Scottish Government: Health Resilience Unit

Guidance for Health Facilities on Surface Decontamination of Self-Presenting Persons Potentially Exposed to Hazardous Chemical, Biological or Radiological Substances

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**Document Title**: Guidance for Healthcare Facilities in Scotland on Surface Decontamination of Self-Presenting Person Potentially Exposed to Hazardous Chemical, Biological or Radiological Substances

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NHS Board Executive Directors
NHS Board Senior Managers and staff responsible for resilience and emergency planning

**Circulation**: All NHS Boards in Scotland
Scottish Ambulance Service
Health Protection Scotland

**Document Purpose**: To provide NHS Boards with guidance on providing a health response to the decontamination of self-presenting persons.

**Description**
The guidance:
- covers incidents when self-presenting people arrive at hospitals and other healthcare facilities.
- provides practical information on how to plan for, approach and deal with an incident based on the IOR principles
- provides practical information on how to plan for and deal with an incident where the IOR principles are not appropriate – i.e. where the contaminant is a caustic chemical and/or biological or radiological substance

**Superseded Documents**: The document supersedes: *Guidance for Hospitals on Surface Decontamination of Self-Presenting Person Potentially Exposed to Hazardous Chemical, Biological or Radiological Substances*, circulated to NHS Boards in April 2012

**Action required**: All territorial Health Boards should implement this guidance to ensure they have appropriate decontamination processes in place.
# Contents

## Section 1: Introduction and Background

| Acknowledgment | 5 |
| Audience | 5 |
| The Policy Context | 6 |
| The Aim and Scope of the Guidance | 6 |
| Legal Responsibilities | 7 |
| Board Responsibilities | 7 |
| HAZMAT/CBRN incident Plan and Risk Assessment | 8 |
| Recent Changes to Decontamination Procedures | 9 |
| The Underpinning Principles | 10 |
| Rationale | 10 |

## Section 2: The Planning and Response to Contaminated Self-Presenters

**PLANNING**
- General Principles for Planning | 12
- Training and Exercising | 13

**RESPONSE**
- Dynamic Risk Assessment | 14
- Incident Response Trigger | 16
- Incident Plan Activation | 16
- Casually Reception | 17
- Protection of Staff | 17
- Response – at Scene | 17
- Response – at Department | 18
- Decontamination Methodology | 18
- Medical Interventions / Countermeasures | 20
- Response at Other | 20

Healthcare Facilities | 20
Patient Care Post Decontamination | 21
Recovery from CBRN / HAZMAT Incidents | 21

POST INCIDENT
- Staff Debrief | 23
- Waste Water from the Decontamination Process | 23
- Management of Decontamination Equipment | 23
- Building Decontamination Contaminated Clothing and Personal Effects | 24

## Appendices

A. Definitions | 26
B. UK CBRN and HAZMAT Decontamination Algorithm | 30
C. The ORCHIDS Project | 32
D. Indicative Contents of Health Board Decontamination Plans | 35
E. Decontamination Team Roles | 39
F. Suggested Action Cards | 41
G. Decontamination Equipment and Area | 48
H. Decontamination Options and Process | 50
I. Dry Decontamination of Casualties | 55
J. Rinse-Wipe-Rinse Method | 56
K. Personal Protective Equipment | 58
L. References | 59
PART ONE – INTRODUCTION AND BACKGROUND

This section sets out the background and purpose of the guidance and who it is aimed at within Health Boards. It also provides an initial summary of recent changes in decontamination procedures.
1. Introduction and Background

1.1 This document provides guidance to Health Boards on managing people who have been exposed to chemical, biological, or radiological substances as a result of an accidental (HAZMAT) or a deliberate (CBRN) release, and who may self-present at a hospital or other premises. It highlights the particular features of such an incident over and above the generic planning and response arrangements that should be in place for any other major incidents and emergencies.

1.2 This guidance also provides specific updated information and guidance on changes to aspects of the decontamination process for certain chemical incidents. It does NOT change any aspects of the decontamination process for biological or radiological contamination (see Part 2 of this document).

1.3 Health Boards need to ensure that they have in place appropriate plans to respond to all hazards.

1.4 Promoting equality and addressing health inequalities are at the heart of NHSScotland’s values. Throughout the development of this document, due regard has been given to:

- the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it;
- the need to reduce inequalities between patients in access to, and outcomes from, healthcare services and in securing that services are provided in an integrated way where this might reduce health inequalities.

Acknowledgement

1.5 This guidance is a revision of the document: Guidance for Hospitals on Surface Decontamination of Self-Presenting Persons Potentially Exposed to Hazardous Chemical, Biological, or Radiological Substances, (April 2012).

1.6 In developing this guidance, the Scottish Government Health and Social Care Directorates acknowledges the kind support of NHS England Emergency Preparedness, Resilience and Response (EPRR), and the Task and Finish Group chaired by Peter Boorman, Deputy Head of Emergency Preparedness, Response and Resilience, NHS England (London Region), for allowing the use of material in this document which has been taken from their publication: Chemical Incidents: Planning for the management of self-presentation patient in healthcare settings (April 2015).

Audience

1.7 This document contains strategic national guidance for Health Boards in Scotland, and is especially relevant to any healthcare facility where contaminated patients could potentially self-present.

1.8 This guidance is aimed at NHS Board Chief Executives, Executive Directors, senior managers and staff responsible for resilience and emergency planning within territorial Health Boards. It also applies to the
integrated health and social care partnerships. Health Boards should ensure that primary care contractors are aware of this guidance and engage them in the relevant planning processes.

1.9 Preparedness to respond to a hazardous materials (HAZMAT) incident or a CBRN / CBRNe incident forms part of the Standards for Organisational Resilience which are due to be published in 2016.

The Policy Context

1.10 This guidance should be used in conjunction with and in the context of:

a) The Civil Contingencies Act 2004 and the Civil Contingencies Act (Contingency Planning) (Scotland) Regulations 2005
b) Preparing for Emergencies – Guidance for Health Boards in Scotland 2013
c) Standards for Organisational Resilience which will be published during 2016.
d) Business Continuity – A Framework for NHSScotland 2009
e) Guidance for the UK Emergency Services on the Decontamination of People Exposed to Hazardous Chemical, Biological or Radiological Substances 2013
f) Initial Operational Response to a CBRN Incident, July 2015
g) The results of the ORCHIDS Project

and subsequent versions of these documents as they are revised.

General Principles

1.11 A Board’s response to a HAZMAT/ CBRN incident should reflect the following general principles:

- all persons who self-present from the scene of a HAZMAT/ CBRN incident should be considered contaminated until the IOR principles/ UK CBRN and HAZMAT Decontamination Algorithm/ decontamination triage has determined otherwise
- the need for critical medical care should take priority over decontamination provisions but should, to the maximum extent possible, be subject to risk assessment to determine the appropriate precautions
- notwithstanding the need for medical intervention, early decontamination remains a priority, and should wherever possible be done before a casualty enters any part of a hospital building.

The aim and scope of the guidance

1.12 The basic tenet of this guidance is that the overriding priority is the saving of life.

1.13 The aim of the document is to provide generic guidance on the response expected from Health Boards providing a health response to decontamination of self-presenting persons.

1.14 The scope of the guidance is:

- to cover incidents when self-presenting people arrive at hospitals and other healthcare facilities. It is assumed that the majority of people in an incident involving potential exposure to hazardous chemical, biological and radiological substances will have been disrobed and decontaminated at the scene by the emergency services
to provide practical information on how to plan for, approach and deal with an incident based on the IOR principles – i.e. the use of disrobing followed by dry decontamination as the default response to a non-caustic chemical contaminant.

to provide practical information on how to plan for and deal with an incident where the IOR principles are not appropriate – i.e. where the contaminant is caustic chemical and/or biological or radiological.

1.15 The subject matter considered here is limited to the external contamination of people.

1.16 This guidance does not include advice on:
- Disrobe/decontamination at scene by the Scottish Ambulance Services or the Scottish Fire & Rescue Services.
- Ingestion of chemicals.

Legal Responsibilities

1.17 All Health Boards have a statutory duty to provide care for all patients including those that may be contaminated with chemical, biological or radiological material (or a nuclear explosion causes widespread effects due to the blast, heat and large amounts of harmful radiation). An incident involving such contaminated patients could result in the contamination of an area and subsequent closure of a facility (e.g. an Emergency Department) or an entire hospital, and therefore compromise a Board’s ability to fulfil its ability to provide accessible healthcare for the population they serve.

1.18 As employers, Health Boards also have a duty to protect their staff and members of the public from risk to health. This duty includes a requirement to ensure that:
- appropriate Risk Assessment has been carried out,
- staff are provided with suitable facilities and equipment to carry out their duties (including personal protective equipment (PPE) and an effective means of communication),
- staff are adequately trained in their duties (including the use of any equipment).

1.19 The Civil Contingencies Act (2004) (CCA) establishes the framework for civil protection within the UK and the Civil Contingencies Act (Contingency Planning) (Scotland) Regulations 2005 sets out how the act applies in Scotland. Both place a statutory duty on territorial Health Boards as Category 1 Responders to have plans in place to:
- deal with any emergency,
- deal with any threat to the provision of normal services during an emergency.

1.20 In this context Boards should have plans in place to deal with self-presenting patients, and have contingency plans in place to deal with the consequential impact on normal service provision.

Board Responsibilities

1.21 Health Boards must have appropriate measures in place so that they can respond to potentially contaminated patients who self-present at a hospital or other healthcare facility, and, as far as reasonably practical, continue to provide their other services.
1.22 To fulfil this Boards must ensure that:

- there is a designated person (Board-level Director – the ‘Decontamination Strategic Lead’) responsible for ensuring that appropriate decontamination arrangements are in place and maintained;
- at a tactical level there is a designated person for ensuring that appropriate decontamination arrangements are in place and maintained;
- appropriate HAZMAT/CBRN incident plans are in place that are proportionate, practical, and clinically effective; and are maintained as quality assured documents;
- plans are subject to regular exercise (annually) and review;
- appropriate decontamination equipment and facilities are provided;
- appropriate Personal Protective Equipment (PPE) is provided;
- staff have been identified to carry out the roles required to safely decontaminate patients (including at an operational level a Decontamination Officer who will lead the decontamination response). These staff must be suitably trained, including regular (annual) refresher training;
- plans are adequately resourced so that they can be implemented in full when necessary;
- plans account for self-presenters who arrive at healthcare facilities that do not have decontamination facilities.

1.23 Health Boards’ HAZMAT/CBRN Incident Plans should be developed in conjunction with the appropriate experts and local multi-agency partners (e.g. Scottish Ambulance Service, Scottish Fire and Rescue Service, Police Scotland, local authorities, and Health Protection Scotland) and should be based on robust local risk assessments.

1.24 Plans should be quality controlled documents authorised by the Decontamination Strategic Lead, and subject to regular exercise and review. It is recommended that these plans dovetail with the Board and Hospital Major Incident Plans. There should also be plans to lock down areas or an entire hospital to protect staff, patients, and facilities from cross contamination\(^1\) which can be activated as part of the Major Incident Plan.

1.25 There is the possibility that decontamination arrangements at a hospital may be overwhelmed by large numbers of casualties. Board decontamination plans should make allowance for this through the use of improvised or interim decontamination and the option of mass decontamination. In addition there should be pre-agreed arrangements in place with local partner agencies on what support can be provided to the hospital in these circumstances. These agreements should be made locally within Regional and Local Resilience Partnerships (RRPs/LRPs).

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1 See [Hospital Lockdown – A Framework for NHS Scotland](https://www.nhs.scot) issued jointly by Health Facilities Scotland and the Scottish Government.
Summary of recent changes to Decontamination Procedures

1.26 The introduction of the Initial Operational Response (IOR) has changed the approach to non-caustic chemical decontamination. Disrobing followed by dry decontamination is now the default process for managing persons contaminated by non-caustic chemicals. Typically non caustic chemicals will not produce any immediately obvious changes to the skin while caustic chemicals such as acids and alkalis may cause pain or blistering or discolouration. In some cases alkalis may not cause immediate pain following dermal exposure.

1.27 For all other contaminants (including caustic chemicals) where decontamination is indicated, the default process for managing persons remains the same, that is, wet decontamination. Dry decontamination using an absorptive material, such as cloths or paper hand towels, to blot and gently rub, provides effective removal of non-caustic chemical contaminants, and importantly rapidly diminishes the potential impacts of further chemical absorption through the skin. (See Appendix I)

1.28 However, further work is required to ascertain whether dry decontamination is sufficient to ensure that hair is decontaminated. The best advice that can be currently recommended is that a flexible risk based approach be taken, and that people with long or thick matted hair are advised to wash it in running water leaning forward (so as hair wash water does not run off onto the face and body) as the final stage of the disrobe and dry decontamination process. The decision to wash hair will need to take account of the disposal of waste water.

1.29 In any decontamination situation, lead staff will not be criticised for opting for the wet decontamination option if this is available and use of this is justified.

1.30 As with all tasks carried out in the NHS, safety, including patient and staff safety, is paramount. Safety within a decontamination environment can only be achieved with appropriate training and practice that must be regularly refreshed, and by the use of dynamic risk assessment. It is recommended that all decontamination staff attend training at least annually and that a record of this training is maintained.

1.31 The IOR is predominantly aimed at ensuring an immediate “first aid” type approach that is capable of being delivered by non-specialist staff in any setting without delay.

1.32 Patient disrobe and the dry decontamination option, are important mitigation processes that:
- are ‘first aid’ measures that are proven to reduce exposure
- reduce adverse health effects in the patient;
- permit faster access to medical care;
- protect the health, safety and wellbeing of staff;
- protect the integrity of the health care infrastructure.

1.33 Research indicates that the single most important step for decontamination of people contaminated by non-caustic chemical material is the prompt removal of clothing, at least to underwear, ideally within 15-20 minutes of exposure to the contaminant (or as soon as is
reasonably practicable) and the use of dry decontamination.

1.34 It does not mean that subsequent specialist advice may not also recommend the use of alternative decontamination processes including wet decontamination. Wet decontamination is advised for the decontamination of hair following disrobe and dry decontamination.

1.35 During wet decontamination the duration of decontamination has changed to between 45 and 90 seconds and ideally, to use a washing aid such as a cloth.

The underpinning principles

1.36 The patient decontamination principles described here are from a strategic perspective. The principles are meant to guide, but not specify, operational practices which remain the responsibility of individual organisations.

1.37 The purpose of this guidance is to inform a more uniform approach in the way in which decontamination is carried out throughout NHSScotland. Health Boards should therefore review their current plans and processes against this guidance and amend these as appropriate to ensure a consistent approach is in place.

1.38 Previous protocols for the response to a chemical incident dictated that unprotected responders should withdraw from the scene and not approach people who might be contaminated and await the arrival or establishment of specialist trained and equipped assets. However recent research has pointed to the need for a more rapid and flexible approach that is more patient focused yet maintains the health, safety and wellbeing of contaminated people and responders assisting them (whether at scene or at healthcare facilities).

1.39 The ORCHIDS project (Optimisation through Research of Chemical Incident Decontamination Systems), delivered quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and scenarios requiring decontamination. A description of the ORCHIDS project and its principal findings is presented at Appendix C. Health Boards may find it helpful to refer to this annex when providing training to decontamination staff.

Rationale

1.40 In the year to the end of December 2014, there were 179 HAZMAT type incidents in Scotland as recorded by Health Protection Scotland. Of these, 113 were chemical incidents, 64 were microbiological and 2 involved exposure to radiation.
PART TWO – THE PLANNING AND RESPONSE TO CONTAMINATED SELF-PRESENTERS

This section provides information and guidance for Health Boards on planning for, and responding to, the arrival of decontaminated persons at hospitals or other healthcare facilities.
2. PLANNING AND RESPONSE TO CONTAMINATED SELF-PRESENTERS

PLANNING

General principles for planning

2.1 Previous guidance for dealing with people who had been contaminated by chemical, biological or radiological contamination required responders and other staff to withdraw from the scene and the people, and to await specialist staff and equipment to arrive or to be deployed.

2.2 However, a new approach is now in place for non-caustic chemical contamination, based on using STEP 1,2,3 Plus where the Plus indicates that action can be taken in the absence of specialist equipment and resources such as PPE. The principle changes required to plans are shown at Appendix D in the context of an outline of a hospital decontamination plan.

2.3 All health boards should have appropriate and proportionate plans and arrangements in place for the decontamination of potentially contaminated self-presenting patients. A commonality of response will be required for all incidents involving contamination regardless of cause, source or scale.

2.4 All decontamination plans need to be coordinated and should include arrangements for:
- Describing/detailing how contaminated people should be managed at the scene and in the pre-hospital/healthcare facility context so that there is a clear understanding of what will have happened to contaminated people before they arrive.
- All hospitals with fully designated emergency departments should have plans that include arrangements for responding to incidents involving contamination, including self-presenting people who may have been contaminated
- All healthcare facilities including, for example primary care centres, should have appropriate and proportionate plans that will enable them to deal with self-presenting people who may have been contaminated. As a minimum these plans should include arrangements for the initial disrobing of contaminated people, improvised decontamination including dry decontamination and long or matted hair washing (where indicated), and the escalation and reporting of an incident as appropriate. There is existing guidance Preparation for incidents involving hazardous materials: guidance for primary and community care facilities’ and associated training material available through the NHS England website and this may be helpful to health boards.

2.5 Some incidents can be handled at a local level but, where the scale of an incident puts it beyond the capacity of local resources, the first recourse is usually to request mutual aid from partners (other Health Boards, the Scottish Ambulance Service, Scottish Fire and Rescue etc.

2.6 Plans need to recognise that significant numbers of people concerned about the health impact of a HAZMAT/CBRN contamination

2 www.england.nhs.uk/ourwork/eprr/hm/
incident but not necessarily affected may attend hospitals and other NHS sites, even though they do not require any subsequent intervention or treatment.

**Training and Exercising**

2.7 Training and exercising arrangements should be in line with the requirements of the Standards for Organisational Resilience which will be published during 2016.

2.8 Health boards will need to ensure that staff are well prepared and can be supported appropriately in the event of a contamination incident. This will require health boards to:
   a. Facilitate training for staff that may be called upon to manage contaminated people, including information on what signs and symptoms may be present. This should include clinical and non-clinical staff as appropriate.
   b. Ensure staff that may form part of a decontamination team are provided with and trained in the use of appropriate Personal Protective Equipment (PPE) including the Powered Respiratory Protective Suit (PRPS) if that is appropriate. Staff need to be competent and rehearsed in their response to an incident with training that is provided at appropriate intervals on an on-going basis and which requires mandatory attendance.
   c. Maintain accurate records of all staff that have undergone specific training.
   d. Ensure that appropriate staff receive updates to their training on an annual basis and in line with local training requirements and when there are any significant changes to national or local procedures.
   e. Investigate where training and training materials can be sourced, for example from Health Boards running in house training, the Scottish Ambulance Service, HPS, Public Health England, and Resilience Direct.
Dynamic risk assessment

2.9 A risk-based approach should be used to determine the appropriate response level and associated strategies and tactics (including PPE, medical interventions and decontamination). Figure 2 shows the effectiveness of the disrobe and decontamination stages expressed as the "rule of tens".

2.10 Despite the best efforts of the emergency services, it is likely, especially in larger incidents, that some people who may be contaminated will leave the immediate area and seek assistance from any nearby healthcare facility. This could be a GP practice, a community hospital, a mental health hospital, as well as an Emergency Department.

2.11 A balance must be achieved between the need to protect healthcare facilities, staff and uncontaminated patients and the provision of timely and appropriate care to people self-presenting from a HAZMAT/CBRN incident.

2.12 Dynamic risk assessment takes into account the rapidly evolving nature of an incident. Risk assessment needs to be carried out as soon as possible and in consultation with any other emergency service partners. The aim is to balance the need to save life and reduce harm with the need to mitigate risk to NHS staff members.

2.13 The key elements of the risk assessment process are:
- confirming what you are seeking to achieve e.g. safe decontamination of people
- identifying hazards e.g. nature of contaminant; scale of event; length and quantity of hair and whether advice needs to be given to wash hair.
- deciding who might be harmed and how e.g. staff members, public, healthcare facilities;
- consideration of the impact of the external environment e.g. the state of the weather
- evaluation of the risks and decision on precautions and control measures e.g. disrobing; dry decontamination; need to proceed to wet decontamination
- recording the elements of the decontamination process e.g. keeping patient records; logging the incident.
- reviewing the assessment and updating as necessary.

2.14 Dynamic risk assessment underpins any response to a HAZMAT/CBRN incident. In instances where there is a lack of warning and a need for urgent action, prompt risk assessment and decision making might be required based on limited information and advice from other organisations and/or from the people involved in the incident themselves. This may result in a decision for urgent decontamination of people whose contamination status is not clear.

2.15 In this context, the dynamic risk assessment process should focus on the following elements (illustrated in Figure 1):

Focus on the person to be decontaminated
- communication
- safety e.g. protection from hypothermia
• modesty e.g. take account of cultural needs; gender needs
• provision of accessible instructions and information e.g. provision of interpreters; provision of pre-prepared printed instructions

What resources are available and required?
• numbers and type of available staff
• variation by time of day/day of the week
• access to specialist equipment including wet decontamination and PPE
• quantity of any equipment that can be made available
• deployment of staff e.g. pre-allocation of staff at the start of each Emergency Department shift to roles in the event of an incident

What is the scale of response required?
• how many people presenting?
• how many people at scene?
• what is the nature of any injuries?

What is the environment to work in?
• what is the setting e.g. acute hospital; primary care; community health facility?
• what is the type of building?
• is there the ability to lockdown?
• what is the weather and its impact e.g. wind direction; temperature?

Is anything known about the contaminant?
• what is known about the contaminant? Is that information from a reliable source?
• the approach to be used on non-caustic chemicals
• all other contaminants to be dealt with in accordance with existing plans / guidance
• what processes will be needed to seek advice about an agent? National Poisons Information Service (NPIS)/ Toxbase/ HPS/ PHE.
Incident Response Trigger

2.16 Health Boards can become aware of an incident through one or more of the following triggers:

- notification from the emergency services, an industrial site, the military, or other source
- the arrival of patients showing a history of exposure
- the unannounced arrival of casualties exhibiting collapse, skin blistering/burns, visual disturbance, sweating, breathing difficulties, lachrymatory symptoms, salivation, convulsions, muscle tremors, hoarseness, or major gastrointestinal disturbance. (It is important to note that exposure to some dangerous substances may not result in symptoms in the initial period).

2.17 When the first notification of an incident is the unannounced arrival of casualties, hospitals should notify other agencies/ departments (emergency services, local authority, public health, HPS).

Incident Plan Activation

2.18 Any of the triggers set out above should activate the Hospital Decontamination Plan and where appropriate the Health Board’s HAZMAT/CBRN Incident Plan. The initial phase of such a plan should
include a procedure which involves the notification of key departments /individuals. These include:

- the Emergency Department (Nurse in Charge)
- “On-call” Duty Manager
- the Decontamination Strategic Lead

2.19 It may also be necessary to initiate the hospital’s Major Incident Plan at this stage, since frontline Emergency Department staff may be fully occupied with the response. Such a decision should be communicated to other organisations.

2.20 Consideration should be given to whether the Hospital Lockdown Plan should be initiated as a temporary measure, until further information about to the extent of the incident is available. These arrangements can be revoked or extended as required. Plans should address what support will be available from the Police in locking down a hospital should it be required.

Casualty Reception

2.21 Decontamination Plans should indicate that wherever possible, contaminated casualties should be received out-with the hospital, in an area that prevents cross contamination of other patients, staff, and the public.

2.22 Where there is no warning, potentially contaminated self-presenting patients may gain access to the hospital building. Plans should include arrangements to move such patients to an appropriate area outside the hospital, for triage and possible decontamination, and should also include a process to deal with any area of the hospital that might have become contaminated.

2.23 Specific awareness training should be provided to all staff that may either receive the first notification of an incident or come into first contact with self-presenting patients (e.g. Receptionist, Porters).

Protection of Staff

2.24 The level of PPE required should be based upon the particular hazards of the contaminant and with reference to appropriate plans and guidance for the organisation and taking account of training in its use. More details are set out in Appendix K.

Response – at scene

2.25 This description of what happens at scene is included here to help inform Health Boards of the revised approach to management of decontamination at scene.

2.26 Previous protocols for the response to a HAZMAT/CBRN incident, dictated that unprotected emergency responders should withdraw from the scene and await the arrival of specialist trained and equipped assets (STEP 1-2-3).

2.27 Research has indicated that a rapid response is critical for effective life-saving following a HAZMAT/CBRN incident. Specific actions, which include the removal of casualties from the area of gross contamination and the removal of their outer clothing within the first 15-20 minutes (or as soon as is reasonably practicable) can save life and can be achieved without putting NHS staff and emergency service responders at undue risk of exposure by the use of the STEP 1-2-3 Plus method as set out in the IOR.

2.28 There is a significant change to current procedures at the scene with
the introduction of disrobing and decontamination by the emergency services as the first response.

**Response – at Emergency Department**

2.29 To match the response at the scene, the response in the Emergency Department (and other healthcare facilities) must change to take account of the research.

2.30 The process of disrobing is highly effective at reducing reaction to HAZMAT/CBRN materials when performed as soon as possible after exposure. Disrobing to underwear should ideally be undertaken within 15 to 20 minutes but should still be done even if this ideal time period has been exceeded.

2.31 If disrobing is followed immediately by appropriate decontamination carried out effectively, research has shown that the vast majority of skin contaminants are removed.

**Decontamination Methodology**

2.32 Decontamination can take several forms ranging from improvised decontamination through to full Clinical decontamination.

2.33 More information on decontamination options is set out in Appendix H.

2.34 Improvised decontamination is the use of an immediately available method of decontamination prior to the use of specialised resources. This should be performed on all disrobed people as a priority.

2.35 Dry decontamination, which should be considered the default process for non-caustic chemical incidents, is the use of dry absorbent material such as paper tissue or cloth to blot the exposed skin.

2.36 Unless casualties are demonstrating signs or symptoms of exposure to caustic or irritant substances, for example, redness, itching and burning of the eyes or skin, exposed skin surfaces should be blotted and rubbed with any available dry, absorbent material such as paper tissues (e.g. blue roll). All waste material arising from disrobing and decontamination should be double bagged in clinical waste bags (or equivalent) and tied for disposal at a later stage.

2.37 Existing local procedures should be followed for processes including re-robing, handling of personal items, and management of hazardous waste.
2.38 Wet decontamination – to be used if there are signs and symptoms of caustic chemical substances, as well as radiological and biological contaminants – is the use of water from any available source such as taps, showers, hose-reels, sprinklers.

2.39 Water should only be used for decontamination where signs and symptoms are consistent with exposure to caustic substances such as acids or where the contamination is biological or radiological in nature.

2.40 Appendix J gives details of the recommended ‘Rinse – Wipe – Rinse’ method of decontamination for casualties where it is determined that wet decontamination is appropriate. This procedure should be repeated only if skin contamination is obvious. Some chemical agents are poorly soluble in water and may require repeated applications of the rinse-wipe-rinse methodology.

2.41 Cloths or sponges used for patient decontamination will be
2.42 Emergency decontamination would be performed on all disrobed casualties, unless medical advice is given to the contrary.

2.43 Generally in the initial stages of an incident and dependent on the symptoms and needs of the contaminated people, casualties, other people or first responders may initiate dry decontamination.

**Medical intervention / countermeasures**

2.44 Health services have responsibility to undertake disrobe, decontamination and re-robing of live casualties following an incident involving chemical, biological or radiological materials or substances. Disrobing and decontamination is considered to be a medical intervention because without it, casualties’ health would deteriorate. This function is largely carried out by the emergency responders (Scottish Ambulance Services/Scottish Fire and Rescue Services) at the scene of an incident. However, in a large-scale incident or emergency, health service resources may need to decontaminate people particularly those who self-present. Existing local processes for re-robing should be incorporated into the revised processes.

2.45 At the point where clinical care needs to be applied, any risk assessment already undertaken should be reassessed.

2.46 Casualties should undergo dynamic re-triage in the event of any significant delay as symptoms may have developed during the waiting period. Clinical care can then be applied if necessary.

**Response – at other healthcare facilities**

2.47 The response to the presentation of contaminated people at Healthcare facilities other than an Emergency Department, should aim to follow the principles and approaches outlined in the guidance above.

2.48 It is recommended that these facilities have:

- the ability to lockdown should they receive a warning that self-presenting patients may arrive
- the ability to quarantine any self-presenting patient that may enter the facility to minimise the risk of cross contamination of staff and other patients
- mechanisms in place to summon help from the emergency services
- provide appropriate staff training
- the ability to undertake improvised decontamination if required including following the IOR principles.

2.49 The response made should be appropriate and proportionate to the setting and the event.

2.50 Guidance and training material for Primary and other healthcare facilities is available through the NHS England website and this may be helpful.

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3 [https://www.england.nhs.uk/ourwork/eprr/hm/](https://www.england.nhs.uk/ourwork/eprr/hm/)
Patient Care Post Decontamination

2.51 Plans should include arrangements for re-robing, and appropriate aftercare. This may involve admission to Hospital for treatment or observation, transfer to local Rest Centre or other place of safety or discharge. Clothing and valuables should not be returned to individuals until appropriate scientific advice, and police advice for possible evidential requirements, has been received.

2.52 Although externally decontaminated there may still be casualties with some internal contamination. Plans should make arrangements for the isolation of these patients to avoid potential cross-contamination of staff and other patients. Staff should remain vigilant for the signs of ill effects in decontaminated casualties and potentially contaminated colleagues.

2.53 Patients who self-present may have been witness to a criminal act. Although the need to preserve life remains the priority in such cases, plans should include arrangements to record contact details of all self-presenters prior to discharge.

2.54 Plans should also consider aftercare requirements (i.e. follow up by Public Health).

Recovery from CBRN and HAZMAT incidents

2.55 Business Continuity Plans should be reviewed to ensure that they reflect changes made to Major Incident and Incident Response Plans.

2.56 Should the incident be extended, have a serious impact upon the Health Board’s operations or upon local residents’ health or care, recovery planning may be needed to manage the transition back to normality. Should this be needed, the planning should be started as soon as this need is recognised, i.e. during the incident response. Recovery planning may be carried out internally and/or on a multi-agency basis. If multi-agency recovery planning is needed, it will be led by the Local Authority as part of their statutory role. NHS organisations should identify as part of their Incident Response Procedures, an appropriate process for recovery management, including allocation of recovery specific senior personnel, drawing up and implementing a recovery plan, liaising with partners and contributing to the community recovery effort led by the Local Authority as necessary; the extent of the incident impact will dictate the extent of the recovery plan.

2.57 Health Boards must ensure there are robust arrangements in place that support responding to the psychosocial needs of patients and staff affected by significant incidents, emergencies, and disasters.

2.58 Health Boards must ensure staff welfare in general. Welfare includes anything that is done for the comfort and improvement of staff. Measures include monitoring working time and should be in line with the Working Time Regulations (1998) and subsequent amendments. NHS incident commanders must be aware of the potential for stress and/or fatigue to impact upon individual performance and decision-making. They must ensure that they take account of their own and their team’s levels of stress and fatigue and that effective arrangements are in place to
minimize the potential impact for example rest-breaks and shift systems for protracted incidents.

2.59 HAZMAT/CBRN incidents may lead to heightened levels of psychological stress amongst staff, together with any potential additional physical impacts related to decontamination (such as the wearing of PPE or undertaking decontamination in one of the described facilities/units).
POST INCIDENT

Staff Debrief

2.60 It is good practice to hold a debrief with staff involved immediately after an incident has ended (hot debrief) and a further debrief (cold debrief) should be held within a few weeks of the incident and a report should be produced. This report should include lessons identified, including what worked well and what didn’t work so well and any relevant actions, with implementation timescales. The Hospital Decontamination Plan should be amended as appropriate to reflect these lessons learnt. Where other agencies were involved a multi-agency debrief may be beneficial.

Waste Water from the Decontamination Process

2.61 Waste water from the decontamination operation must be considered contaminated and should be quarantined until the appropriate route for disposal is decided. Guidance should be sought from the Scottish Environment Protection Agency (SEPA) and Scottish Water.

2.62 Boards must obtain permission to run this water to drain from Scottish Water and SEPA. If it is not possible to run the waste water to drain, then arrangements must be put in place to dispose of contaminated water through an appropriate licensed waste disposal company.

2.63 If the quantity of waste water exceeds the available storage capacity, and there is a need for further urgent decontamination then a decision to run this excess direct to the drain may be necessary.

2.64 If any potentially contaminated water is released into the drainage system either deliberately or accidentally, then SEPA and Scottish Water must be alerted as soon as practicable.

Management of Decontamination Equipment

2.65 Equipment used during the decontamination process should be considered as potentially contaminated and should be quarantined until decontamination can be carried out. Advice on the appropriate method for equipment decontamination can be obtained from:

- the company responsible for the contamination (after a HAZMAT incident at an industrial site/transport spillage etc.)
- other industry experts (i.e. the manufacturer)
- the Government Decontamination Service (GDS)
- Public Health Department
- Health Protection Scotland

2.66 It should be noted that any waste water from equipment decontamination may also be subject to the same restrictions as waste water from the decontamination process.

Building Decontamination

2.67 When contaminated patients have gained entry to an Emergency Department and/or other parts of a hospital, these areas should be considered as potentially contaminated and should be subject to quarantine/restricted access until the area can be decontaminated. Hospital Buildings should be treated in line with The Strategic National Guidance on the Decontamination of buildings, infrastructure and open environment exposed to chemical, biological,
radiological or nuclear materials (Cabinet Office, 2011).

**Contaminated Clothing and Personal effects**

2.68 Clothing, valuables and personal items removed from self-presenting casualties must be considered as contaminated and expert advice should be sought (e.g. from Public Health, HPS, GDS, SEPA) prior to their return to their owner or as to the appropriate means for disposal. It should be noted that, in those cases where there has been a CBRN incident, such items of clothing may be required by the Police as criminal evidence.

2.69 Any equipment that cannot subsequently be decontaminated effectively and economically should be disposed of as contaminated waste. The final disposal of this waste should only be undertaken after the hazard has been identified and specialist advice taken on the safest disposal options to prevent further contamination or harm.
APPENDICES
Appendix A

Definitions used in this document

The following list includes terms and abbreviations used within this guidance or are terms closely associated with the response to such incidents:

**Casualty**
Person who is symptomatic and contaminated presenting to emergency services and at health facilities

**Caustic**
Capable of burning, corroding, dissolving or eating away by chemical action. Causing a burning or stinging sensation. Causing irritation

**CBRN and/or CBRNE**
Chemical Biological Radiological Nuclear and Chemical Biological Radiological Nuclear Explosives. A term used to describe Chemical, Biological, Radiological, Nuclear and Explosive materials

CBRNE terrorism is the actual or threatened dispersal of CBRN material (either on their own or in combination with each other or with explosives), with deliberate criminal, malicious or murderous intent

**CCA**
The Civil Contingencies Act 2004

The CCA establishes the legislative framework for civil protection within the UK. The Civil Contingencies Act (Contingency Planning) (Scotland) Regulations 2005 describes how the provisions of the act apply in Scotland

**Contaminant**
A substance in an incident or disruption that is either present in an environment where it does not belong or is present at levels that might cause harmful effects to humans or the environment

**Contamination**
The presence of a minor and unwanted constituent (contaminant) in material, physical body, natural environment, at a workplace

**Clinical Decontamination**
The process where contaminated persons are treated individually by trained healthcare professionals using purpose designed decontamination equipment

**Decontamination**
The process of cleansing the human body and other surfaces to remove contaminants, or the possibility (or fear) of contamination, by hazardous materials including chemicals, radioactive substances, and infectious material

**DIM**
Detection, Identification and Monitoring
Provided by Fire & Rescue Services, DIM provides a capability to a major national incident, involving actual or potential chemical, biological, radiological or nuclear (CBRN) or hazardous materials (HAZMAT)

**Dry decontamination**
The blotting and rubbing of exposed skin surfaces with dry absorbent material – a form of improvised decontamination

**Emergency decontamination**
A procedure carried out in advance of specialist resources where it is judged as an imperative that decontamination of people is carried out as soon as possible

**Exposed persons**
Self-presenters at NHS funded provider locations or those at scene who are asymptomatic

**Exposure**
Where someone has come into contact with a Contaminant / Hazardous Material

**HAZMAT**
Hazardous materials also called HAZMAT Abbreviation for hazardous materials although it is commonly used in relation to procedures, equipment and incidents involving hazardous materials

A hazmat incident will be an accidental incident

**HPS**
Health Protection Scotland

HPS is responsible for planning and delivering effective and specialist national services which co-ordinate, strengthen and support activities aimed at protecting all the people of Scotland from infectious and environmental hazards

**IOR**
Initial Operational Response

The IOR programme has been introduced by the Home Office across all blue light emergency services and to key first responders including the NHS, to improve patient outcomes following contamination with hazardous materials (HAZMAT) or a chemical, biological, radiological or nuclear (CBRN) incident

**Improvised decontamination**
The use of an immediately available method of decontamination prior to the use of specialist resources

**Interim decontamination**
The use of standard equipment to provide a planned and structured decontamination process prior to the availability of purpose designed decontamination equipment

**NHSScotland**
National Health Service in Scotland
The ORCHIDS project aims to strengthen the preparedness of European countries to react to incidents involving the deliberate release of potentially hazardous substances. Response capabilities can be enhanced by identifying ways of optimising decontamination processes for emergencies involving large numbers of casualties.

**Patient**
A person who may require disrobing and decontamination having been at or near the location of hazardous materials release and who was potentially exposed and therefore potentially contaminated and who may require some form of care (e.g. decontamination, supportive medical care, lifesaving interventions, antidote therapy, communication and reassurance).

**PHE**
Public Health England

PHE is charged with protecting the health and well-being of United Kingdom citizens from infectious diseases and with preventing harm and reducing impacts when hazards involving chemicals, poisons or radiation occur.

**PPE**
Personal Protective Equipment

Protective clothing, helmets, goggles or other garment designed to protect the wearer’s body from injury.

**RRPs/LRPs**
Regional Resilience Partnerships (RRPs)/Local Resilience Partnerships (LRPs)

RRPs and LRPs are the principal arenas for multi-agency cooperation in civil protection at local level. They have a key role in preparation and response to emergencies.

**Self-presenters**
People may leave a scene before cordons are put in place, either attempting to flee from danger or not immediately realising that they may have been contaminated and turn up at A&E, a primary or community care facility, or another healthcare facility.

**STEP 1-2-3**
Safety triggers for emergency personnel

**Step 1 – One collapsed casualty:**
- approach using normal procedures – CBRN contamination unlikely.

**Step 2 – Two collapsed casualties at one location – CBRN**
contamination possible:

- approach with caution. Consider all options
- if CBRN possible or suspected follow the advice for STEP 3.

Step 3 – Three or more collapsed casualties at one location:

- DO NOT approach the scene – CBRN contamination likely

**STEP 1-2-3 Plus**

The Plus indicates that action can be taken in the absence of specialist equipment and resources such as PPE

**Wet decontamination**

The use of water to aid the removal or reduction of hazardous materials to lower the risk of further harm to those affected and/or cross contamination

**Worried well**

Members of the public who may be near to an incident when it happens, or who have heard about it third hand, and who are worried that they have been affected by the incident, or consider themselves likely to need medical intervention
Appendix B - UK CBRN and HAZMAT Decontamination Algorithm (UKCHDA) for Determining the Appropriate Decontamination Response

The UKCHDA was developed as a tool to assist in deciding whether decontamination is required and, if so, how it should best be delivered. The procedures are consistent with existing guidance on decontamination protocols, routine triage procedures, and available options for decontamination.

The UKCHDA comprises three sections:
(i) Injury & exposure assessment.
(ii) Decontamination assessment.
(iii) Decontamination techniques.

It describes routes to sieve a range of possible casualty types:
(i) Uninjured, injured, exceptional circumstances.
(ii) Exposed or potentially exposed, unexposed.
(iii) With or without visible signs of contamination by a hazardous or non-hazardous CBR substance.
(iv) Gaseous exposures.
(v) Symptomatic or asymptomatic casualties.

Leading to one of four principal outcomes:
(i) Decontamination not required – Triage, treat & transport.
(ii) Carry out Improvised Decontamination – Triage, treat & transport.
(iii) Triage & decontaminate (Improvised, Clinical and Mass Decontamination).
(iv) (Conduct essential Improvised Decontamination and immediately transfer to hospital.

Involving one of four decontamination methods:
(i) Improvised Decontamination.
(ii) Interim Decontamination.
(iii) Clinical Decontamination.
(iv) Mass Decontamination.

How to use the UKCHDA
(i) The UKCHDA can be applied to individual casualties, or groups of similar casualties in a mass exposure event, to prioritise and identify the most appropriate decontamination option.
(ii) An assessment of the casualty’s injury and exposure status is the starting point to the pathways determining appropriate outcomes. Consider the Criteria/Questions (grey boxes) on the pathway, to determine an appropriate outcome for decontamination and treatment.
(iii) If there is significant uncertainty about the need for decontamination or the potential for harm from an exposure hazard then serious consideration should be given to decontamination.
(iv) Dry decontamination should be performed on all disrobed casualties, unless medical advice is received to the contrary.
(v) Dry decontamination should be considered the default process for an incident involving chemicals unless the use of water is justified. Water should not be used for decontamination unless casualty signs and symptoms are consistent with exposure to caustic substances such as acids or the contamination has been identified as biological or radiological in nature.
Appendix C: The ORCHIDS Project: background and principle findings

The decontamination response is predicated on process rather than patient outcome and is mainly based on perceived best practice.

The Optimisation Research Chemical Incident Decontamination Systems (ORCHIDS) projects aimed to strengthen the preparedness of European countries to react to incidents involving the deliberate release of potentially hazardous substances. The intention was to enhance response capabilities by identifying ways of optimising current decontamination processes for emergencies involving large numbers of casualties.

This project delivered quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and scenarios requiring emergency mass casualty decontamination, by addressing a full range of issues through applied toxicological research to mass casualty decontamination exercising and simulation modelling. Applied research into priority contaminants was undertaken in a programme of laboratory research trials using a range of toxic materials and chemical warfare agents. The outcome of these trials provides evidence-based recommendations on the optimum techniques for effective decontamination. A series of operational research trials with human participants using simulant agents have tested the efficacy of the optimised decontamination methods. Two large-scale mass casualty decontamination exercises were also conducted, focusing on the operational processes and capacities of decontamination facilities. Quantitative data generated from the operational research trials and exercising was used to create a realistic simulation model of mass casualty decontamination response. This model has been used to test response capacity to mass casualty scenarios.

The ORCHIDS project was the first to explore mass casualty decontamination from ‘first principles’. Evidence-based best practice guidelines have been produced and disseminated to key stakeholders within the EU and beyond. Recommendations for the procurement of second-generation mass decontamination response programmes have also been generated.

This became the ORCHIDS programme that started in April 2008 and comprised the following projects:

- **ORCHIDS 1**: The purpose of this project was to evaluate existing mass casualty decontamination procedures to identify rational means of optimising efficiency.
- **ORCHIDS 2**: This project was designed to specifically address the time-dependencies of disrobing and decontamination and to assess existing and novel personal decontamination products as a potential form of interim decontamination.
- **Clot and Clean**: Whilst mainly limited to wound decontamination, a number of studies performed during the project have direct relevance to personal decontamination and so have been included in this review.

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4 Clot and clean refers to the two principal aims of developing a product to arrest uncontrolled haemorrhage and neutralise the effects of CW agents from penetrating wounds.
Two further projects were instigated during the course of the programme to address specific questions arising from initial laboratory work:

- **ORCHIS**: The objective of this short (6 month) human volunteer study was to build upon the initial outcomes of ORCHIDS 1 to evaluate the impact of pictorial washing instructions, duration of showering and the provision of a washing aid (cotton flannel) on the efficiency of mass casualty decontamination using a biological/radiological (BR) simulant on human volunteers.

- **MSD**: The purpose of this short (6 month) human volunteer study was to determine the minimum duration of showering required to perform a full and effective body wash.

**Summary of Principal Findings of the ORCHIDS Project**

Overall, the existing mass casualty decontamination procedure can be optimised to improve performance. However, the evidence suggests that immediate disrobing followed by dry decontamination is safer, substantially more effective and should be the default option when managing an incident. The following points provide a summary of the main findings.

1. **Flannel or washing aid.**
   - Provision of a washing aid (such as cotton flannel) significantly enhances the effectiveness of mass casualty decontamination.

2. **Disrobe and decontamination.**
   - Disrobing is generally an order of magnitude more effective than decontamination and so removal of clothing should be an immediate priority if a chemical exposure is suspected.
   - Disrobing and decontamination are most effective if performed within the first 15 minutes of exposure.
   - The effectiveness of disrobing and decontamination then rapidly decreases: after a delay of one hour, there may be little clinical benefit (although still an operational imperative to reduce risk to responders).
   - The rapidity with which disrobing and decontamination need to be performed is referred to as the ORCHIDS timeline.

3. **Water-related effects**
   - The use of water has many disadvantages and so shower duration should be as short as possible: 1.5 minutes was identified as being the minimum shower duration practicably attainable in a healthy adult population.
   - In theory, a halving of shower duration may potentially double the throughput of casualties via mass decontamination units.

4. **Dry decontamination**
   - Use of dry decontaminants is generally safer than wet decontamination.
   - A research project (“EDICTAS”) is currently underway to identify what readily available products (such as blue roll, tissue paper, etc) may be used to allow implementation of the ORCHIDS timeline.

**Conclusions**

This programme of R&D has identified several means for optimising the current UK mass casualty decontamination provision. The recommended changes may improve the overall effectiveness of decontamination and may result in
increased throughput of individuals. However, a number of issues were identified. Principally, the current system may not be in alignment with anticipated timescales required to deploy an effective disrobe and decontamination procedure. Secondly, dry decontamination should be the default option for decontamination as it is quicker and safer.

**Primary Recommendations**

- The ORCHIDS (mass decontamination showering) protocol should be introduced as the standard UK means of performing mass casualty decontamination. The key features are the provision of a wash cloth and decreased shower duration.
- A more rapid response for facilitating effective disrobe and decontamination at the scene of an incident is required. One potential means of addressing this would be to store disrobe packs containing an interim decontamination product at response nodes such as fire or ambulance stations or encourage the use of readily available absorbent products such as incontinence pads, wound dressings or paper tissue.
**Annex D: Indicative principle contents for Health Board decontamination plans**

Including a summary of changes that may be required for the approach to decontamination of people possibly exposed to non-caustic chemicals.

Note: while this section is primarily aimed at Hospitals in Scotland, other parts of NHSScotland may find this a useful tool

*For all plans: keep the person / patient who may be contaminated at the centre of all actions*

<table>
<thead>
<tr>
<th>Indicative plan section headings</th>
<th>Indicative content of section</th>
<th>Where changes might be needed based on the newly published research findings</th>
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<tbody>
<tr>
<td>Governance section</td>
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<td>Validation process/committee/Board</td>
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<td>Partnership working</td>
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<td>Command &amp; Control</td>
<td>Activation of plan</td>
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<td>Links to other relevant plans – such as major incident plan, lockdown plan</td>
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<td>Information gathering</td>
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<tr>
<td>Summary section</td>
<td>Outline of immediate actions required including recognition of HAZMAT or CBRN incident</td>
<td>Modify to account for new approach to decontamination for non-caustic chemicals</td>
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<td></td>
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<td>Emphasise that a timely response is paramount particularly that disrobe, and dry decontamination take place within 15-20 minutes of the incident or as soon as is reasonably practicable</td>
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| **What type of incident is this?** | Background / introductory information about:  
- potential scope of an incident  
- scenarios that may present including HAZMAT and CBRN  
- basic information on responses including recognition, safety including selection of PPE and  
- hazard avoidance, First aid and casualty management  
- identification of processes and procedures including use of PPE, key locations and where to set up equipment  
- identification of differences in management of chemical, biological, radiological and nuclear responses  
- communication and notification including lockdown,  
- cordons and other security considerations  
- internal hospital incident vs. external incident | Focus on early identification event  
Training of frontline staff who may have the first encounter with people who have been contaminated including reception staff in EDs, and other healthcare facilities  
Modify existing plans for the disrobe and decontamination of people contaminated by non-caustic chemicals. Emphasise that a timely response is paramount particularly that disrobe, and dry decontamination take place within 15-20 minutes of the incident or as soon as is reasonably practicable  
Wet decontamination should be undertaken for between 45 and 90 seconds. |
| **Triage and casualty assessment** | Triage as part of a dynamic risk assessment process;  
- Clinical Assessment  
- Life-saving Interventions (LSIs)  
- Casualty Hazard Management (Decon./Isolation)  
- Supportive management  
- Definitive management including antidotes and surgery | If non caustic chemicals are suspected, follow the revised process for dry decontamination  
Communication within the organisation and with partner agencies |
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<th>Indicative content of section</th>
<th>Where changes might be needed based on the newly published research findings</th>
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</table>
| **Medical management**          | Building on triage and re-triage considering:  
- Clinical Assessment  
- Life-saving Interventions (LSIs)  
- Casualty Hazard Management (Decon./Isolation)  
- Supportive management  
- Definitive management including antidotes and surgery | If non caustic chemicals are suspected, follow the revised process for dry decontamination  
Communication within the organisation and with partner agencies  
Where to refer to for further advice |
| **Casualty hazard management**  | Decontamination processes  
Isolation processes | Access to materials for dry decontamination  
- creative use of existing resources e.g. blue towel  
- identify pathways and areas for decontamination  
- process for disrobe and re-robe  
- further consideration of hair after the initial dry contamination  
- use of improvised decontamination processes  
- who to refer to for further advice |
| **Casualty flow**               | Local arrangements described for casualty flow | |
| **Equipment**                  | What equipment there is and where it is and what it might be used for  
- Decontamination tents  
- PPE  
- Other equipment  
- Antidotes/POD availability and access  
- Others | Consideration of the local type of decontamination facility that is available  
- Fixed structure  
- Exo-skeleton  
- Inflatable |
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| ACTION CARDS                    | Allocation of key roles at each shift handover Action cards may include:  
- immediate actions
- action cards by role and by scenario
- decontamination procedures by scenario
- points of contact and emergency information | Ensure that all front line staff – including reception staff, triage and assessment staff – are aware of the need for:  
- early identification
- early disrobing
- local isolation procedures
- appropriate alerting mechanisms |
| Training                        | Key training requirements for each level of staff PPE training | |
| Exercising                      | Details of how the plan is validated/exercised  
Details of learning incorporated as a result of local exercising  
Details of inter-agency exercising | |
| Recovery                        | Link to business continuity plans where appropriate  
Debrief process and report production  
Staff support | |
Appendix E: Decontamination Team Roles

There are a number of roles that will need to be carried out during a hospital response to an incident involving potentially contaminated self-presenting casualties and it will therefore be necessary to form a multi-disciplinary team. Decontamination team members should have an appropriate background where they have patient contact as part of their normal duties. However, this may not always be possible for all Health Boards, although all team members should be Enhanced Disclosure Checked. Boards will wish to consider the role of A&E staff when forming a decontamination team. A&E staff may be required to continue in the department if there are a large number of casualties.

Everyone with a role within the response should receive appropriate training which must reflect the possibility that patients may arrive unannounced at any time of the day. Some of the roles that should be considered are listed below (this list is not intended to be exhaustive). Where appropriate, some of these roles may be combined:

Decontamination Officer
The Decontamination Officer should take command of the management of the overall decontamination response and is responsible for the overall management and recovery of the incident. In anticipation of an incident occurring without warning at any time, this role should be allocated, at least in the initial period, to an on-duty member of staff such as the nurse in charge of the ED pending arrival of other suitably qualified staff.

He/she should follow the IOR Principles/UK CBRN and HAZMAT Decontamination Algorithm (UK CHDA) at Appendix B to determine whether there is a need to decontaminate self-presenters. If necessary expert advice should be sought to ensure that a suitable and sufficient risk assessment is carried out, based on the information available from self-presenting patients, the Ambulance Service, Medical Incident Officer (if deployed), Local Police, and other relevant professionals (i.e. on-call Public Health Professional, Radiation Protection Advisor etc.).

The Decontamination Officer should take the lead role in determining the appropriate response with the support of relevant individuals. The factors that should be considered are the risk assessment, the number of casualties either present or expected, and the possible need to start decontamination urgently. This response could range from provision of improvised decontamination equipment, the deployment of the decontamination facility, or the request for assistance from the Ambulance Service/Fire and Rescue Service.

Decontamination Triage Officer
The Decontamination Triage Officer will assess casualties/self-presenters to determine the priority and need for decontamination. The decontamination algorithm shown at Appendix B can be used to assist with this assessment.

Entry Control Officer
When decontamination staff have donned PPE, the function of the ‘Entry Control Officer’ is to log in and out staff undertaking decontamination of casualties and consider any safety requirements. Boards should ensure that the staff that might be allocated this role are provided with specific training and equipment.

Decontamination Team
Boards should identify and train staff to carry out the decontamination of contaminated casualties. It may not be appropriate to deploy staff from within the Emergency Department since they may have other duties to fulfil. Decontamination teams should include
‘safety teams’ i.e. staff ready to assist should a member of the Decontamination team get into difficulty. All staff in the decontamination or ‘safety team’ must be trained in the use of PPE and decontamination techniques.

**Decontamination Unit Deployment Team**

In those cases where Mobile Decontamination Units are used, Boards should form teams to deploy these decontamination units and the associated ancillary equipment. It is essential that these teams are well rehearsed in their role as the time taken for the deployment of this equipment is key to the overall incident response. As staff from the Emergency Department will have other roles to fulfil, this role should be carried out by staff from other areas who are not otherwise directly involved in the response (e.g. Porters, Estates). In those cases where Static Decontamination Units or Decontamination Rooms are available, providing the preparation needed to make the facility ready can be kept simple and quick, on-duty staff should be trained to make these preparations.

**Crowd Control/ Security**

It may be necessary to control the movement of the public, patients, and staff, to ensure “clean” and “dirty” areas are clearly separated and, in particular, to prevent contaminated patients entering the hospital. It will be necessary to allocate staff duties associated with the creation of such zones (e.g. setting up barriers, directing traffic).

Other roles that need to be considered include arrangements for staff call-out/incident alert, arrangements to ready the Emergency Department, and arrangements to implement lockdown.

Staff training should be augmented by the provision of Action Cards for each individual role, which provide users with clear, concise, and unambiguous instructions. These Action Cards must be easily accessible in the event of an incident (see Appendix F for suggested Action Card examples).

**Recruitment**

The Decontamination Strategic Officer will be responsible for ensuring that there is a sufficient pool of trained staff available to implement their Decontamination plans as appropriate in a timely manner on a 24/7 basis. Members of the team should be selected for appropriateness e.g. clinical background, physical fitness.
**Appendix F – Suggested Action Cards**

These are sample action cards for Hospitals. Roles and the duties attached may be appropriate to different people in different Hospitals. Boards should tailor these as per their local plans require.

**Action Card 1 – Decontamination Officer**

Responsibilities:

Primary
- Assume command of the decontamination response (responsible for overall management including recovery).

Actions:

1. Assess the situation to determine the type and method of decontamination required.

   Seek expert advice and support in risk assessment and decision-making. Where possible, the following information should be obtained:
   - Number of casualties?
   - What are the signs and symptoms?
   - Is it likely that Lockdown will be required? If so, will it be the Emergency Department only or the entire hospital site?
   - Type of contaminant?
   - Is it likely that decontamination will be required?
   - If so, what is the best method of decontamination?
   - What level of PPE is likely to be required?
   - Wind direction?
   - Number of trained operators available?
   - Number of suits available?

   Information relating to the incident can be obtained from:
   - Patients
   - SAS or NHS staff at the scene of incident
   - Local Police

   Specialist information can be obtained from:
   - Fire & Rescue Service
   - SAS
   - Public Health Department
   - Health Protection Scotland
   - Radiation Protection Advisor
   - Health Protection Agency
   - National Poisons Information Service

2. Brief responding staff on the incident and allocate tasks to decontamination team members. If insufficient staff are available – designate a staff member (not necessarily a decontamination team member) to call in decontamination trained staff from call-in sheets.

3. Arrange for the decontamination facility to be made operational.

4. Ensure Decontamination Team wear the correct PPE.

5. Maintain effective communications (detail a member of staff as a runner if necessary) with:
   - Hospital Control Centre
   - Emergency Department
   - Emergency Services (if on site)

6. Log all messages and actions taken (detail a member of staff as a scribe if available to assist with this).

7. Ensure decontaminated persons are clean.

8. Ensure decontamination area is cleared of any waste and valuables and equipment which should be handled and stored appropriately following the correct procedures.

9. Ensure security is in place.

10. Post incident, organise a hot debrief for members of the decontamination team and other staff involved in the incident
Appendix F (continued)

Action Card 2 – Nurse In-charge

Responsibilities:

Primary
- Identify Decontamination Lead
- Continue with Co-ordination of the Emergency Department

Secondary

Actions:

1. Inform security
2. Start and Maintain a log of incident/decisions taken
3. Clear clinical areas as needed, e.g. by sending patients directly to wards.
4. Ensure contaminated casualties are kept out of the ED.
5. If contaminated patients are in the ED, follow the action card for this. Continue with duties as below.
6. Nominate the next most senior or appropriately trained member of staff to act as Decontamination Officer. If you are the most appropriately trained person on duty, hand over the Nurse In-charge role and assume the Decontamination Officer role.
7. Allocate staff for decontamination team (at least initially). If insufficient staff available – call in decontamination trained staff from call-in sheets.
8. Inform Switchboard that a HAZMAT/CBRN incident is being dealt with and if necessary to place hospital on Major Incident Stand By (HAZMAT/CBRN).
9. Call duty manager and ED consultant.
10. Continue to liaise with Decontamination Officer and the Hospital Control Team (if a Major Incident has been declared).
11. Continue with management of the Emergency Department.

If Major Incident Not Declared:

1. Monitor staff resources and allocate someone to call in additional staff as required.

If Major Incident Declared:

1. Follow your action card in the Major Incident Plan.
Appendix F (continued)

Action Card 3 – Doctor In-charge

Responsibilities:

Primary
- Identify Decontamination Lead
Secondary
- Continue with Co-ordination of the Emergency Department

Actions:

1. Start and maintain a log of activity/decisions taken
2. Ensure contaminated casualties are kept out of the ED
3. If contaminated patients are in the ED follow action card for this. Continue with duties as below.
4. Together with nurse in-charge, allocate staff for decontamination team (one or more medical staff may be needed for this depending on clinical condition of incoming contaminated patients).
5. Consider closing the Emergency Department, i.e. by phoning the ambulance service, and informing other local Emergency Departments.
6. Ensure hospital management are informed and are providing assistance.
7. Allocate medical staff duties, e.g. prepare for resuscitation cases.
8. Ensure on call public health consultant is contacted to inform them of incident and, if necessary, to ask their assistance in:
   a. accessing information on treatment
   b. advice on symptomology
Appendix F (continued)

**Action Card 4 – Decontamination Entry Control Officer**

Responsibilities:

- **Primary**
  - Maintain Entry Control Board
  - Management of decontamination team
  - Ensure the safety of all members of the decontamination team
  - Management of the decontamination process (positioned in the Cold Zone)
  - Quality Assurance of patients exiting decontamination
  - Maintain effective communication with the decontamination team when they are deployed in the warm zone.

**Action:**

1. Go to the toilet
2. Take oral fluids
3. Gather equipment:
   - marker pen
   - decontamination team Entry Control board and tallies
   - ‘tuff cut’ scissors
   - Camera (to record the Entry Control Board details)
4. Ensure ‘safety team’ are in relevant PPE and ready to enter the Decontamination area should they be required
5. Log all staff as they enter and exit the decontamination facility and log the time on the board.
6. Maintain effective communication with Triage Officer, Decontamination Operators and Decontamination Officer at all times. Monitor all personnel for signs of exhaustion, problems etc.
7. After one hour, ensure staff start to conduct self-decontamination, remove personnel from the warm zone and assist out of suits as per instruction booklets. Log time on the board. Photograph Board at change over times or if it needs to be wiped clean prior to another team deployment, for evidential purposes.
8. Ensure suits are bagged and tagged for decontamination.
9. Log all information from decontamination team Entry Control board onto hard copy and give to Decontamination Officer.
10. Monitor the Health & Safety of all Staff within the Warm Zone.
**Appendix F (continued)**

**Action Card 5 – Triage Officer**

Responsibilities:

Primary:
- Triage of contaminated patients using triage sieve

Secondary
- To be the 1st member of the decontamination team into the warm zone
- To oversee decontamination of casualties prior to formal decontamination in unit

**Action:**

1. Don theatre ‘blues/greens’
2. Go to the toilet
3. Take oral fluids
4. Remove all jewellery
5. Don full PPE
6. Gather equipment:
   - Triage algorithm
   - All available buckets. Each person should be given 2 buckets of different colour. One colour for clean buckets (tepid/warm clean water only), and the other colour for the dirty bucket (tepid/warm, water and 20 ml of detergent)
   - “Tuff cut” scissors
   - Property bags
   - Modesty packs
   - Marker pen
   - Sponges
7. Reassure casualties waiting for decontamination. (Issue instructions such as remove outer garments and rinse using buckets and sponges to assist in decontamination process).
8. Assess each of the casualties/self-presenters to decide which, if any, require decontamination (see algorithm at Appendix B)
9. Triage patients using triage sieve for order of decontamination.
10. Ensure patient(s) carry out decontamination prior to formal decontamination in decontamination unit.
11. Inform decontamination team of order of priority.
12. Assist decontamination team in appropriate treatments and decontamination of patients.
13. Monitor the Health & Safety of all Staff within the Warm Zone.
14. Maintain communications with team members at all time
15. At appropriate times start the self-decontamination procedure.
Appendix F (continued)

Action Card 6 – Decontamination Operators

Responsibilities:

Primary:
- Decontamination of casualties
- Manage and control contaminated casualties

Action:

1. Prepare decontamination area and equipment in line with local arrangements
2. Don theatre ‘blues/greens’
3. Go to the toilet
4. Take oral fluids
5. Remove all jewellery
6. Don full PPE.
7. Report to Entry Control Officer for final check prior to deployment
8. Decontaminate patients as brought forward by Triage Officer
9. Provide reassurance to patients
10. Conduct effective decontamination using the rinse-wipe-rinse method
11. Maintain communications with team members both in and out with the warm zone
12. Monitor the Health and Safety of all staff within the warm zone
13. At the appropriate time start self-decontamination
14. Follow instructions of Triage Officer and Entry Control Officer.
Appendix F (continued)

**Action Card 7 – Emergency Department Receptionist**

Responsibilities:

Primary
- To notify Nurse in Charge of arrival at Emergency department of casualties that are potentially contaminated

Action:

1. Tell patient to go outside to: (local arrangements).
2. Alert Nurse in charge
3. Inform security or whoever is responsible in line with local arrangements.
4. Inform all persons in waiting room to vacate the area via (local arrangements).
Appendix G: Decontamination Equipment and Area

The equipment available to decontaminate self-presenting casualties includes:

First Strike Equipment
This equipment (for improvised or interim decontamination) may include:
- paper towels/tissues (blue roll)
- two different colour buckets (designated clean and dirty)
- sponges (individual to each casualty)
- towels
- blankets
- contaminated clothing bags (clear)
- labelled bags for personal effects
- dignity/re-robe packs or other appropriate garments to protect patient dignity
- cordon tape to mark off “dirty” and “clean” areas and should be used in a designated area outside the building.

The use of such equipment may be appropriate if there is a need for urgent decontamination and can be used alone or as an initial measure that is provided while other facilities are made ready.

Decontamination Units
(i) Mobile Decontamination Units (for clinical decontamination) are collapsible temporary structures which in most cases are stored at Hospital Emergency Departments. These units require assembly prior to use. Ideally, Boards should have, as far as reasonably practical, the capability to deploy these units as quickly as possible following receipt of intelligence alerting an Emergency Department of an incident or of the arrival of self-presenting casualties. It is recognised that rapid deployment of such equipment could pose logistical problems and Boards should therefore have plans in place to deal with a situation in the event that adequate resource is not immediately available i.e. First Strike equipment.

(ii) Static Decontamination Units are semi-permanent structures sited outside Emergency Departments. Arrangements should be in place to ensure that such units can be fully operational in as short a period as possible following receipt of intelligence alerting an Emergency Department of an incident or of the arrival of self-presenting casualties.

Decontamination Rooms
Decontamination rooms (for clinical decontamination) are permanent facilities sited within a hospital. Such facilities should be purpose built and sited in an area of the building that allows the segregation of potentially contaminated casualties from the remainder of the hospital. These rooms should be provided with appropriate ventilation and effluent collection systems that are separate from those of the rest of the building. Arrangements should be in place to ensure that such a facility can be fully operational in as short a period as possible following receipt of intelligence alerting an Emergency Department of an incident or of the arrival of self-presenting casualties. NHS Boards should consider fixed decontamination facilities when designing new buildings (Scottish Health Planning Note 22).

Decontamination Area
Boards should consider the following when deciding where to carry out decontamination operations. The area selected should:
• ensure that patients are treated with dignity and respect
• allow for the creation of secure areas to facilitate the proper flow of patients both pre and post decontamination
• ensure that access is maintained to the Emergency Department for both the Ambulance Service and non-contaminated patients
• allow location of the “dirty side” such that it is both accessible for incoming contaminated patients and that it is away from entry and exit routes used for “clean” patients, other patients, and staff
• allow location of the “clean side” such that “clean” patients can move into the hospital building through a designated access point
• take cognisance of the direction of the prevailing wind and, where possible, the designated area should be down-wind of buildings. Similarly, with regard to the orientation of the decontamination unit/area, the “clean-side” should be up-wind of the “dirty-side”
• allow decontamination to be carried out in an area that avoids run-off of potentially contaminated water into either the drainage system or the clean-area (This is of particular importance for decontamination using buckets and sponges.)
• allow ancillary equipment (e.g. pumps, generators, lighting etc.) to be sited such that they cannot be cross-contaminated by contaminated casualties
• access to water and power supply from the hospital where applicable
• provide shelter and protection from the elements.
Appendix H: Decontamination Options and Process

Decontamination options and issues that Health Boards need to consider are set out in this Appendix.

Decontamination Options

In the event of a major incident, the majority of casualties will be decontaminated at the scene by the Scottish Ambulance Service or the Scottish Fire and Rescue Services. If a person has been through improvised, interim, clinical or mass decontamination at the scene, which has been verified by the SAS, there should be no need for any further surface decontamination at the hospital, although there may be instances when a contaminated casualty is brought directly to hospital from the scene.

Decontamination can take several forms ranging from improvised decontamination by persons responding to an immediate and necessary need, through to full Clinical decontamination. Any decision to decontaminate should be taken after an appropriate assessment which should include following the IOR principles and/ or the UK CBRN and HAZMAT Decontamination Algorithm (UK CHDA) at Appendix B. Boards’ Decontamination Plans should include the full range of decontamination options available and the response should be proportionate and reasonable.

(i) Improvised Decontamination:
An immediately available method of decontamination instead of or prior to the use of specialist resources. In many cases it may be appropriate to start improvised decontamination before the establishment of full decontamination processes at a Hospital.

Improvised decontamination can be performed on all disrobed casualties, unless medical advice indicates otherwise. Dry decontamination should be considered the default process for an incident involving (non-caustic) chemicals unless the use of water is justified see below.

Generally, in the very early stages of an incident and dependent on the symptoms and needs of contaminated people, Improved Decontamination may be initiated by casualties, other people or by the emergency services.

Before specialist resources are deployed, responders should consider:

Dry Decontamination:
Unless casualties are showing signs or symptoms of exposure to caustic or irritant substances for example, redness, itching and burning of the eyes or skin, exposed skin surfaces should be blotted and rubbed with any available dry, absorbent material such as paper tissue (e.g. “blue roll”). If possible ensure that all waste material arising from this process is bagged if possible.

Wet Decontamination:
Water should be used for decontamination where the signs and symptoms are consistent with exposure to caustic substances such as acids or alkalis or the contamination has been identified as biological or radiological. Wet decontamination should be performed with any available source of water such as taps, showers, fixed installation hose-reels, sprinklers, etc. When using water, it is important to try and limit the decontamination time to less than 90
seconds and to use a washing aid such as a cloth or sponge.

Improvised decontamination should not involve aggressive methods of removing the contamination (e.g. scrubbing) as this may drive the contamination further into the skin.

Any available facility for washing the skin and hair with water should be considered. This might include hospitals providing buckets and sponges or bottles of water and self-presenter providing self-help. The Rinse-Wipe-Rinse method of decontamination should be attempted (see Appendix J).

Contaminated clothing should be removed as soon as possible and the casualty should be dried and dressed in appropriate clothing - re-robe packs or other appropriate garments should be available for this purpose.

Following improvised decontamination, the hospital decontamination lead should decide on any further appropriate action. This might involve further, more rigorous decontamination, referral for medical care or discharge

(ii) Interim Decontamination:
The use of standard equipment to provide a planned and structured decontamination process prior to the availability of decontamination equipment.

Following an initial assessment of the requirement to carry out decontamination, consideration should be given to the benefits of establishing Interim Decontamination. Casualties decontaminated using Interim Decontamination should then be assessed for further decontamination or further medical care.

There is no national standard for Interim Decontamination. Boards should develop their own plan in partnership with other agencies where appropriate. However, Interim Decontamination has the advantage of being more structured than Improvised Decontamination. Examples include portable shower systems; the use of Ambulance or Fire and Rescue Services water heaters attached to hosing with shower heads.

(iii) Clinical Decontamination:
The process where contaminated persons are treated individually by trained healthcare professionals using purpose designed decontamination equipment.

This is full wet decontamination using NHS Decontamination Units. All Hospitals should have plans in place to allow prompt deployment of such equipment.

(iv) Mass Decontamination:
The planned and structured procedure delivered by the Fire and Rescue Service using purpose designed decontamination equipment, where there are large numbers of casualties.

Decontamination Triage

Decontamination is not an automatic response to the arrival of potentially contaminated casualties. An initial assessment of potentially contaminated casualties should be carried out. The algorithm at Appendix B can be used to assist with this task. Triage and labelling of casualties should follow standard triage systems (sieve and sort).
Patient Care Prior to Decontamination

As the bulk of any contamination is likely to be on casualties’ clothing, plans should include the removal of clothing as soon as possible on arrival at hospital – in line with the IOR principles – see Part Two of the guidance. Contaminated clothing should be placed in double (clear) plastic bags, sealed by using a swan neck, and labelled. Personal belongings should also be placed in appropriately labelled bags sealed by a swan neck and placed inside a large plastic bag with the clothing bag. Plans must also consider the need to protect, as far as possible, patient dignity and be flexible enough to accommodate the needs of vulnerable persons. In addition, plans should include arrangements for protecting casualties from the elements. It should be noted that certain groups of patients may be unwilling to undress in public due to cultural and/or modesty issues and, where practical, alternate arrangements should be considered to accommodate such individuals.

Only basic life support and first aid (simple airway opening manoeuvres, bag-valve-mask ventilation, and pressure on wounds) might be possible prior to and during decontamination (notwithstanding the fact that clinical need should determine the priority of life saving intervention if necessary). An emergency bag containing appropriate disposable equipment should therefore be available for this purpose. Staff conducting such interventions must be appropriately trained and wearing protective equipment where appropriate.

Decontamination Response

The response to the arrival of self-presenting casualties requiring decontamination might range from the deployment of:

Assistance from Other Agencies

It should be noted that the resources of the police, Scottish Ambulance Service and the Fire and Rescue Service may already be deployed at the scene of the incident and their capability to respond to any call for assistance may be limited in the first instance. However, it is important that, in such circumstances, contact is made with the emergency services (including the Police) and any appropriate action can be determined by risk assessment of the overall situation. Prior multi-agency planning should consider what support will be made available to Hospitals. If the emergency services cannot provide the necessary support within a suitable time-frame, it is recommended that plans should include the ability to provide improvised decontamination (e.g. the provision of paper towels, buckets and sponges, the facility to hose down patients, modesty packs etc).

Radiological Contamination

Although the arrangements for dealing with persons contaminated with a radioactive substance will, in general, be the same as for those contaminated with a chemical (caustic) or biological contaminant, the following should be noted:

- the radiation dose rate from contamination is usually small
- the risk to staff involved in decontamination of such patients is normally low
• the use of a radiation detection device by appropriately trained staff can determine initial levels of radiation and the efficacy of decontamination
• Patient treatment can take priority over decontamination (however, in those cases where the need for treatment is not urgent, it may be prudent to decontaminate first to reduce the likelihood of cross contamination)
• It may be necessary to carry out secondary decontamination to remove residual contamination. Such decontamination is best carried out out-with the shower area and the use of a radiation detection device may assist in this process. These instruments must only be used by appropriately trained staff.
• Although the risk may be reduced, precautions should be in place to prevent/minimise potential cross contamination of persons/facilities.

(Note: contamination with radiological material may be accompanied by chemical or biological contamination and appropriate precautions and decontamination procedures must be in place in such cases.)

Emergency Department Preparation

Health Boards should ensure they have plans in place to respond to the arrival of self-presenting contaminated or potentially contaminated casualties, including the segregation of contaminated from non-contaminated patients.

Vulnerable Persons

The specific needs of vulnerable persons (as defined in the Protection of Vulnerable Groups (Scotland) Act 2007) is recognised within the CCA (2004) and plans should include arrangements to deal with such groups. Vulnerable persons requiring consideration include:

i. Children under the age of 16 may either attend the Emergency Department as a casualty or as a member of a family or group caught up in the event. Plans need to reflect procedures for dealing with children and young people that may arise directly or indirectly from an incident (including keeping family groups together wherever possible).

ii. Persons inhibited in physical movement caused by age, illness (including mental illness), disability, pregnancy, or other reasons.

iii. Deaf, blind, and visually and hearing impaired persons.

iv. Those persons from non-English (or non-Gaelic) speaking communities and faith groups.

v. Persons with learning disabilities or mental illness.

Contamination within an Emergency Department

The hospital building should be protected against cross-decontamination as far as possible. However, should any contaminated patient(s) gain access to an Emergency Department, or other parts of a hospital, the following measures should be considered, pending a more thorough assessment:

i. Move all contaminated patients outside the department or if facilities exist within the department to isolate contaminated patients, ensure this is carried out. However, if a patient is critically unwell and undergoing resuscitation, a risk assessment must be made regarding either the
continuation of treatment inside or moving the patient outside. In the event that the patient is kept inside, the number of staff exposed should be minimised, replaced by staff wearing the correct level of PPE and measures undertaken to decontaminate the patient as thoroughly as possible. This may involve removal of clothing, use of wet wipes, and moving the patient outside for decontamination later.

ii. Identify any staff or others who may have been cross contaminated, move them outside and treat as appropriate which may involve decontamination.

iii. Evacuate staff and patients from areas which may be contaminated. These areas should be cordoned off and any equipment present within such areas left until deemed safe or otherwise.

iv. Depending on the contaminant and the circumstances it may be prudent to open doors and windows being very mindful of wind direction, ambient temperature etc. to allow ventilation of the room

v. Staff should wear protective clothing as required.

vi. Establish one entry point to contaminated areas, blocking off all other routes. If this is not possible, establish cordon points on corridors leading to and from areas which may be less severely contaminated. A variety of interventions can be employed at these points which include:

- the provision of plastic overshoes for staff to change when passing through the point
- move patients onto clean trolleys (i.e. not used within the potentially contaminated area) when passing through the point
- frequently clean the corridor floors on an on-going basis

If it is not possible to remove potentially contaminated persons outdoors, or that the area has been contaminated to such an extent that the above measures are insufficient, it may be necessary to close the Emergency Department and remove those patients that have not become potentially cross-contaminated to an alternative area for treatment. Other actions that should be considered include:

- segregate those potentially contaminated patients in an area which is cordoned off to prevent further spread of contamination
- take measures to ensure further potentially contaminated patients do not gain access to the Emergency Department or other areas of the hospital
- carry out the actions described above as appropriate to prevent/contain any contamination
- Consider shutting down the air conditioning and ventilation systems to prevent spread of contamination
Appendix I – Dry Decontamination of Casualties

Improvised Dry Decontamination

Dry decontamination following disrobe is to be considered the default method of decontamination for non-caustic chemical contamination. Wet decontamination is the preferred option when casualties are demonstrating signs or symptoms of exposure to caustic or irritant substances such as acids or alkalis (for example, redness, itching and burning of the eyes or skin) or are contaminated with radiological or biological contaminants.

If walking casualties can self-decontaminate then this is the best approach to take. Casualties should be supervised and assisted to perform dry decontamination as required.

To perform improvised dry decontamination:

- Any available dry, absorbent material can be used, for example:
  - kitchen towel, toilet roll or paper tissues, such as ‘blue roll’
  - towels and clean rags
  - strips of blanket or sheeting
  - Other absorbent materials like dry soil or cat litter can also be used.
  - Exposed skin surfaces should be blotted and gently rubbed, starting with the face, head and neck and moving down and away from the body.
  - Sufficient absorbent material should be used to avoid transferring contamination from one part of the body to another.
  - Rubbing and blotting should not be too aggressive, or it could drive contamination further into the skin.
  - All absorbent materials used in this process may also be contaminated and should not be used on a new casualty.

All waste material arising from dry decontamination should be left in situ, bagged if possible or placed in a designated waste bin. It will be managed by specialists at a later time. Casualties should be moved away from waste materials arising from improvised dry decontamination as soon as possible.
Appendix J – Rinse-wipe-rinse Method of Skin Decontamination

Introduction
It should be noted that guidance on this method is based on the best currently available advice on how to achieve safe and effective decontamination.

Equipment per person
For effective application of the RINSE-WIPE-RINSE method of skin decontamination, the following is required:
(i) Water, preferably warm/tepid.
(ii) A bucket or other container (5 to 10 litre capacity) or a shower head with clean, preferably warm/tepid, running water.
(iii) A second (dirty) bucket (5 to 10 litre capacity) for use with a water (preferably warm/tepid) and detergent mix.
(iv) Detergent.
(v) A sponge or soft brush.

Procedure
If walking casualties can self-decontaminate then this is the best approach to take. Hospital personnel should supervise and assist as required.

The recommended procedure for applying the RINSE-WIPE-RINSE method is as follows:
(i) Make up a water/detergent solution of 0.5% detergent in warm/tepid water (5ml of detergent per litre of water or about three squirts of liquid detergent into a bucket of water).
(ii) Having removed the contaminated person’s clothes, RINSE the affected areas with clean water (no detergent) using showerheads or buckets. RINSE from the highest point downward, ensuring that any sponge or brush used does not come into contact with the casualty or their clothing.
(iii) The RINSE should be applied to contaminated areas of skin only, to avoid spread to uncontaminated areas.
(iv) Using the water/detergent mix detailed in point (i), WIPE the affected areas of skin with a wet sponge or soft brush.
(v) RINSE the decontaminated casualty with clean warm/tepid water (no detergent) to remove the detergent and any residual chemicals.
(vi) Dry the skin with a clean towel.
(vii) This process should not take more than three to five minutes for an individual walking casualty. Repeat the RINSE-WIPE-RINSE procedure only if skin contamination remains obvious. (Persistent chemical warfare agents are poorly soluble in water and might require extended or repeated application.)

Additional notes
1. The rinse water itself will be contaminated, and therefore hazardous, and a source of further contamination spread.
2. Sponges used in this process will also be contaminated and should not be used on a new patient.
3. On average, stretcher casualty decontamination can take between 10 to 12 minutes to complete.
4. The risk from hypothermia should be considered when any form of decontamination is carried out.
5. The use of contamination/dose rate monitor may assist in determining if the decontamination of radioactive material has been successful. Dry wipe may also be effective for radiation contamination.
Notes on the use of hot and cold water

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/tepid water should be given to reduce this possibility.

Cold Water
Advantages:
Readily available
Rapid decontamination
Vaso constriction (Closure of pores of skin, reducing chemical absorption)

Disadvantages:
Hypothermia
Thermal shock

Warm/tepid 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
May not be readily available
Appendix K: Personal Protective Equipment (PPE)

Health Boards have a statutory obligation to protect the health and safety of their staff. Boards should ensure that suitable Personal Protective Equipment is available for use by staff who may become exposed during decontamination processes and provide appropriate training in its use (including refresher training). To this end, the Scottish Government have made Powered Respirator Protective Suits (PRPS) available to territorial Health Boards and the Scottish Ambulance Service for use as appropriate for the decontamination of patients. Health Boards must ensure these suits are kept validated and available and that staff are appropriately trained to use them.

The need for additional personal protective equipment will depend on the contaminant involved. However the following provides a suitable baseline.

a. Patient Potentially Exposed to Chemical Contamination

To protect staff from health risks arising from casualties who might have been exposed to chemical contamination the following PPE should be available:

- Chemical resistant overall with integral hood
- Chemical resistant gloves
- Chemical resistant boots
- Suitable respiratory protective equipment to protect against hazardous gasses, vapours, and airborne particles.

b. Patient Potentially Exposed to a Biological Agent which may Present a Risk of Airborne Infection

For casualties who might have been exposed to a biological agent that presents a risk of infection, the following PPE should be available:

- Full length fluid impermeable gown, apron, hair, and foot cover
- Suitable respiratory protective equipment to protect against hazardous airborne particles to FFP3 standard
- Face shield, visor, or goggles
- Latex/vinyl/nitrile single use disposable gloves

c. Patient Potentially Contaminated with Radioactive Material

For casualties who might be contaminated by radioactive material, the following PPE should be available:

- Disposable plastic apron
- Full-length fluid impermeable gown
- Suitable respiratory protective equipment to protect against hazardous airborne particles to FFP3 standard
- Latex/vinyl/nitrile double layer disposable gloves

In the event that full clinical decontamination is required then the use of gas tight, chemical protective suits will be necessary.
Appendix L – Reference Documents

**Home Office (2013):** Guidance for the United Kingdom Emergency Services on the Decontamination of People Exposed to Hazardous Chemical, Biological or Radiological Substances

**Home Office (2015):** Initial Operational Response to a CBRN Incident

**The Cabinet Office (2015):** The Strategic National Guidance – The decontamination of buildings, infrastructure and open environment exposed to chemical, biological, radiological or nuclear materials


**NHS London (2012):** Preparation for incidents involving hazardous materials: guidance for primary and community care facilities’