reduce the level of contamination and should, therefore, be a priority. Wherever possible the removal of clothing should be from head to foot, to limit the risk of inhalation of any contaminant.
- 6.7 Special care must be taken to ensure there is no spread of contamination from any clothing to exposed skin.
- 6.8 People who are capable of removing their own clothing and decontaminating themselves should do so, under supervision.
- 6.9 Special care must be taken to reassure and support people who have personal articles such as spectacles or hearing aids removed from them.
- 6.10 All personal clothing and property, whether contaminated or not, must be recorded and linked to an individual. It may contain valuable intelligence or evidence and the continuity of its recording is vital.
- 6.11 In situations where the urgent need for decontamination exceeds the rate at which the Rinse-Wipe-Rinse method can be applied¹², the

¹² See Appendix B

alternative procedures for mass decontamination (MD)¹³ should be used.

- 6.12 MD methods include low-pressure water spray from a fire hose, portable showers, the use of large, purpose-built mobile units and the use of fixed facilities away from the scene of the incident. However, the method of decontamination will depend on the type of material that has been released. The identification and assessment of the hazard jointly by the emergency services will determine this.

Removal of casualties from the immediate area surrounding the source of the release.

- 6.13 It will be necessary for responders to prioritise the order of evacuation and or rescue depending on the availability of resources or complexity of the situation.
- 6.14 If casualties are either mobile or capable of being removed from the inner cordoned area, trained personnel using appropriate levels of personal protection should carry this out.
- 6.15 Depending on the nature of the incident, an entrapped casualty may have to be partially decontaminated in situ. To facilitate this it may be appropriate to remove clothing and decontaminate exposed skin.

Dealing with non-ambulant casualties

- 6.16 Having removed the non-ambulant casualties from the Hot Zone, limited clinical support and decontamination can start simultaneously at the Decontamination Point(s)
- 6.17 Priority should be given to the decontamination of the face and mouth to allow for early resuscitation to take place before disrobing.

Ambulant casualties using the self decontamination methodology

- 6.18 Ambulant contaminated casualties should remain within the inner cordon outside the Hot Zone until they have been decontaminated.
- 6.19 It is likely that the majority of contamination will be contained on clothing. Suspected contaminated casualties should therefore be encouraged to remove top layers of clothing down to their underwear and this should also be removed if contamination is suspected.
- 6.20 The removed clothing should be treated as hazardous waste and therefore should be double bagged and placed in a controlled area, in

¹³ See section 7 below

accordance with the rules concerning continuity of evidence.

- 6.21 Ideally the correct percentages of detergent should be mixed before its use via temporary showers in the form of spray jets, hose reels or flat fan sprays. However this may not be practicable in many situations and if it cannot be achieved then plain water should be used.
- 6.22 Casualties who have undergone decontamination will need further clinical assessment and may need further treatment.

Danger

- 6.23 Risks to CBRN responders include harm from secondary devices, confused, violent or rowdy victims, undetected perpetrators attempting to escape, prisoners under arrest, and police/military weaponry. In the case of mass decontamination, and if there is impatience to enter the decontamination facility, responders should expect public disorder. For these reasons, the decontamination process must be adequately controlled from the outset.

Dealing with fatalities

- 6.24 The dead must at all times be treated with respect and every effort must be made to ensure the dignity of remains. During the immediate response, unless they are presenting a hazard to the living, the dead should where practicable be left in situ.

7. Mass decontamination – general issues

- 7.1 Mass Decontamination (MD) should always be carried out with due regard to any attendant risks including thermal shock, hypothermia and further injury.
- 7.2 Decisions on when to use MD will be taken by the ambulance service in consultation with the Senior Fire Officer and co-ordinating police commander.
- 7.3 MD should normally be undertaken at the inner cordon. However, circumstances (such as trapped casualties) might dictate that MD within the inner cordon is necessary. This decision should, if possible, take account of all operational exigencies including clinical advice.
- 7.4 The Fire Service will be equipped with mobile mass decontamination units. These will normally be deployed straddling the inner cordon. The process will include disrobing, showering and re-robing. Immediately following spraying, the opportunity to shelter, dry and don clean clothes must be provided.
- 7.5 The siting of the decontamination point should take account of wind direction and topography. In terrorist incidents a check should always be made around the decontamination point for secondary devices.

8. Cultural, Religious & Diversity issues

- 8.1 While the paramount consideration is always the health and safety of people affected by a CBRN incident, some will find the process of decontamination distressing. Responders should offer reassurance and be prepared to answer any queries at all times. Ensuring high levels of decency is vital.
- 8.2 Responders must always remain sensitive to the dignity, cultural and religious concerns and requirements of different communities and social groups and of the special needs of individuals.
- 8.3 Decontamination procedures are likely to take some time. People will want the opportunity to contact relatives and friends to reassure them they are all right, make arrangements for childcare etc. Responders will wish to be sensitive to this need and provide whatever help they can.

9. Further reading¹⁴

Name & authors of document	Published by	Date
Emergency Procedures Manual	Association of Chief Police Officers	2002
Arrangements for responding to nuclear emergencies	HSE Books	1994
Civil Nuclear Emergency Planning Consolidated Guidance	Nuclear Emergency Planning Liaison Group	2001
Concise guide to customs of minority ethnic religions: Collins D, Tank M, Basith A	Arena, Aldershot	1993
Conventional & Non-Conventional CBRN terrorism: Fire Brigade Procedures	CACFOA	2001
Counter Terrorist Contingency Planning guidance (<i>Confidential</i>)	Home Office	14 th edition, 2001
Dealing with Disaster	Home Office	3 rd edition, 1997
Dealing with Disasters Together	Scottish Executive	Revised 2001
Death and bereavement across cultures	Routledge, London	1997
Deliberate Release of Biological & Chemical Agents	Department of Health & NHS Executive	2000
Deliberate Release Guidance: Public Health Response (http://www.doh.gov.uk/epcu/cbr/response/introph.htm)	Department of Health	2002
Emergency Data Handbook	NRPB	2002
Jane's Chem-Bio Handbook	Jane's	4 th edition, 1999
Guidance for the Emergency Services on decontamination of people exposed to hazardous chemical, biological or radioactive substances	Scottish Executive	2002
Guidelines for Faith Communities when Dealing with Disasters	Church of England	1996
Major Incident Procedure Manual (5 th edition)	London Emergency Services Liaison Panel	1999
Military Aid to the Civil Community: a Pamphlet for the Guidance of Civil Authorities and Organisations	MOD	3 rd edition, 1989
Northern Ireland Standards in Civil Protection	Central Emergency Planning Unit of the Office of the First Minister and Deputy First Minister	1998
Protocol for the Disposal of Contaminated Water	Water UK	2002
Recovery: An Emergency Management Guide	Home Office	2000

¹⁴ Advice on how to obtain these and other relevant publications is available from the Librarian at the Cabinet Office Emergency Planning College, Easingwold, near York – website <http://epcollege.gov.uk>

Refugee reception centre handbook	British Red Cross	1999
Response to the Deliberate Release of Chemicals and Biological Agents, Guidance for Local Authorities	Cabinet Office, Civil Contingencies Secretariat	2001
The Terrorist Attack with Sarin in Tokyo on 20 th March 1995: Per Kulling	National Board of Health and Welfare, Stockholm	2000

Useful Links

Title and Content	Organisation	Link
BBC Nations and Regions Connecting in a crisis; meeting the public demand for information – A guide to working with the BBC during an emergency.	BBC	http://www.bbc.co.uk/connecting/inacrisis/index.shtml
Emergency Planning Co-ordination Unit Includes publications on good practice and public health response.	Department of Health	http://www.doh.gov.uk/epcu/index.htm
Emergency Planning College The college library contains many useful publications to borrow and purchase. The college also provides Emergency Planning training courses.	Cabinet Office	http://www.epcollege.gov.uk
London Prepared This site tells you about how London is checking that all its plans and procedures can stand up to any type of threat.	London Resilience Team (Cabinet Office)	http://www.londonprepared.gov.uk
National Steering Committee for Informing and Warning the Public	A partnership of central and local government, emergency services, public utilities, industry, the media and professional organisations.	http://www.nscwip.info

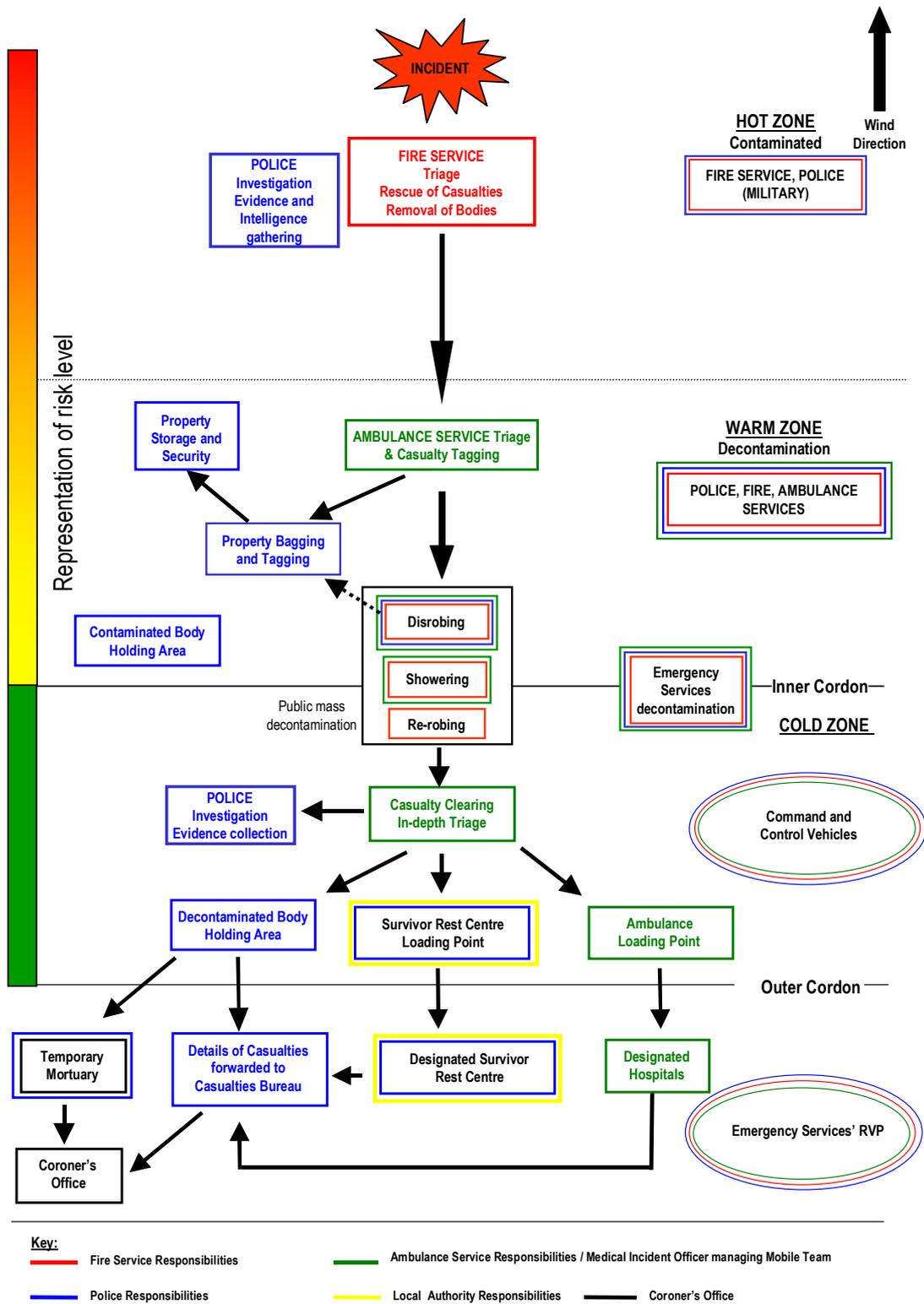
<p>UK Resilience</p> <p>Website for government information and links on civil contingencies, including press releases, recently issued government guidance for example, for business.</p>	<p>Cabinet Office</p>	<p>http://www.ukresilience.info</p>
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10. Glossary of terms and definitions

KEY TERM	DEFINITION
Cold zone	This is the area beyond the inner cordon.
Contaminated casualty	Any person who has come into contact with the contaminant and is physically injured or ill.
Consequence Management	Measures to protect public health and safety, restore essential services and provide emergency relief to business and individuals affected by the consequences of a crisis (such as an act of terrorism)
Crisis management	Measures to identify acquire and plan the use of resources needed to anticipate, to prevent and/or resolve crisis or an act of terrorism.
Decontamination	The reduction of contamination to lower the risk of further harm to victims and/or cross contamination.
Decontamination Point(s)	The position(s) on the Inner Cordon at which decontamination is carried out.
Emergency decontamination	The initial immediate decontamination carried out on suspected casualties to minimise the effects of a hazardous substance.
Hot Zone	The zone of the highest contamination. Only personnel in appropriate PPE will enter this zone (following a dynamic risk assessment.)
Inner Cordon	This surrounds the immediate scene and provides security for it. It is made up of the hot and warm zones. Personnel within the inner cordon must wear appropriate PPE commensurate to the risk.
Integrated Emergency Management (IEM)	A process for the development of flexible plans to enable any organisation to deal effectively with any emergency, foreseen or unforeseen. IEM consists of five key stages: Assessment, Prevention, Preparedness, Response, Recovery
Mass decontamination	Where the need for decontamination exceeds the resources of the Ambulance Service, to be determined locally in accordance with the Memorandum of Understanding (or equivalent).
Outer Cordon	This designates the controlled area into which unauthorised persons are not allowed.

Recovery	The process of restoring and rebuilding the community in the aftermath of an incident.
Resilience	The ability at every relevant level to detect, prevent and, if necessary handle disruptive challenges.
Rest Centre	A place provided by the Local Authority offering a warm, safe, indoor environment for people affected by a major incident, equipped for overnight accommodation and feeding.
Secondary device	A device designed to harm responders to the initial incident by exploding close by or contaminating them.
S.I.O.	Senior Investigating Officer. Detective leading the criminal enquiry.
Survivor reception centre	A temporary shelter established by the emergency services, with local authority assistance, for the victims of a disaster to provide basic initial needs.
Urban search and rescue	Search and Rescue activities carried out on collapsed structures (as opposed to those in the open air).
Victim	Any person directly affected by the incident who is neither ill nor injured.
Warm zone	In this zone some cross contamination from the Hot Zone is to be expected. The level of PPE will need to be determined on the basis of dynamic risk assessment.

**APPENDIX A
CBRN SCENE - DECONTAMINATION DIAGRAM¹⁵**



¹⁵ **Note:** Some services refer to the area inside the inner cordon as 'dirty' and beyond the inner cordon as 'clean'.

APPENDIX B

The "rinse-wipe-rinse" method of casualty decontamination ¹⁶

Equipment

For effective application of the rinse-wipe-rinse method, the following equipment is required:

- Water (preferably lukewarm)
- A bucket or other container (5-10 litre capacity)
- Detergent.
- A sponge or soft brush.

Procedures

- For contamination by industrial chemicals, suspected chemical weaponry, biological agents or other unidentified substances, make up a solution of 0.5% detergent in lukewarm water (5 ml of detergent per litre of water or about three squirts of liquid detergent into a bucket of water). These decontaminants are the best for use in the circumstances under consideration but their efficacy is limited.
- Having removed the contaminated person's clothes, rinse the affected areas with the detergent solution. This first rinse helps to remove particles and water-based chemicals, such as acids and alkalis. Rinse from the head downward.
- The rinse should be applied to contaminated areas of skin only, to avoid spread to uncontaminated areas.
- Wipe the affected areas with a wet sponge or soft brush. This first scrub helps to remove organic chemicals and petrochemicals that adhere to the skin.
- If the contaminant comprises primarily biological material, rinse for a second time.
- Otherwise rinse the decontaminated person with clean lukewarm water to remove the detergent and any residual chemicals and dry the skin with a clean towel.
- This process should not take more than three to five minutes. Repeat the rinse-wipe-rinse procedure only if skin contamination remains obvious.

¹⁶ When casualties have been contaminated with water reactive chemicals, subject to medical advice they should be treated with water and detergent, in copious amounts. Particular care should be taken when decontaminating near the eyes or orifices.

- ❑ It might not always be possible to guarantee that a casualty will be totally decontaminated at the end of this procedure. Remain cautious and observe for ill effects in the decontaminated person and in staff.

- ❑ Persistent CW agents are poorly soluble in water. The wipe stage is necessary to assist in their removal. The rinse water itself will be contaminated, and therefore hazardous, and a source of further contamination spread.

- ❑ Brushes and sponges used in this process will also be contaminated and should not be used on a new patient.

Notes on the use of hot and cold water¹⁷

1. Depending on the nature of the contamination the use of cold water may be preferable, however certain people are more susceptible to hypothermia than others e.g. the old, frail, infants and traumatised casualties. Wherever possible warm water should be given to reduce this possibility.

2. Cold Water.

Advantages

- Readily available
- Rapid decontamination
- Vaso constriction (Closure of pores of skin, reducing chemical absorption)

Disadvantages

- Hypothermia
- Thermal shock.

3. Warm Water

Advantages

- Reduces possibility of hypothermia and thermal shock

Disadvantages

- Slow
- Increases blood flow to the skin thereby increases the skin absorption of material
- Does not help dissolve some chemical weapon material

¹⁷ Water may turn some compounds caustic, in these cases or where water is not available, dry decontaminants may be considered.

- May not be readily available

APPENDIX C

Decontamination Run Off

1. The wet decontamination of casualties may produce contaminated water and the water run off should be contained to reduce any environmental impact from the decontamination.
2. In the case of large numbers of casualties suffering from chemical contamination speed is of the essence. The removal of clothing will considerably reduce any such chemical in the run off water.
3. Where there is a risk that the Fire Service will not be able to satisfactorily contain the run off from the decontamination process, the Environment Agency (Scottish Environment Protection Agency) and the local water and sewerage companies (Scottish Water Authority) should be alerted as early as possible. These agencies and companies will work together to mitigate the risks to the environment and to drinking water that the run off creates.
4. The environmental and possible longer-run health issues related to containment of water run off should be considered in accordance with existing guidance and protocols. However this should not delay the urgent need for casualties' decontamination in any life or health threatening situation, where containment may have to be of secondary consideration.
5. The police may require samples of run-off water for forensic analyses.

APPENDIX D

Signs and Symptoms of a Chemical Incident

1. Casualties suffering from generic chemical poisoning

Nausea, coughing (possibly with blood), tiredness, breathing difficulties, convulsions, skin reddening or blisters.

2. Casualty suffering from low doses of nerve agents

The pupil of the eye may become contracted. Other probable symptoms: headache, eye-pain, tightness of chest, and difficulty in breathing.

3. Casualty suffering from high doses of nerve agents

Secretion from the mouth, difficulty breathing, coughing, discomfort or cramps in the stomach, vomiting, involuntary discharge of urine and defecation. The discharge of saliva is powerful and the victim may experience running eyes and sweating, muscular weakness, tremors or convulsions.

4. Casualties suffering from doses of mustard agents

Mustard attacks the skin, eyes, lungs and gastro-intestinal tract. Mustard agent gives no immediate effect on contact and consequently a delay of between two hours and twenty-four hours may occur before pain is felt and the victim becomes aware.

The symptoms consist of aching eyes with abundant flow of tears, inflammation of the skin, irritation of the mucous membrane, hoarseness, coughing and sneezing. Severe injuries may involve loss of sight (although experience has shown this is usually only temporary), blisters on the skin, nausea, vomiting and diarrhoea together with severe respiratory difficulties.

5. Effects on vegetation

Leaves and foliage changing colour, light or matt spots as well as brown discoloration.

APPENDIX E

The United Kingdom National Reserve Stock for use following the release of CBRN material (“DoH pods”)

1. The UK National Reserve Stock has been established by the Department of Health acting with its counterparts in the devolved administrations. The stock’s use is not limited to terrorist events and can be called upon for use in major accidental releases. The stock is for rapid deployment in major incidents, including mass casualty situations. Part of the stock has been packed into pods (containers) designed to treat 100 people. Part has been distributed to strategic sites throughout the United Kingdom and part is held centrally and can also be made available.
2. Stocks include Nerve Agent Antidote Pods, Biological “Cipro” Pods, Biological “Doxy” Pods and Equipment Pods (for dealing with resuscitation, ventilation etc.), and Modesty Pods for use by Ambulance and Acute Trusts following decontamination. Each modesty pod contains sufficient paper towels, paper suits and space blankets for 100 people.

APPENDIX F

Cultural, Religious and Diversity issues: areas for possible planning¹⁸

1. The police, local authorities and other organisations will have systems in place to ensure that the cultural and religious concerns and requirements of different communities and social groups and of the special needs of individuals are not overlooked. The role of Family Liaison Officers is an obvious example.
2. The paramount consideration in a CBRN incident is the health and safety of the people affected. If mass decontamination procedures have become necessary, diversity issues will not have primacy over saving life or alleviating suffering.
3. The following are offered as possible areas for planning during the decontamination process, which is likely to be lengthy:
 - cultural considerations in respect of medical treatments, including ensuring enough female medical staff are available; personal hygiene and toilet needs;
 - dietary requirements;
 - provision of separate areas for men and women, especially if overnight stays are envisaged;
 - having interpreters on site or on call, especially (but not exclusively) in areas of high minority or refugee population;
 - having pre-prepared documents in various languages or in pictograph format to describe the decontamination process;
 - arrangements for ensuring places are set aside for personal worship;
 - sensitivity to various cultural attitudes and requirements in dealing with death, burial and bereavement,
 - ensuring that as far as possible buildings and facilities are suitable for disabled people.
4. Policy makers should also bear in the mind the requirements of the Race Relations (Amendment) Act 2000 and equality schemes produced in response to it. All public authorities must assess the impact of their policies on race equality, consulting stakeholders in the community, monitoring the impact of policies and publishing the results.
5. It should also be remembered that many groups of people will have their own special needs. For example, farmers may be particularly reluctant to leave their livestock, pet-owners will not wish to be separated from their pets etc.

¹⁸ See section 9 for useful reading or links to other guidance

APPENDIX G

Communications Issues¹⁹

1. A release of CBRN material, or the threat of an incident, will generate widespread public and media interest and concern. There will be a heavy demand for information and a need to communicate quickly and efficiently with the public, both directly and through the media, to advise them what they can do to help themselves and the emergency services.
2. There are well-established protocols and guidance for Chief Officers of Police covering working with the media during major incidents. Using those procedures, close liaison can be maintained between the police and the Government Information and Communication Service, whose staff have specific roles both at the centre of Government and near the site of any major incident, working to support the emergency services.
3. In relation to CBRN incidents and other events that may have a major public health dimension, the GICS would work with responding agencies, at both a national and local level to help formulate and deliver public health and safety messages. To achieve this effectively, GICS has almost instant capabilities to create emergency messages via conventional advertising media, print and broadcast media via press officers, through web sites and if necessary public call-centres. A central objective for GICS, which has high-level access to senior executives of both broadcast outlets and newspapers, is to emphasize the implications and importance of the messages that need to be transmitted to the public as a result of the consequences of a release or the threat of a release.
4. In incidents of this kind, the current communications strategy is built around the simple messages “Go in; Stay in; Tune in.” People are advised to go home or go inside some other safe location, stay indoors and tune in to local radio or television news programmes for advice and information. These messages would be reinforced through work already conducted by the BBC, through its “Connecting in a Crisis” publications²⁰ and consultation process, which the GICS supported. This gives senior emergency service staff in each locality a direct link to their relevant local radio station manager.
5. Members of the public who are on the site of an incident should follow the instructions of the Emergency Services. The best general advice for people who have not been involved in an incident but who fear they have been exposed to dangerous substances, is to contact their GP or NHS Direct (0845 4647).

¹⁹ To be read in conjunction with Chapter 5 of *Dealing with Disaster*

²⁰ This material, which currently covers England and is in the process being extended to the rest of the United Kingdom, can be accessed through <http://www.bbc.co.uk/connectinginacrisis/index.shtml>