

MANAGING INCIDENTS  
PRESENTING  
ACTUAL OR POTENTIAL  
RISKS TO THE PUBLIC  
HEALTH

Guidance on the Roles and  
Responsibilities of Incident  
Control Teams.

## **CONTENTS**

### **INTRODUCTION**

- **Background**
- **Consultation**

### **DEFINITIONS AND KEY PRINCIPLES**

- **Definitions**
- **Key Principles**

### **ROLES AND RESPONSIBILITIES**

- **Statutory responsibility for managing public health incidents**
- **Organisational arrangements for managing public health incidents**
- **Formal reporting on outbreaks and incidents**

### **KEY FUNCTIONS OF INCIDENT MANAGEMENT**

- **Surveillance and reporting**
- **Identification and initial investigation**
- **Investigation**
- **Risk Assessment**
- **Control Measures**
- **Communications**
- **Audit and evaluation**

### **ANNEXES**

- 1. SEHD Guidance on the management of specific public health incidents**
- 2. Management of Chemical incidents (Revised Annex to NHS emergency planning guidance)**
- 3. Management of Radiation Incidents (Revised Annex to NHS emergency planning guidance)**
- 4. Management of Outbreaks of Healthcare Associated Infection**
- 5. Roles and responsibilities of statutory agencies**
- 6. Template for ICT Reports**

## INTRODUCTION

1. On a day to day basis, we all come into contact with a variety of situations which may cause us harm. Individually and collectively we can take measures to prevent this occurring. Circumstances can arise, however, when the health of sections of the population can be put at risk because they are being or are likely to be exposed to higher levels than normal of a harmful substance or germ. In these situations additional controls need to be put in place and/or services must react to a surge in demand. These are public health incidents.

2. NHS Boards are accountable to the Scottish Executive Health Department (SEHD) for protecting and improving the health of people of people living within their geographic areas. This involves working in close partnership with local authorities and other agencies. This guidance provides a framework for how NHS Boards should discharge these functions in relation to incidents presenting actual or potential risks to the public health.

3. NHS Boards discharge their responsibility for the protection of human health during incidents and outbreaks within the context of shared responsibility for improving health with local authorities and overall emergency planning arrangements. With regard to the latter, the principal resource document for civil contingency planning in Scotland is the Scottish Executive's "Dealing with disasters together". This document stresses the need for "Integrated Emergency Management" (IEM) and this is reflected in the guidance provided here. Further guidance on these on these is provided in "*NHS Scotland – Responding to Emergencies*".

4. This document should be regarded as a reference document for developing integrated local public health incident response plans and procedures. These local plans should be drawn up under the general direction of the NHS Board in close collaboration with local authorities and local emergency planning co-ordinating groups.

### Background

5. This overall guidance, applicable to all types of public health incidents, was requested by the Ad-Hoc Group of Ministers on Health and the Public Water Supply. In addition to the issues raised in the incidents involving cryptosporidium and the public water supply to Edinburgh and Glasgow in August 2002, it takes into consideration:

- the guidance to help plan the health service response to the deliberate release of biological and chemical agents in Scotland issued in May 2002;
- the revised guidance on the investigation and control of outbreaks of food-borne disease in Scotland, issued in August 2002;
- the recommendations of the Fatal Accident Inquiry into the outbreak of *Clostridium novyi* in injecting drug users in the West of Scotland issued in February 2002;
- the recommendations of the Expert Group which reviewed the circumstances surrounding the onset of the outbreak of salmonella infection at the Victoria Infirmary, Glasgow, issued in October 2002.

6. This document deals with the generic organisational arrangements and main functions involved in handling incidents or outbreaks involving actual or potential exposures to a range of hazards, and in particular the roles and responsibilities of incident control teams (ICT). SEHD has issued guidance on the investigation and control of a range of specific public health incidents and outbreaks. These are summarised in Annex 1. This guidance builds on the principles laid out in these

documents. Specific issues related to incidents involving chemical and radiation are presented in the Annex 2 and 3. These annexes update annexes J and M of “*NHS Scotland – Responding to Emergencies*”. In response to the recommendations made in the report of the expert group which recently examined the management of the outbreak of hospital acquired infection (HAI) at the Victoria Infirmary Glasgow, Annex 4 outlines roles and responsibilities regarding the management of outbreaks of HAI occurring in NHS settings.

7. As defined in the next section arrangements NHS Boards are required to have in place arrangements to deal with outbreaks and incidents, be they of accidental or deliberate causation. Unless otherwise indicated, the term incident is used to cover all these eventualities in the following text.

### **Consultation**

8. This guidance should be regarded as a reference document for developing integrated local public health incident response plans and procedures, and for handling any future outbreaks or incidents. However the Executive recognises that its publication will stimulate consideration and discussion if the issues. As such, all recipients are invited to submit comments on the guidance to:

Sandra Smith  
Public Health Division  
Scottish Executive Health Department  
Room 3E(S)  
St Andrew’s House  
EDINBURGH  
EH1 3 DG  
E-mail - [sandra.smith@scotland.gsi.gov.uk](mailto:sandra.smith@scotland.gsi.gov.uk)

9. The deadline for this consultation is 30<sup>th</sup> May 2003.

## DEFINITIONS AND KEY PRINCIPLES

### Definitions

#### Hazards and exposures

10. The broad categories of agents which endanger health (hazards) and how we come into contact with them (exposures) are presented in below.

<u>Hazards</u>	<u>Exposures</u>
	Person to person
Biological	Food
Chemical	Water
Radiation	Air
Physical	Animal
	Environmental

11. Biological hazards are mainly micro-organisms e.g. viruses, which cause infections. Most public health incidents involve actual or potential exposure to micro-organisms. However chemical incidents, e.g. spills and fires, are not uncommon.

#### Outbreaks and Incidents

12. An *outbreak* is defined either as two or more linked cases of the same illness (i.e. associated in person, place or time) or as a situation when the observed number of cases of an illness unaccountably exceeds the expected number.

13. An *incident* is defined as:

- a single case of a serious illness with major public health implications (e.g. botulism, viral haemorrhagic fever, vCJD) where action is necessary to investigate and prevent ongoing exposure to the hazardous agent;
- a situation where there is a high likelihood of a population being exposed to a hazard (e.g. a chemical or infectious agent) at levels sufficient to cause illness, even though no cases have yet occurred (e.g. a major contamination of the drinking water supply);
- the circumstance when it is recognised that two or more linked cases of unexplained illness could indicate the possibility that they may both be caused by the same known or unknown agent or exposure.

14. An *incident control team* (ICT) is a multidisciplinary, multi-agency group with responsibility for investigating an outbreak or incident and implementing control measures.

## Key Principles

### **Key principles of Incident Management**

- A state of preparedness
- Clarity of purpose and integrated working
  - An early and effective response
- Effective communication with the public and among agencies
  - Learning from experience

15. *A state of preparedness* – the management of outbreaks and incidents should not be regarded as an activity relevant exclusively to an emergency response but should be integrated into an NHS Board's overall health protection arrangements. Effective working on a day to day basis in the surveillance, prevention, treatment and control of illnesses related to exposure to hazards coupled with sufficient capacity in these services to respond to unforeseen increases in demand will facilitate an effective response to an outbreak or incident.

16. *Clarity of purpose and integrated working* - No single agency can deal with a public health incident. NHS Boards should jointly with local authorities and other partners draw up co-ordinated outbreak/incident plans, protocols and procedures, which should be regularly updated. These should include the capability of involving other neighbouring and national agencies should this be necessary.

17. *An early and effective response* – the prompt detection and response to an actual or potential public health incident is crucial. Front-line medical and laboratory staff should be aware of and competent to diagnose illnesses likely to present immediate public health risks. Epidemiological systems should be capable of distinguishing clusters of cases requiring further investigation and control. Systems for monitoring food, water and air quality should be able to detect the presence of hazards likely to endanger public health. NHS Boards should ensure that mechanisms are in place to collect and collate information from these sources, to take prompt decisions on the nature and levels of risks to public health and to co-ordinate action from a range of agencies to reduce these.

18. *Effective communication with the public and among agencies* – widespread public anxiety can be a result of outbreaks and incidents. NHS Boards must ensure that the public are kept fully and appropriately informed about public health incidents. They must co-ordinate the reporting of incidents to a network of local professionals and national agencies and ensure effective media handling. Systems should be in place to enable the rapid transfer of information on public health incidents. Those charged with managing incidents should regularly report on progress to the agencies to which they are accountable.

19. *Learning from experience* – those involved in managing incidents should evaluate and report on the efficiency and effectiveness of their efforts. National agencies should co-ordinate information on public health incidents and disseminate it to interested parties, so that the whole service can learn from the experience of others.

## **ROLES AND RESPONSIBILITIES**

### **Statutory responsibility for managing public health incidents**

#### NHS Boards

20. Under the terms of the National Health Service (Scotland) Act 1978, the NHS in Scotland is charged with two statutory duties:

- securing improvement in the physical and mental health of the people of Scotland and
- securing the prevention, diagnosis and treatment of illness.

21. NHS Boards are responsible for discharging these duties effectively and efficiently on behalf of their local resident populations. The NHS Act states that “ in exercising their respective functions, Health Boards, local authorities and education authorities shall co-operate with one another to secure and advance the health of the people of Scotland”. A key component of improving health is protecting the public from hazards which damage their health, including managing incidents.

22. Should the public health incident be categorised by the NHS Board or its emergency planning partners, as an actual or potential major incident e.g. the deliberate release of a chemical hazard, the police will have responsibility for the overall co-ordination of the activities of all of those responding to this. NHS Boards should discharge their specific health protection responsibilities within this framework.

23. Under the 1978 Act, NHS Boards should designate a medical officer or officers of the Board for the purpose of exercising on behalf of local authorities such functions as may be assigned to the officer. This medical officer is known by the term ‘Designated Medical Officer’ (DMO) and may exercise any powers conferred on him/her by the local authority in writing. NHS Boards should ensure that all DMOs have received a letter detailing their responsibilities. A DMO will normally be responsible for leading the NHS Board’s response to an incident and co-ordinating that of other agencies involved in responding, including chairing the Incident Control Team.

24. Should a public health incident occur in a service or establishment belonging to an NHS Trust, when appropriate, responsibility for managing this should pass to the NHS Board. Further detail is provided in Annex 4.

#### Local authorities

25. As indicated above, local authorities have a statutory duty to co-operate with NHS Boards in improving health and preventing illness. On a day-to-day basis, Environmental Health Officers working in Environmental Services or other departments, constitute the prime local authority resource in health protection. They also have the principal local responsibility for reducing the risks from many environmental hazards. They liaise closely with their NHS colleagues in the investigation and control of outbreaks of infections, often being the enforcement arm of the teams set up to manage these incidents.

#### Other agencies

26. Other agencies have statutory responsibilities which overlap with those of NHS Boards and local authorities and may come into play in the investigation and control of communicable diseases. They include:

- The Food Standards Agency

- The State Veterinary Service;
- Scottish Water;
- The Drinking Water Quality Regulator;
- The Police;
- The Fire Service;
- The Health and Safety Executive
- The Scottish Environment Protection Agency;
- The National Radiological Protection Board
- The Procurator Fiscal Service..

The responsibilities of these agencies is detailed in Annex 5.

27. In a public health incident, the NHS Board, in addition to being responsible for its own response, will co-ordinate the activities of other agencies involved in investigating, controlling and communicating about the risks to health. During the incident, each agency will be responsible for discharging its own statutory responsibilities within the framework developed by the NHS Board and agreed with its partners. It should do so in a way which contributes most effectively to the overall management of the incident.

#### The Scottish Centre for Infection and Environmental Health (SCEIH)

28. The Scottish Centre for Infection and Environmental Health (SCIEH) is a Division of the Common Services Agency for NHS Scotland. It is responsible for the national surveillance of communicable diseases and environmental health hazards and the provision of expert operational support on infection and environmental health to NHS Boards and local authorities in Scotland. Its aim is to improve the health of the Scottish population by providing the best possible information and expert support to practitioners, policy-makers and others on infectious and environmental hazards.

29. SCIEH's duties include the collection, analysis and dissemination of information on laboratory reports and outbreaks and incidents. SCIEH can assist with the co-ordination of the investigation and control of outbreaks which cross geographical or organisational boundaries, and provide a mechanism for the collection, collation and dissemination of information from the different areas involved. It may also, where appropriate, provide expertise to assist at NHS Board level, but always at the invitation of the local agencies with whom final responsibility rests. SCIEH also provides advice and support on chemical incidents in its capacity as Regional Service Provider Unit (RSPU) for Scotland.

#### Scottish Executive Health Department

30. The SEHD is the main point of Government contact for public health incidents. NHS Boards must notify SEHD about incidents and update the Department on developments in them. This will normally be through the DMO or other nominated person from the ICT informing a member of the Chief Medical Officer's staff. On being notified, SEHD will copy all relevant information to other Executive Departments and liaise with the SE press office. Agreement will be reached as to which Department briefs Ministers (normally this will be SEHD). Clear channels of communication will be

established between SEHD and the ICT. These channels will be notified to all concerned and will be the sole lines of communication. The SE and ICT will agree the timing and updates on progress.

31. For a major public health incident, an incident group will be formed within the Scottish Executive led by the Health Department to assess the coherence of the local response, the resources at the local Board's disposal, potential national consequences and the nature of communications from the NHS Board. It will ensure that other appropriate agencies e.g. SCIEH, are involved and will agree communications and briefing to Scottish Ministers, other SE Departments, and when appropriate other UK Health Departments. In the circumstances of national level emergency, the SEHD National Emergency Planning Officer will co-ordinate the efforts of the emergency services and, if necessary, the military. Consideration will also be given to opening the Scottish Executive Emergency Room in St Andrew's House.

32. Where a major breakdown of local arrangements occurs, or the scale of the incident overwhelms resources including established arrangements for mutual support from other regions, the Scottish Executive would be entitled to deploy reserve powers, normally on the advice of the Chief Medical Officer.

33. On an on-going basis, SEHD will assess the effectiveness of the management of public health incidents and produce guidance on how to improve it.

### **Organisational arrangements for managing public health incidents**

#### Accountability and reporting arrangements

34. NHS Boards share statutory responsibility for improving health with Local Authorities. In addition representatives from other statutory agencies will be involved in planning for and managing public health incidents each fulfilling a remit on behalf of their own organisation and being responsible to it for actions taken in this regard. Each will have its own statutory duties to fulfil with regard to protecting public health. NHS Boards, as lead agency for protecting health, are responsible for the overall performance of the arrangements for planning for and managing public health incidents.

35. NHS Boards should reach agreement with their partners, especially local authorities, on:

- developing and testing joint plans for managing public health incidents. Normally this will be through regional emergency planning committees' arrangements;
- reviewing and approving incident/outbreak plans. Members of the NHS Board and where appropriate, political or appointed representatives of other organisations should be involved in this process;
- assessing the performance of control teams during the incident/outbreak;
- reviewing ICT reports. Members of the NHS Board and where appropriate, political or appointed representatives running other organisations should be involved in this process;
- following up the recommendations made in Incident Control team reports;
- liaising with SEHD and other national agencies in developing national plans and procedures and reviewing the overall effectiveness of public health incident management in Scotland.

36. NHS Boards should appoint a lead officer to be responsible for putting these arrangements in place and updating them as appropriate. Normally this would be the Director of Public Health.

He/she would also be responsible for ensuring that the NHS Board has efficient procedures to discharge the functions detailed in this guidance.

37. Occasionally there will be indications that the ICT is not working as effectively as required. In such instances, the lead NHS Board officer for assessing ICT performance should take steps with his senior management counterparts in the other agencies participating in the ICT, to assess and remedy any shortcomings.

#### Joint planning for public health incidents

38. NHS Boards should jointly with local authorities and other partners draw up co-ordinated outbreak/incident control plans. Such plans should be reviewed annually and jointly exercised on regular basis. Formal endorsement of joint plans by all agencies involved in them is recommended (see above). Plans should outline a comprehensive approach to the control and investigation of outbreaks of infection and incidents involving exposure to chemical, radiation and other hazardous agents. Further details on the functions to be covered in the plan are included in page of this document.

39. It is essential that arrangements for handling outbreaks and incidents are integrated with overall multi-agency arrangements for emergency response. This is particularly important should there be any question of any criminal activity being involved in the causation of the outbreak or incident e.g. the illegal supply of drugs. In certain incidents, e.g. those involving the deliberate release of a chemical or biological agent, the NHS Board while retaining its own responsibilities, will be required to play a key part in the overall response led by the Chief Constable of the area in which the incident occurs (or the Police Incident Commander nominated by him/her), and have regard to the potential requirement to protect the crime scene in order to avoid prejudicing prosecutions. When incidents involve or have the potential to involve legal proceedings, it is important that the local Procurator Fiscal's department is kept fully informed. NHS Boards should reach agreement with their emergency planning partners and in particular the relevant police force about emergency response arrangements in the circumstances when criminal activity is implicated.

40. It is imperative that adequate resources are made available from the outset to investigate the control of the outbreak. An inadequate initial response may have serious consequences for the wider public health. Investigations should never be delayed for financial or contractual reasons. NHS Boards should reach agreement with local agencies with regard to responsibility for the costs of processing samples. Representatives of agencies on the ICT should have sufficient devolved authority to commit agency resources required to investigate and control an outbreak. These issues should be discussed among agencies as part of the arrangements for formally agreeing plans.

#### Incident Control Teams

41. It will be the responsibility of the NHS Board to call an Incident Control Team. In public health incidents, an officer of the NHS Board, acting as a DMO of the Local Authority, should co-ordinate and lead the investigation and control of the outbreak/incident. Usually this will be a Consultant in Public Health Medicine with responsibility for communicable disease and environmental health. The NHS Board should ensure that DMOs are adequately trained and have demonstrable competencies in communicable disease control and environmental health and in leading multi-agency teams.

42. The DMO will be responsible for initial action in response to the incident and convening an incident control team. The size and nature of the outbreak will determine the exact arrangements. The ICT is a multidisciplinary, multi-agency group with responsibility for investigating the outbreak/incident and implementing control measures. The remit of the ICT is on behalf on the NHS Board and in co-ordination with other agencies, to:

- a. reduce to a minimum the number of cases of illness by promptly recognising the outbreak/incident, defining how cases have been exposed to the implicated hazard, identifying and controlling the source of that exposure and preventing secondary exposure;
  - b. minimise mortality and morbidity by arranging optimum care for those affected;
  - c. inform the public, their representatives and the media of the health risks associated with the incident and how to minimise these risks;
  - d. collect information which will be of use in better understanding the nature and origin of the incident and on how best to prevent and manage future incidents.
43. In carrying out this remit, the ICT should, in a timely manner:
- ensure that systems are in place to collect and collate all relevant information and verify, review and interpret its significance;
  - carry out a full risk assessment and decide on courses of action necessary to protect the health of the public;
  - co-ordinate the investigation and management of the incident within the protocols and codes of practice of the agencies involved and having regard to extant legislation;
  - liaise with SCIEH, SEHD and other relevant agencies to draw on their expertise and ensure necessary actions falling with the responsibility of these bodies are put in place;
  - co-ordinate the issuing of advice and information to the public directly and through the media;
  - ensure arrangements for the care of patients are in hand and keep all relevant clinical professionals updated;
  - declare the end of the incident;
  - produce a timely report on the incident and provide information to SCIEH for outbreak surveillance purposes.
44. The ICT should normally include:
- a NHS Board representative (the DMO, usually a CPHM (CD/EH));
  - local authority representative (normally an environmental health officer);
  - a scientist with expertise in the detection and characterisation of the hazardous agent involved in the incident e.g. a consultant microbiologist;
  - administrative support;
  - a press officer.
45. Usually the ICT will also contain officers from other relevant agencies e.g. the State Veterinary Service, Scottish Water, whose input is essential to manage the incident. However it is important that the ICT does not become too large, e.g. more than 10 people.

46. An ICT usually functions for a single NHS Board area. However there are occasions when an NHS Board will be asked to lead a regional or national ICT which involves other NHS Boards. For example, when an outbreak/incident is affecting more than one NHS Board area or Scotland as a whole. In such instances, discussion should take place between representatives of the boards affected, SCIEH and SEHD (or FSA Scotland in the case of an actual or potential foodborne outbreak/incident) about the need to establish a national/regional ICT, led by a single NHS Board on behalf of the others. If it is decided to proceed with a national/regional ICT, this may act as the single team responsible for managing outbreak/incident or may co-ordinate local teams. If it is the latter, the national team should include the Chairs of local teams. The Chair of the ICT will be accountable to the lead NHS Board for the performance of the national/regional team. With regard to the investigation into the cause and extent of the national/regional outbreak or incident, in both of the above instances, SCIEH will co-ordinate the human health aspects of the investigation.

47. All members of the ICT must have due regard to the confidentiality of information discussed in the ICT meetings (while bearing in mind the need to demonstrate openness and transparency when reporting the facts to the public). All agencies represented in the ICT must ensure that relevant staff within their own organisations are regularly briefed about the outbreak/incident. Representatives from the individual agencies involved in an outbreak/ICT should only carry out investigations, assess risk to the public health, take control measures and make public statements after full discussion within the ICT or if that is not practical, with the Chairman of the ICT.

48. Meetings should be kept to a minimum and be as short and efficient as possible without compromising safe working. They will normally be chaired by the DMO. Adequate secretarial support must be provided. Careful consideration should be given to the composition of the agenda, the timing and the duration of meetings. Attention should be paid to the context of public concern in which an incident may be taking place, the different information requirements of the print and broadcast media and the crucial issue of timing, to ensure optimal dissemination of information. Responsibility for this should be clearly assigned.

49. At the first meeting the Chair should remind the ICT participants of their roles and responsibilities and status as members of the group. Attendees at the first ICT meeting should all be required to declare any possible conflicts of interest as individuals or on behalf of their organisations. Where a declaration of a possible conflict of interest is made, it should be recorded and a decision made by the Chair on that individual's status. Individuals who are not full members may continue to attend the ICT by invitation, but should not expect to have equal rights in terms of determining the conduct of the investigation, the advice given to the public, the content of press statements or the final ICT report.

50. On occasion e.g. in a major incident, a representative of SEHD or other SE Department will attend an ICT to facilitate liaison between the ICT and SE. In such instances, unless otherwise indicated, his/her status on the team will be as an observer.

#### Outbreak/Incident Management Support Team

51. If the situation develops into a very large-scale incident/outbreak or one with considerable national interest, pressures may be brought to bear on the ICT, which could distract it from its core purpose of managing the incident. An example is when there is a sustained, large volume of enquiries about the outbreak from the public, media and politicians. Very large outbreaks can have secondary impacts on a range of services e.g. hospital care, food and water supply and may lead to the need for increased expenditure with money being reallocated from existing budgets. In large and/or lengthy outbreaks, there will be a need to make appropriate provisions for relieving ICT members who may become fatigued. In such instances, the Chair of the ICT, liaising closely with NHS Board lead officer for incident management, should discuss setting up an incident management support team (IMST).

52. The purpose of the IMST is to enable the ICT to fulfil its remit detailed in paragraph 38, more effectively by:

- supporting the ICT by providing it with additional information and resources needed for its effective functioning;
- if necessary, acting an alternative resource to help deal with certain external factors, including aspects of media enquiries;
- making strategic decisions on the wider impact of the incident on services not directly implicated in the incident;
- mobilising additional resources to aid the control of the outbreak;
- responding to requests from the ICT for additional help required to resolve problems which may compromise the function of the ICT.

53. In circumstances when there are a large volume of enquiries the IMST, liaising with the ICT, should provide a focal point of contact with SEHD and for briefing Scottish Executive officials and local and national politicians. It should also advise the CMO and SE officials on the need to deploy reserve powers if incident management arrangements are overwhelmed.

54. The IMST should consist of representatives of senior management from the agencies involved in the ICT. Normally it should be led by an NHS Board senior officer and must include the DPH or other officer to whom the DMO is reporting on the management of the incident and a senior Local Authority representative. The ICT Chair should liaise closely with the lead IMST officer in co-ordinating the different functions.

#### The end and aftermath of an outbreak/incident

55. The ICT must decide when an outbreak/incident is over and make a statement to this effect for release to the general public and other interested parties. This should be based on a risk assessment which reaches a conclusion that there is no longer a significant risk to the public health. Subsequent to this decision being taken, and within as short a time-scale as possible, a debriefing meeting of the ICT should be convened to consider lessons learned about managing the incident and any further preventive action required. These should be recorded in a note and key lessons learnt should form part of the subsequent ICT report.

56. A full, but anonymised report should be prepared by the ICT. . The Chair of the ICT has overall responsibility for its production. As far as possible, the ICT report should be the product of agreement of all full members of the team. If this is not possible, areas of disagreement should be noted. Officers of the constituent agencies in the ICT who were not ICT members should not edit the report after its production. A template for the report is provided in Annex 6. The report should, in addition to describing the outbreak/incident, consider the effectiveness of the investigation and the control measures taken. It may in some instances be necessary to delay or limit the circulation of the final report pending legal action. In such cases legal advice should be sought.

57. Based on the results of the incident investigation, risk assessment and debriefing, the ICT should formulate targeted recommendations. The Chair of the ICT should ensure that the report and specifically the section dealing with the recommendation, is communicated to the targeted organisation. NHS Boards are responsible for ensuring that ICT recommendations are followed up. The NHS Board to which the ICT is accountable should ensure that there is a response to the recommendation from that organisation for its implementation. If it has statutory responsibilities, it must reply to the NHS Board laying out its response to the recommendation.

58. ICT reports should be sent for formal review to a Board meeting. The reports should also be made available to appropriate individuals, the local authority, SCIEH and the Scottish Executive Health Department or other SE Department with responsibility for aspects of the outbreak/incident. Other relevant regulatory agencies (e.g. Food Standards Agency (Scotland), Scottish Water) should receive a copy.

59. As indicated above, the NHS Board is responsible for approving an action plan to follow up the recommendations contained in the report. The action plan should be appended to the copies of the report submitted to the Scottish Executive Health Department. If a recommendation has major policy implications or if the response from the agency to which an action is recommended is deemed by the NHS Board to be inadequate, the NHS Board should inform SEHD who will review the issue further.

60. In addition to a full outbreak/incident team report, all relevant outbreaks or incidents should be summarised in the appropriate standard summary form for submission in timely fashion to SCIEH for the purposes of outbreak/incident surveillance.

## **KEY FUNCTIONS OF INCIDENT MANAGEMENT**

### **Introduction**

61. The key functions are outlined schematically in Figure 1. Local incident/outbreak plans should include reference to how these functions will be implemented in the relevant area.

### **Surveillance and reporting**

62. An essential part of the control of outbreaks and incidents is the recognition of a change in the distribution of illness or of the occurrence of an illness of major public health significance. To this end surveillance, i.e. the collection and collation, analysis and dissemination of information is a vital tool. NHS Boards should ensure that surveillance systems are in operation locally and in particular that these include the notification of clinical illness and laboratory reporting of microbiological isolates. Such systems should feature the early reporting by telephone or electronic means of cases of significant illnesses, which may or may not be statutorily notifiable.

63. NHS Boards should have in place systems, which enable them to analyse and interpret information collected through surveillance and identify:

- an excess in the incidence of a communicable disease, or of an illness which may be due to an environmental hazard, over that expected for a specific time, person or place;
- the clustering of cases of communicable disease, or of an illness which may be due to an environmental hazard in person, place or time;
- the occurrence of a single case of a serious infection with significant public health implications;
- a clustering of cases of severe illness which have an unusual clinical presentation;
- a clustering of unexplained illnesses;
- the occurrence of an event which has led or has the potential to lead to a community or significant proportion of the population, being exposed to a hazardous agent.

64. NHS Boards should agree with their partners reporting mechanisms which include criteria (“triggers”) for notification of potential incidents requiring further investigation and risk assessment. In particular they should agree with:

- clinicians in local healthcare services, a protocol for the notification of unusual illnesses;
- local microbiological laboratories, a protocol on the notification of infectious agents of known or potential public health significance;
- the statutory agencies responsible for monitoring air, food and water quality, the notification of data which indicate the development of a situation likely to present a risk to the public health;
- the emergency services, the reporting of incidents likely to lead to the public being exposed to harmful agents e.g. the fire service in respect to chemical spills.

# KEY FUNCTIONS OF INCIDENT MANAGEMENT



65. SCIEH is currently piloting a surveillance system known as CELSIUS (Clinical and Expanded Laboratory Surveillance of Illness of Unexplained or Unusual Severity). The study which aims to facilitate the early detection and reporting of severe illness, caused by deliberate release of chemical biological, radioactive or nuclear agents or by new re-emerging or unusual infections, will run for four months during the peak winter illness months prior to its evaluation in early April 2003.

### **Identification and initial response**

66. The occurrence of one or more of the events indicated above should alert the NHS Board and in particular the Consultant in Public Health Medicine (Communicable Disease & Environmental Health) to the possibility of an outbreak/incident. Incidents, particularly those involving more than one NHS Board area, may be recognised through the national surveillance system operated by SCIEH. In certain circumstances e.g. an immediate response to a chemical incident, one or more agencies may have to take urgent action to protect the public before notifying the NHS Board. As soon as possible after control measures have been put in place, the Board should be informed.

67. On recognition of one or more of these events, the Board should ensure that:

- all relevant agencies with an interest in investigating and control of the outbreak/incident are notified;
- steps are taken to gather further information about the cases of illness and how they may have been exposed to the hazardous agent;
- an initial risk assessment is undertaken;
- if possible, a working hypothesis as to the cause of the outbreak/incident is formulated
- if necessary to protect public health, urgent control measures are put in place.

68. If the risk assessment indicates that there are cases of an illness which have major public health implications and/or there is a probability of the public continuing to be exposed to an infective or other hazardous agent, steps should be taken to convene an Incident Control Team. Based on an initial risk assessment, the NHS Board should reach a view in conjunction with the partners alerted about the need for specific control measures. These should be instituted as soon as possible and should not necessarily await the convening of an Outbreak/Incident Control Team if there is an urgent need to protect public health.

69. Some outbreaks/incidents may be over by the time they are reported or discovered. In this case the focus of the investigation will be on elucidating the cause and on the prevention of a future episode. An outbreak may be limited in terms or size and clinical significance, e.g. a mild infection affecting only one family unit. In such instances it may not be appropriate to convene an Incident Control Team.

70. Once the initial risk assessment has been carried out, a decision should be made on how the risk is likely to be perceived by the public; how and when it should be communicated and the best media for doing so. If there is a justified need for urgent preliminary communication, this should not await the meeting of an ICT.

71. The findings of an initial investigation; the timing and content of communications; the outcome of initial risk assessment; decisions on steps to be taken and all other relevant matters should be carefully recorded in an appropriate format.

## Investigation

72. From the information gathered from the initial investigation, it may be possible to form a working hypothesis about the type of exposure to the infective agent or environmental hazard involved, the source and level of that exposure, the nature and size of the population exposed or likely to be exposed and the degree of risk to the public health. It will then be for the ICT to decide how to progress a fuller investigation to test that hypothesis.

73. The investigation should usually consist of three elements:

- an epidemiological investigation;
- a scientific investigation into the nature and characteristics of the implicated hazard (in communicable disease outbreaks, this would be a microbiological investigation);
- a specific investigation into how cases were exposed to the infective agent (e.g. food supply and hygiene, hygiene in healthcare settings).

74. Most outbreaks/incidents merit detailed description. Because of this, as full as possible a descriptive epidemiological study of cases should be carried out. The ICT should agree a simple definition of case for the purpose of the outbreak/incident and revise this definition as appropriate through the outbreak investigation. Specific draft data collection forms should be available prior to the outbreak/incident under investigation and should be modified for the purposes of the outbreak. Information from individual cases should be collated preferably using an appropriate computer software package. Standard epidemiological output, e.g. epidemic curve, incidence rates and exposed populations, should be presented to the ICT. The working hypothesis may then need to be reconsidered and alterations made as necessary. Based on the outcome of the descriptive epidemiological investigation, the ICT may decide to carry out an analytical epidemiological study. A decision to carry this out should be made in liaison with SCIEH and NHS Boards should normally expect support from that organisation in carrying out these studies.

75. It is essential to involve scientific especially microbiological laboratories as early as possible in the investigation of an outbreak/incident. The scientist on the ICT should advise on the taking of appropriate specimens and arrange for relevant investigations. This should include liaison with the relevant reference laboratory in Scotland or other specialist laboratories in the UK. It is essential that accurate consistent results of tests are available as rapidly as possible to the ICT. The ICT should therefore consider carefully the best use of laboratory resources available, taking into consideration turn-around times for testing and reporting. Guidance on the submission of clinical samples should be a high priority and should be communicated to all relevant clinicians. As part of the incident investigation such samples should be identified for the specific reference numbers or codes to distinguish them from other samples.

76. Specific investigations should be undertaken into the reasons for and circumstances in which cases were exposed to the infectious agent implicated in the incident. This will often involve the taking of appropriate samples for microbiological or other laboratory testing. It also may involve tracing the likely passage of the agent causing illness from the most probable source of contamination or infection to the specific circumstances in which the case was exposed to it. NHS Boards should liaise with local authorities and other agencies in ensuring that relevant protocols for this type of investigation are developed.

77. Should a criminal investigation be likely to ensue, evidential procedures should be followed as far as possible.

78. The results of the epidemiological, scientific and exposure investigation must be considered together before reaching a conclusion as to their significance to the control of the outbreak. This should be linked to previous knowledge of the illness involved and local circumstances. Considering

the findings from each investigation singly may be misleading. ICTs should take care to assess where the findings may be coincidental. In particular the ICT should review associations which may be considered causal and assess whether there is evidence of bias in the investigation and/or the strength of a specific association.

## **Risk Assessment**

79. Based on the findings from the investigation and an assessment of the effectiveness of control measures taken, the ICT should assess the ongoing risk to the public from exposure to the hazardous agent involved in the outbreak/incident. The purpose of this assessment is two-fold:

- to estimate the probability of the public continuing to be exposed to the hazard, and
- to estimate the level of illness likely to arise in the population exposed.

80. Risk assessment essentially entails appraising the balance of evidence collected in the incident investigation and reaching a view as to whether it indicates that there is a significant threat to public health. It should involve:

- defining the impact on health associated with the agent identified as being the hazard to health;
- defining the probable or possible vehicle for the exposure of the agent and its distribution in the community exposed;
- identifying the population exposed or likely to be exposed and their susceptibility to infection and
- estimating the overall probability of there continuing to be an ongoing exposure and the likely scale of ill health resulting from this exposure.

81. Conclusions derived from this process are principally a matter of professional judgement. However, for reasons of public accountability and understanding, it is essential that this process is as transparent as possible. The outcome of risk assessments must therefore be clearly recorded.

82. Once the risk has been assessed a decision should be made on how the risk is likely to be perceived by the public. This should inform the development of specific communications to the public about the risk and how it is being reduced.

## **Control Measures**

### Measures to prevent further exposure

83. The principal objective of any control measure is to reduce the risk to public health by preventing further exposure to the hazardous agent involved in the outbreak/incident. Control measures may be directed at the source of the exposure and/or at affected persons to prevent secondary exposure to the agent of susceptible individuals.

84. Specific control measures will vary according to the type of outbreak/incident. In summary they will be one or more of the following:

- advising specific groups or the general public on how to avoid and minimise risks e.g. condom use, needle sharing, , safe food handling;
- delivering healthcare interventions to prevent the transmission or development of illnesses or their complications e.g. chemical antidotes, immunisation;
- implementing hygiene measures which reduce or eliminate contamination with hazards e.g. cleaning & disinfection; decontamination;

- auditing performance against standards and ensuring steps are taken to comply with these e.g. hand hygiene audits in hospitals
- curtailing normal daily activities or services e.g. prohibiting attendance at school or nursery, closure of food preparation or retail premises, either through voluntary agreement or enacting regulatory powers;
- providing alternative arrangements for normal services e.g. drinking water supplies.

85. A range of agencies may be involved in controlling an incident. Many of the measures taken have to be carried out within a legal or statutory framework. At times voluntary agreements will be sought with a range of parties implicated in the outbreak e.g. food retailers. Wherever possible these voluntary agreements should be recorded and if possible signed by both parties. It is important that professionals and the general public are provided with relevant information on the control measures being taken so that they can understand their relevance to their own practice.

86. Control measures taken by one agency will have implications for those taken in another. Because of this it is essential that the ICT maintains an overview and co-ordinates such measures. When controls involve or have the potential to involve legal proceedings, it is important that the local Procurator Fiscal's department is kept fully informed. The agency responsible for a specific control measure should check that the measure is being put in place in the time required and is having the desired impact (which should be defined by the ICT). It should report on this to the ICT.

#### Patient Care Measures

87. A major outbreak or other type of public health incident can lead to significant pressure being placed on primary care and hospital services. It is important that in such instances the Incident Control Team establishes effective liaison with the medical directors of appropriate NHS Trusts or hospitals.

88. In the case of a major outbreak or other type of public health incident, the ICT should decide as far as is practicable a plan of management for patients directly involved in the outbreak/incident. This plan should include details of guidance to GPs and hospital doctors on the clinical care of patients; the enhancement of specialist hospital based services if required; support arrangements for GPs and other primary care services; mechanisms to coordinate services between primary care and between and among different hospitals (if more than one is involved). The plan should also indicate arrangements for the admission of patients; the content of communications to professionals, patients and relatives; contact points for enquiries and infection control measures to prevent transmission in healthcare settings.

### **Communications**

#### Risk Communication

89. Risk communication is an essential part of the process of managing incidents and outbreaks. Because the main issues to be covered in communications about outbreaks and incidents generally concern hazards to the public health, NHS Boards should take the lead in decision making on risk communication. The report from the Department of Health (England) "Communicating about Risks to the Public Health – Pointers to Good Practice" provides guidance for action in this area. It states that:

- from evidence in the scientific literature and on purely tactical grounds, effective **communication demands a presumption in favour of openness**. Not being open puts at stake the perceived trustworthiness of the agencies involved in managing risks;

- when communicating about risks, health agencies should be clear about the objectives they are pursuing and identify any key issues which will influence the impact on the public of the communication (especially those identified in the Guidance as “fright factors “ and “media triggers”);
- plans for public health incidents should contain clear procedures for risk communication e.g. helplines, briefing for professionals, leaflet distribution, special arrangements for businesses and institutions (e.g. hospitals), media handling;
- the content of communications should acknowledge uncertainties and explain as far as possible the risk to the public in terms of probabilities and by comparing the current risk to others;
- mechanisms should be in place to monitor the impact of communication on public perception of risk and how this is reported e.g. monitoring the number and nature of calls to a helpline and the extent, content and tone of media coverage.

90. **Decision-making on communication about public health risks should be based therefore on a presumption in favour of openness.** As far as possible communications should be founded on factual evidence but if there is doubt as to the reliability of this, the public should be informed of this and uncertainties acknowledged. The particular need for specific communications aimed at high risk groups (e.g. immuno-compromised patients and babies) or at those with sensory deficits (hearing or vision) have to be kept in mind. Decisions on risk communication should be recorded. Decisions not to communicate about actual or potential risks to the public health even when these are uncertain should be justified and recorded.

#### Communications Plans

91. NHS Boards should have a communications plan which indicates how they will provide information about the outbreak/incident and its control to the following key groups:

- the key agencies involved in managing the outbreak;
- professionals involved in diagnosing, treating, or advising patients who are, or could be cases of infection or toxic exposure;
- the general public and in particular the community directly affected by the outbreak/incident.

#### Intra and inter agency communications

92. With regard to agencies involved in managing the outbreak, notification of the occurrence or likely occurrence of the outbreak/incident should be made to these key agencies prior to the first OCT meeting. Information should be regularly updated as appropriate. As part of their emergency plans, NHS Boards should maintain a contact list (including out of hours arrangements) for representatives for all key agencies.

93. During a major outbreak, a range of professionals working in laboratories or clinical services will require information about the nature of the infection, care arrangements, diagnostic testing, advice to the public and the scale of the outbreak and steps taken to control it. NHS Boards should have plans on how to disseminate and distribute such information.

94. NHS Boards should have in place mechanisms for the effective transmission of information within as short a time-scale as possible. This should involve faxes and/or e-mails. Communications should be recorded.

95. In respect of actual or suspected outbreaks or incidents, NHS Boards should ensure that there are procedures to ensure that on notification, information is passed to senior management and in particular the Board Press Officer. The relevant local authority and the Scottish Centre for Infection and Environmental Health (SCIEH) should be informed about suspected outbreaks or incidents

96. NHS Boards must notify all suspected outbreaks or incidents and especially those requiring the formation of a outbreak or incident control team to the Scottish Executive Health Department, if possible prior to the first meeting of the team. If the outbreak is one of foodborne disease, the Food Standards Agency should be notified also. SEHD should receive regular updates on progress.

97. Where deaths have or are suspected to have arisen as part of an outbreak or incident, the Procurator Fiscal should be informed and subsequently briefed if appropriate.

#### Communications with the public

98. To help allay any unnecessary anxiety, communications should be made as early as possible in the management of the incident. This requires tested systems capable of rapid deployment which are ready for use prior to any incident occurring. The following mechanisms should be considered:

- face to face communication with affected individuals or groups e.g. public meeting;
- the establishment of a helpline;
- letters or fact sheets provided directly to members of the public in an affected community;
- specially designed information leaflets to be distributed at appropriate points
- briefing key members of the public such as head teachers, MSPs, councillors, members of local health council
- information in the form of statements, press releases, interviews and briefings for the print and electronic media (see below).

99. Wherever possible standard templates for communicating with the general public and the media should form part of planning for more common or potentially dangerous types of incidents. They should include standard press releases and “question and answer” information sheets. These should require minimal customisation during incidents to facilitate speedy communication.

100. In some types of incident, private or public sector organisations implicated as probable sources of the exposure to a hazard will have existing lines of communication to their customers, clients or patients. . At times the organisation may form part of the ICT e.g. Scottish Water, NHS Trust. Use of these lines of communication can often facilitate advising the public on how to reduce risks and to implement control measures to prevent exposure e.g. not eating a product already purchased. In these circumstances the ICT should liaise with the organisation in employing its knowledge and resources to communicate with public about risks. The ICT should co-ordinate the content and tone of any messages and how these should be disseminated.

101. NHS Boards should have in place mechanisms to establish help-lines promptly. In some incidents the public will look to contact a specific company or agency to obtain information about their services or products. In these instances, the ICT should liaise closely with the organisation in the

measures it establishes to deal with customer enquiries while recognising that the mechanisms for doing so are best left to the company involved. It should be made clear however that the central public health message is the responsibility of the ICT.

102. The ICT should maintain an overview of all communications to ensure that there are no contradictions in their content or tone.

#### Media handling

103. With regard to media liaison, the considerable extent of public, press and political interest in recent outbreaks and incidents highlights the importance of paying careful attention to this aspect of outbreak management. There is a need, in large-scale outbreak/incident situations, for a clear and proactive approach to media management and public relations especially by NHS Boards. In view of the crucial interface with the media, media management should form an essential part of outbreak/incident plans.

104. There are two important roles that require to be fulfilled, that of media liaison and that of acting as spokesman for the ICT. To fulfil the first role, an appropriate Press Officer agreed by the ICT should be identified to liaise with the media to ensure that the information communicated to them is consistent and to organise arrangements for press briefings, interviews etc.. He/she should be the only press officer acting in this capacity on behalf of all organisations involved in the ICT. The Chair of the Incident Team should usually fulfil the second role i.e. be the “public face” of the ICT. There may be situations when the Press Officer fulfils both roles. If other professional opinions are sought from individual ICT members, these should not be given without the agreement of the Chair of the ICT and full liaison with the Press Officer. Whenever possible those from other organisations answering media enquiries should be members of the ICT.

105. In some instances it may be desirable for other organisations represented on the ICT to respond to press enquiries which specifically relate to their operations or legal responsibilities. Arrangements should ensure that such organisations can respond promptly to such enquiries without straying from the core message about public health risks and the measures being taken to reduce them. Again the Chair of the ICT should be informed and full liaison with the agreed Press Officer maintained.

106. To avoid confusion, a common data set (e.g. on number of cases and their clinical status) and a timetable for its compilation and issue to the media should be agreed by the ICT. Decisions about media briefing, and the issuing of press statements, should be made at each ICT meeting. In doing so, careful consideration should be given to:

- Background briefing material, such as the role of the ICT, the general nature of the hazard or threat, what is known, and important facts which may not be known;
- the implications of releasing the information;
- the implications of the timing of the release;
- the importance of presenting complex information in simple language
- and the different requirements of the print and broadcast media.

107. All Press Statements issued should be copied to the press offices of all organisations represented on the ICT, the Scottish Executive Health Department and other relevant and interested organisations. The Food Standards Agency must be informed about outbreaks of food-borne disease.

Scottish Executive Departments will liaise with ICT Press Officer and through him/her with the ICT Chair in handling media enquiries to the Executive and developing and releasing press statements.

### **Audit and evaluation**

108. A recurrent theme with public health incidents is the need to learn from experience. This involves three key components:

- A formal ICT debriefing on the management of the incident with a view to including lessons learnt in the ICT report;
- Procedures to assess the performance of statutory agencies in managing public health incidents;
- An evaluation of the effectiveness of incident management arrangements in protecting the public health.

### ICT debriefing

109. The OCT/ICT report should feature recommendations to prevent further outbreaks and incidents and improve the handling of further outbreaks and incidents. These may allude to research. Recommendations should be based on evidence collected during the outbreak and the OCT/ICT debriefing. Recommendations must be targeted at organisations with specific responsibility for taking action on the recommendation.

110. ICTs both during and in the debriefing following an incident should use criteria jointly agreed with their partners (see below) to assess and report on their own performance in managing the incident and the appropriateness of current plans. Recommendations on how these can be improved should be included in the ICT report (see also paragraphs 52 to 57).

### Performance assessment

111. Public and media scrutiny of the performance of ICTs in dealing with public health problems is now common. NHS Boards work with their partners to jointly assess the performance of incident teams. In order to aid this process, SEHD is collaborating with the FSA(S), SCIEH and representatives of NHS Boards and Local Authorities in preparing indicators of good practice in outbreak/incident preparedness and management. The indicators listed provide evidence of “essential” good practice i.e. if not done they will significantly impede or constrain the efficiency and efficacy of managing an outbreak. They apply to the structure and process, not outcomes, of incident or outbreak control and investigations. Further work will be carried out to further develop a consensus about the validity and reliability of these indicators to public health practice.

### Evaluating the effectiveness of incident management

112. For relevant outbreaks or incidents NHS Boards should submit promptly to SCIEH the appropriate standard summary form for outbreak/incident surveillance. SCIEH should work with NHS Boards, the Scottish Executive and other Scottish and UK partners to develop systems to assess the effectiveness of incident management in terms of preventing further cases of ill health; minimising morbidity and mortality through specific patient care measures and communicating with the public about risks.

## **Outbreak/Incident Preparedness**

- Outbreak/Incident plans have been reviewed annually by NHSB's and their partners especially local authorities.
- Each outbreak/incident plan dealing with a a major exposure to hazard e.g. food, waterborne, HAI, chemical and radiological incidents have been tested\_within a 3-year cycle i.e. utilised in an actual major outbreak or tested in an exercise. Such testing should include dealing with the deliberate release of hazardous agents
- Outbreak/Incident plans include up to date contacts for liaison out of hours, available expertise and possible ICT members – as related to incident, whether full members, co-opted or advisory level.
- Outbreak/Incident plans include an aide-memoir of the outline of the role of ICTs.
- The NHSB has documented systems and agreed criteria for being notified of and detecting potential or actual outbreaks and incidents.

## **Outbreak/Incident management**

- In the event of an outbreak or incident, the NHS Board has undertaken an initial risk assessment and recorded
  - whether there is a significant risk to the publics health.
  - Scale of problem
  - Severity of problem
  - Possible cause of incident/outbreak
  - Initial actions to be taken and why.
- the ICT has kept records of decisions made about outbreak/incident control measures and documented:
  - whether these measures have been applied and
  - if not, the reason why
  - if yes, by whom, when and where they have been carried out.
  - any further action arising from above.
- the ICT has reviewed the impact of control measures at each OCT meeting and documented its view on this.
- the ICT has kept records of decisions made about outbreak/incident investigation and documented:
  - whether the investigation is being carried out and
  - if not, the reason why
  - if yes, by whom, when and the main findings .
  - any further action arising from above.
- the ICT has reviewed the risk to public health arising from the outbreak and the likely overall impact of control measures on it
- the Chair of the ICT has ensured that there is a check maintained on the above aspects of outbreak management and that this is recorded in the ICT minutes.
- the Chair of the ICT has regularly reported on the outbreak/incident to relevant senior management of the local authority and NHS Board.
- The ICT has agreed a single press spokesman and press officer who have regularly reported to the ICT on the tone and content of communications and responses to them.

## **The aftermath of the outbreak/incident**

- The Chair of the ICT has submitted the final ICT report to the NHS Board
- The Chair of the ICT has forwarded the report to relevant organisations with responsibility for taking forward its recommendations.

## CURRENT SCOTTISH GUIDANCE RELATED TO OUTBREAKS AND INCIDENTS

**MEL(1997)70** – Advisory Committee on Dangerous Pathogens: *Guidance on the Management and Control of Viral Haemorrhagic Fevers- High Isolation Provision for Actual or Suspected Cases of Viral Haemorrhagic Fever in Scotland*

**MEL(1997)72** – *Emergency Planning – Pandemic Influenza* (Full Plan sent to DsPH under cover of letter from CMO of 13.10.97.

**MEL(1996)93** - *Hepatitis B Infected Healthcare Workers* (Addendum to Covering Scottish Executive letter signed by CMO and Acting Chief Exec, August 93 - Hepatitis B Infected Healthcare Workers (enclosing Guidance))

**HDL(2000)3** – *Hepatitis B Infected Healthcare Workers*

**CMO(2000)1** – *Memorandum on Rabies Prevention and Control*

**Food Standards Agency (Scotland)/SEHD** – *Guidance on the Investigation and Control of Outbreaks of Foodborne Disease in Scotland –May 2002*

**Scottish Centre for Infection and Environmental Health** – *Guidelines for the Investigation of Zoonotic Disease in Scotland* April 2001

**Scottish Office Department of Health Advisory Group on Infection**– *Scottish Infection Manual – Guidance on core standards for the control of infection in hospitals, health care premises and at the community interface* July 1998

**Scottish Office Department of Health** - *Control of Tuberculosis in Scotland* 1998

**SEHD** - *HIV Post-exposure prophylaxis, Guidance from UK CMOs' Expert Advisory Group on AIDS*, July 2000.

**SEHD** - *Guidance on Local Reporting of CJD cases and Local Action by Consultants in Public Health Medicine (CD&EH)*, April 2001.

**SEHD/NHSScotland** - *Deliberate release of Biological and Chemical Agents in Scotland – Guidance to help plan the health service response* (Restricted release), May 2002

**SEHD** - *Guidance on Public health action following the identification of raised levels of cryptosporidium in public drinking water supplies*. January 2003.

**Scottish Centre for Infection and Environmental Health** (in collaboration with PHLS and PHMEG) – *Guidelines for the Public Health Management of Meningococcal Disease in the UK*, Communicable Disease and Public Health Journal, September 2002.

**SEHD - NHS Scotland** – *Responding to Emergencies*

**SEHD** – *HDL (2002) 10 - Regional Planning*. March 2002.

## INCIDENTS INVOLVING CHEMICALS

### M1. Introduction

1. Worldwide, there are more than 11 million known chemical substances, of which some 60,000-70,000 are in regular use. A significant number of these are hazardous to health when inhaled, ingested or absorbed through the skin. Such exposures might be chronic, for example in a workplace situation, or acute, for example as a result of an accidental exposure.

2. This guidance is concerned primarily with acute chemical exposures, for incidents that might occur at an industrial site, during transportation of chemicals, during disposal of chemical waste, or through acts of chemical terrorism. The general aim is to ensure a well-planned NHSScotland response within the concept of 'Integrated Emergency Management' (IEM) adopted by central and local government. This document therefore provides guidance on how the NHS Boards can fulfil their responsibilities for the protection of health and the provision of health care in co-ordination with other agencies including the ambulance, police and fire services and central and local government.

3. The nature of many chemical incidents is that they present continuing threats to the health and safety of responding emergency service personnel. Such threats might include fire, explosion and illness or injury due to exposure to hazardous chemicals. The Health and Safety at Work Act 1974 and subsequent regulations, place specific duties on employers (including the NHSScotland and the Scottish Ambulance Service) to make appropriate provisions to safeguard the health and safety of their employees. This same legislation also places specific duties on employees to take reasonable steps to safeguard their own health and safety and that of others. This Annex also provides guidance, therefore, on appropriate health and safety provisions for healthcare staff when responding to chemical incidents.

### M2. Roles and Responsibilities

4. Many chemical incidents demand a multi-agency response, proper co-ordination of which requires clarity over their individual roles and responsibilities. The general roles and responsibilities of various agencies including the police, fire brigade etc are described throughout the main body of this document and in Annexes A through H. In this section, we consider the particular roles and responsibilities for agencies responding to incidents at one or more sites where a release of chemicals has occurred. It is acknowledged, however that in some circumstances, such as chemical pollution from incidents occurring overseas, no specific site of release might be identifiable.

#### *The Police*

5 Arrangements for overall command and control at the site of a major chemical incident will normally depend on the magnitude of the required response.

6 For the least serious of incidents such as a small domestic fire resulting in minor smoke inhalation, each of the emergency services has its own operational responsibilities and deploys its resources under the command of its own incident officers. Close liaison is, however essential, for example to ensure that all casualties have been located and, where appropriate, the police will normally act as the co-ordinator of the overall response at the scene.

7 For incidents of greater severity, for example where a number of members of the public have been exposed to an ongoing release of chemicals due to a factory incident, each of the emergency

services will have its own Incident Commander and co-ordination of the activities under the control of each of these commanders will usually fall to the police.

8 An example of a very large incident, would be a major explosion at an industrial site regulated under the provisions of the Control of Major Accident Hazards (COMAH) Regulations 1999, involving a large number of casualties and a continuing threat. Such incidents require strategic decisions about deployment of resources, managing populations, etc and a more formal command structure, perhaps involving an off-site emergency room, would normally be established by the police.

9 An incident involving chemical terrorism or the need for sheltering or evacuation of the local population would normally be managed by the police. Special provisions for incidents involving deliberate release of chemicals are described in separate SE Guidance.

#### *The Fire Service*

10 In some cases, fire service personnel will be the only responders who have the necessary equipment and training to allow them to work safely near to the source of a chemical incident. Therefore, at the immediate scene of a chemical incident that presents an ongoing threat to the public or to emergency personnel, the fire brigade will take appropriate steps to identify the chemicals concerned and set-up appropriate cordons around the contaminated area. Depending on the severity of the threat, these might include an "inner cordon" with access normally restricted to fire brigade officers who will rescue casualties from within it. Treatment and triage of these and other casualties would normally be carried out by ambulance and medical staff working within an "outer cordon" identified by the fire service as combining the necessary requirements for operational safety and efficiency. Defined (but less stringent) access restrictions also apply for the outer cordon.

11 Casualties of a chemical incident might require decontamination ahead of medical treatment or release from the scene. Separate guidance for the emergency services on decontamination is provided elsewhere and this defines the roles and responsibilities on the fire service particularly in the provision of "mass decontamination" (for example using cold water sprays).

12 The fire service will normally take principal responsibility for identifying the chemical(s) in question and for obtaining basic information on their toxicity in terms, for example, of their labelling under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP). (These require an "indication of danger" in terms of internationally recognised pictograms and "risk phrases" (e.g. R23 means Toxic by inhalation).) The brigades also have access to appropriate chemical information databases such as that of the National Chemical Emergency Centre (NCEC) and to appropriate sources of expert advice and technical support. They will also be able to obtain predictions from the Meteorological Office of the likely behaviour of any airborne pollutant. Co-ordination of the collection of any environmental samples required for subsequent chemical identification would also fall to the fire service or, in their absence or where forensic evidence is needed, the police.

#### *The Scottish Ambulance Service.*

13 The Scottish Ambulance Service (Annex D) is responsible for triage, decontamination and medical treatment of casualties at the scene of a chemical incident and for getting those deemed to be in need of secondary care to hospital. In fulfilling these responsibilities at the site of a chemical incident, ambulance personnel will work closely with the Medical Incident Officer (Section 3.9 of the main body of this document) and the Site Medical Team (Section 3.11).

14 The Ambulance Service as employers are bound by the requirements of the Health and Safety at Work Act 1974 and subsequent regulations to fulfil these operational responsibilities with due regard to the safety of their employees and others who might be affected by their activities. This latter

group would include, for example, members of the public who might be injured by ambulances travelling to and from the scene.

15 Health and safety provisions for ambulance service personnel will include reasonable precautions to ensure that they will not be unduly exposed to hazardous chemicals or other dangers at the scene of a chemical incident. These provisions should not rely on the issue of personal protective equipment alone but should consider alternative measures to minimize the threats. These measures might include ensuring that any activities at the site of the incident are carried out in a well ventilated area upwind of the chemical release, that suitable provisions are made for escape in the face of any acute increase in the level of threat (such as a change in the wind direction), provision of real time instruments to measure ambient chemical concentrations etc.. The Scottish Ambulance Service should also arrange for regular training and practice in the implementation of all such health and safety provisions.

16 These measures should be augmented by provisions for the issue and maintenance of adequate and suitable PPE and for training in its use, in accordance with the requirements of the Personal Protective Equipment at Work Regulations 1992.

17 Separate guidance for the emergency services identifies the Scottish Ambulance Service as having principal responsibility for decontamination of contaminated casualties at the scene of an incident. Ideally this will involve the use of mobile decontamination units, though in certain circumstances improvised decontamination methods might be applicable. The need for decontamination of ambulance staff working in potentially contaminated areas or with contaminated casualties should also be considered.

#### *The Health and Safety Executive*

18 Health and safety at work is a matter reserved for the UK Government. The Health and Safety Executive (HSE) has responsibility for ensuring the health and safety of people at work and of any members of the public who may be affected as a consequence of work. These responsibilities include ensuring that major industrial sites have emergency plans in place in accordance with the requirements of the Control of Major Accident Hazards (COMAH) Regulations 1999.

19 The HSE enforces the requirements of the Health and Safety at Work Act 1974 and subsequent regulations (such as the Personal Protective Equipment at Work Regulations 1992), which include provisions for the health and safety of emergency service personnel responding to chemical incidents.

20 The HSE is also responsible for investigating the cause of any chemical incident notifiable under the Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) Regulations 1995 at any industrial operation. Any such investigation will only begin when the acute phase of the emergency response is over and the area in question has been deemed safe to enter by the fire brigade or police.

#### *Site operators*

21 The primary responsibility for controlling and minimizing risks to health and safety at an industrial site rests with the site operator. Under the Notification of Installations Handling Hazardous Substances (Amendment) Regulations 2002 (NIHHS), site operators must notify the HSE of every site at which specified quantities of hazardous substances are present. Sites at which the industrial process or the nature and quantity of stored substances present a major accident hazard might also be subject to the Control of Major Accident Hazard (COMAH) Regulations 1999.

22 The NIHHS and COMAH Regulations do not apply to every site at which hazardous chemicals may be present in sufficient quantity to pose a significant threat to the health of people in the vicinity. Nevertheless, operators of these sites are bound by the general requirements of the Health and Safety at Work Act 1974 to take all reasonable precaution to minimize the threat that their operations pose to the health and safety of their workers and the local population.

#### *Carriers of hazardous materials*

23 Surface transport of hazardous materials is governed by the "Carriage of Dangerous Goods (Amendment) Regulations 1999" and a range of related regulations on specific issues such as labelling, and on specific classes of materials such as radioactive substances. The HSE has published a number of related guidance documents and their free advice leaflet "*Are you involved in the carriage of dangerous goods by road or rail?*" August 1999 (available at <http://www.hse.gov.uk/pubns/indg234.pdf>) provides an overview.

24 The most common transport-related incidents involve actual or threatened accidental spills for which the first priority of the NHS or SAS staff will be to ascertain the chemicals involved and their related risk to health and safety. This information can normally be obtained via the labelling on the packaging or tanker and labelling requirements are defined in the "The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations 1996" (and other related regulations including CHIP (see paragraph 12 above)). For example, the packaging of ammonium polysulphide solution should carry the appropriate "Danger sign" pictogram to identify its classification a 'corrosive substance' (Class 8) and also a "Subsidiary hazard sign" which classifies it as 'toxic' (Class 6.1). The packaging should also carry the unique 'UN' number for this material (UN 2818).

25 SAS staff and NHS staff who might require to attend chemical incidents should be familiar with the general requirements of these labelling systems and with the related mechanisms for obtaining appropriate detailed information on risks and on treatment of casualties.

#### *The Local Authorities.*

23 Annex G identifies Local Authorities and NHS Boards as having joint statutory obligations for protecting the health of their local populations and this extends to management of public health incidents. In addition, the Control of Major Accident Hazard (COMAH) Regulations 1999, which cover most major chemical and petrochemical plants, require that local authorities make and maintain, comprehensive emergency plans to deal with off-site effects of any major accident at the site.

24 A major role for the Local Authorities in chemical incident response is likely to come after the immediate response phase of an emergency. The local authority might then assume, from the police or other initial co-ordinator, overall leadership for restoration of-contaminated land and water (in close liaison with the Scottish Environment Protection Agency) and any other local activities needed to restore normality.

#### *The Scottish Executive Health Department (SEHD).*

25 Within the general responsibilities of the SEHD for emergency planning in NHSScotland, as described in Chapter 2 of the main text and in Annex A, the SEHD's Emergency Planning Officer is responsible for regular auditing of the NHS Boards' individual emergency plans, including those for chemical incidents (Section M3) and for ensuring that the provision of these plans are exercised regularly.

26 For incidents involving more than one NHS Board area, operational co-ordination of the overall NHSScotland response will normally be the responsibility of the NHS Board in whose area is

the incident is principally sited. The SEHD will confirm or nominate the lead NHS Board as necessary.

#### *Acute Hospital Trusts*

27. Acute hospital trusts must ensure that satisfactory arrangements are in place for the provision of health care to any casualties of a chemical incident. These casualty management arrangements should be documented in local emergency plans.

28. The casualty management provisions of these plans should require that the acute hospital trust will;

- (i) co-ordinate the operational NHS response, on the receipt of casualties from the scene of a chemical incident;
- (ii) ensure that staff are prepared for their roles, through the provision of appropriate training programmes; and that they have access to the advice and expertise needed to provide medical care to casualties of a chemical incident;
- (iii) on the basis of a preparatory risk assessment, provide the facilities and equipment necessary for staff to fulfil their roles in a safe working environment: these include decontamination facilities at casualty receiving hospitals safe working facilities with adequate ventilation etc and personal protective equipment.

#### *NHS Boards*

29 Within the general healthcare and emergency planning responsibilities of each of the NHS Boards (as described in Chapters 1 to 3 of this document) the local Director of Public Health (DPH) is responsible for ensuring that local emergency plans contain appropriate provisions for chemical incident response. This should cover all aspects of the NHSScotland procedures involved from triage, decontamination and treatment of patients at the incident site through to admission to hospital. It should also provide for those in need of other forms of medical assistance such as trauma counselling and for provision of information to the public. A general overview of the scope required for these plans is given in Section M3.

30 In each of the NHS Board areas, there will be a number of sites where a variety of hazardous chemicals are stored or used. The DPH should take reasonable steps, in liaison with the emergency services, to familiarise him/herself with the range of sites and the principal chemical hazards that they present.

31 No comprehensive information will be available on the full range of chemicals transported through each of the NHS Board areas. However, the DPH should seek information from consignors and consignees on any regular bulk movements of dangerous chemicals within or through their areas or of any single movements that might present a particular threat. Liaison with the police, fire brigade and local authorities is recommended.

32 During a chemical incident, employees of the NHS Boards, who might include the Medical Incident Officer and the Site Medical Team, will work closely with employees of the Scottish Ambulance Service. The NHS Boards are subject to the same employers responsibilities outlined in Paragraph 14 above and provisions for the health and safety of medical staff should accord with those outlined in Paragraphs 15 through 17.

#### *Scottish Poisons Information Bureau*

33 The Scottish Poisons Information Bureau is part of the National Poisons Information Service. The Bureau provides a 24-hour information service (Tel: **0870 600 6266**) including clinical advice,

and should be regarded as the primary source of advice for the NHS in Scotland on the diagnosis, investigation and management of people exposed to chemical substances. It also maintains TOXBASE, an online database of information, which is available to registered users at <http://www.spib.axl.co.uk/toxbaseindex.htm>. TOXBASE carries information on the hazardous nature of chemical substances, their ingredients, the symptoms that might arise by various routes of exposure and their appropriate treatment.

*Scottish Centre for Infection and Environmental Health (SCIEH)*

34 SCIEH is available to reinforce, advise or otherwise support NHS Boards' public health medicine expertise. It has particular skills in epidemiology, in surveillance and control of infection and has in-house veterinary and environmental health specialists. SCIEH maintains liaison with "The National Focus for Chemical Incidents" (a Government funded source of further specialist advice and assistance) and can call on its support and that of other specialist help as may be required. SCIEH thus provides to NHS Boards a one-stop-shop source of technical public health advice and assistance. Their website is at <http://www.show.scot.nhs.uk/scieih/> and their 24 hour contact number is **0141 300 1100**.

### **M3 General emergency planning requirements for a chemical incident response**

35 Each Director of Public Health is responsible for ensuring that their NHS Board's emergency plans include adequate and suitable provision for chemical incident response. In common with the other elements of these emergency plans, the provisions for chemical incidents will be subject to regular review by the NHSScotland Emergency Planning Unit.

36 Plans should include the following elements.

- (i) A defined system, jointly agreed with the other emergency services involved and including acute hospital trusts, for prompt notification of incidents to their respective control centres. This should include an outline protocol for establishing appropriate incident control teams.
- (ii) A defined protocol for communication with the Scottish Centre for Infection and Environmental Health (SCIEH). SCIEH will provide advice on the appropriate response on the basis of their own expertise and through their links with the National Focus for Chemical Incidents.
- (iii) A defined protocol for communicating with the National Poisons Information Service and for access to their TOXBASE Information Service. (Directors of Public Health should ensure that all appropriate organisations including hospitals and GPs within their particular area are registered users of the TOXBASE Information System.)
- (iv) Appropriate protocols for liaison with frontline staff. (A general instruction should be issued that all frontline staff who might need to respond to a chemical incident and who carry a mobile phone should have the 24 hour telephone numbers for (at least) the following organisations logged into its electronic phone book. The Scottish Centre for Infection and Environmental Health (0141 211 3600), The Scottish Poisons Information Bureau (070 600 6266), the NRPB (01235 834 590), and the Food Standards Agency (01224 285 107).)
- (v) Provisions for the health and safety of staff attending the site of a chemical incident or receiving casualties. These provisions should include the issue and maintenance of adequate and suitable Personal Protective Equipment and training in its use, in accordance with the requirements of the Personal Protective Equipment at Work Regulations 1992.

(vi) Protocols for casualty management. These should include arrangements for providing chemical decontamination equipment both at the scene of a chemical incident and at hospitals and provisions for training in its use.

(vii) Provisions for the collection of samples of blood, urine etc for the purposes of chemical identification and forensic evidence.

(viii) Arrangements for storage, access and distribution of appropriate pharmaceutical supplies including antidotes.

(ix) Arrangements for provision of information to the public.

(x) Arrangements for providing psychological support, particularly for those seeking treatment who have not actually been exposed.

(xi) Reference to the NHS Board's general provisions for accommodating a major short-term increase in hospital admissions. This should include co-operative working with other NHS Boards for chemical emergencies that span more than one NHS Board area.

(xii) Arrangements for post-incident reporting.

37 Plans should also provide that any proposed substantial changes will be discussed and agreed with the Scottish Executive's NHSScotland Emergency Planning Unit and with the local authority, the local fire and ambulance services and the police.

38 Chemical incident response plans should be exercised on a regular basis.

## INCIDENTS INVOLVING IONISING RADIATION

### J1 INTRODUCTION

J1.1 The nature and scale of the required NHS response to an emergency involving ionising radiation will vary according to the particular incident, which might range from a major accident at a nuclear reactor to one involving a ruptured or misplaced medical or industrial radioactive source. Whatever the circumstances, and however minor an incident involving nuclear radiation might be, it is likely to generate immediate and widespread public concern and media interest. This Annex contains details of the special arrangements and procedures necessary for NHSScotland to deal with casualties, to protect people against harm from environmental contamination and to otherwise safeguard human health following an incident involving ionising radiation.

#### NHS Board Responsibilities

J1.2 NHS Boards are responsible for the preparation and maintenance of contingency plans appropriate to their area to provide:

J1.2.1 Treatment and care of casualties, including the identification through monitoring of anyone, injured or not, contaminated with radioactive material and its removal by decontamination.

J1.2.2 Advice to the emergency services, local and other authorities, the public and the media about effects of a radiation incident on human health, and of counter-measures to those effects.

J1.2.3 NHS Boards are responsible for the administration of and distribution of stable iodine in co-operation with the local authority and other agencies that could assist.

J1.2.4 Co-ordination of NHSScotland arrangements with those of operators of nuclear sites, of others whose business involves handling radioactive materials, the emergency services, regulatory and other authorities through participation in local inter-agency emergency management machinery.

J1.2.5 Notification of, and keeping informed, SEHD and other NHS Boards in the event of an incident.

J1.2.6 Initiation of measures to assess longer term health effects including confirmation of calculated assessments of population exposure by sample validation monitoring, and by monitoring individuals who have reason to suppose they have been exposed to higher than average levels of contamination.

J1.2.7 (for minor incidents) Provision of assistance under the NAIR scheme (Appendix 1, paragraph 1J.8).

J1.2.8 Ready access to the appropriate specialist clinical and radiation protection expertise and advice which any of the above might require.

J1.2.9 Participation in regular exercises to test responses to a nuclear incident that might affect people in their NHS Board area.

J1.3 The following NHS Boards should act as “lead Board” in relation to the development, exercising and implementation of emergency plans relating to the major nuclear establishments in their areas. Lead Boards should maintain liaison with the site operator on health aspects of planning, and should consult and keep informed other NHS Boards affected, the Scottish Ambulance Service and SEHD (NHS Emergency Planning Unit).

<b><u>Lead Board</u></b>	<b><u>Nuclear Establishment</u></b>
Argyll and Clyde	Clyde Submarine Base and nuclear warship berths as notified.
Ayrshire and Arran	Hunterston Power Station and nuclear warship berths as notified.
Dumfries and Galloway	BNFL Chapelcross.
Fife	Nuclear warship re-fitting facilities, Rosyth.
Highland	Dounreay (both AEA and MoD sites) and nuclear warship berths as notified.
Lothian	Torness Power Station.

## **J2 PLANNING BACKGROUND**

J2.1 The Government Department which will act as “Lead Department”, and thus co-ordinate Central Government support to the response, will depend on the nature and circumstances of the particular incident. So too will overall responsibility for the co-ordination of action at the scene and in its vicinity. The arrangements that apply in particular scenarios are outlined at Appendix 1 to this Annex.

J2.2 Whatever the scenario, and whichever UK Government Department is the Lead Department, the SEHD retains its overall responsibility for the management of NHSScotland, and for providing advice to other Departments, to Ministers and, when necessary, directly to the public on the health implications of any emergency. In the event of a major nuclear emergency, The Scottish Executive would open the Scottish Executive Emergency Room (SEER) to provide a focal point for co-ordinating the response of all Scottish Executive departments involved and would be assisted as necessary by other Government and non-Government agencies, including the National Radiological Protection Board (NRPB).

### **National Radiological Protection Board (NRPB)**

J2.3 The National Radiological Protection Board (NRPB) provides independent advice to Government, other agencies and the public on radiation protection. In the emergency planning context NRPB advises on the radiological consequences of foreseeable accident scenarios and on the implications for emergency planning. NRPB specifies and advises on Emergency Reference Levels (ERLs) which are primarily intended for use in the development of emergency plans, although they may also be useful following an incident to assist in determining whether or not particular emergency measures are indicated. (See Appendix 3.) In a post-incident situation NRPB assesses and advises on the radiological consequences of the incident and co-ordinates monitoring information outside any site emergency plan area. NRPB may be able to provide support to NHS Boards in their responsibility for radiation monitoring of certain sections of the affected population following an incident.

J2.4 NRPB is also responsible for the administration of the NAIR scheme (see Appendix 1, paragraph 1J.8).

### **Plans for Specific Contingencies**

J2.5 Site operators and users of radioactive materials are responsible for ensuring the safety of workers and the public so far as is reasonably practicable and for preparing contingency plans to deal with incidents. Specific plans are in existence for all major civil and military nuclear sites and for certain other contingencies described at Appendix 1. Site plans should identify a Detailed Emergency Planning Zone (DEPZ) closely surrounding each installation within which arrangements to protect the public should be planned in detail. Plans need to be capable of responding to incidents, which although very unlikely, may extend beyond the DEPZ. The exact response must be based on an assessment made at the time and the response may make use of plans made to deal with other major incidents.

J2.6 Formal arrangements exist at major nuclear sites for consultation between site operators and local interests including NHSScotland. Site operators need to be aware of relevant NHSScotland arrangements so that these can be described in their emergency plans. NHS Boards with a nuclear installation within their areas need to be familiar with all aspects of the site emergency plan and ensure that the involvement of the health services is taken into account. The lead NHS Board (see J1.3 above) should be represented on the site Emergency Planning Co-ordination Committee (EPCC) or its equivalent and take an active part in its proceedings.

J2.7 It should be noted that differences of terminology exist in the arrangements for managing civil and military nuclear incidents; the basic arrangements are, however, broadly similar. At a major civil nuclear establishment, initial implementation of the site's emergency plan will be undertaken at the Site Emergency Control Centre (SECC). The operator is then required to activate an Off Site Facility (OSF), well clear of the plant, for overall incident management. Operation of the OSF is co-ordinated by the police. The lead Government Department would, on the advice of the Chief Nuclear Inspector (or Deputy), arrange for the appointment of a Government Technical Adviser (GTA). The GTA would go to the OSF and provide advice both to the Government and to those involved in responding to the incident locally. The NHS Board within whose boundary the site is located should be represented at an appropriate senior level (usually including the Director of Public Health) in the OSF to:

J2.7.1 Give advice to the police, site operator, local authorities, GTA and others on health implications and possible health measures, drawing upon necessary technical assistance, monitoring data and assessments from the site operator, NRPB, SEPA and other sources;

J2.7.2 Advise on the implementation and progress of NHSScotland emergency arrangements and their co-ordination with those of others;

J2.7.3 Ensure the provision of information about the incident and its management to the NHS Board Control Centre for transmission to hospitals, general practitioners and other NHSScotland staff who need it and to neighbouring NHS Boards;

J2.7.4 Participate in media briefing at the OSF or its associated Media Briefing Facility (MBF);

J2.7.5 Maintain direct contact with SEHD to ensure full consistency, and synchronisation, of health advice given locally with that nationally by Ministers and the Chief Medical Officer.

J2.8 Where a Local Authority Emergency Centre (LAEC) is established separately as a focal point for local co-ordination, the NHS Board may require to be represented there as well as at the OSF.

J2.9 Formal planning arrangements may not exist for other users of radioactive materials. NHS Boards should make themselves aware of users within their areas, and liaise with them as necessary

on emergency arrangements. This is best done in co-operation with local authorities who will normally have been notified.

### **J3 COUNTER-MEASURES**

J3.1 In the context of implementing counter-measures, 3 time phases can be identified: pre-release, emergency and longer term. The pre-release phase starts when a substantial risk of imminent release of radioactive material is identified and ends when either a release occurs or the plant is brought back under control. During this period, precautionary counter-measures may be implemented, to ensure that appropriate protection is in place before a release occurs. The emergency phase lasts from the time a release occurs until shortly (i.e., no more than a day or two) after the plant has been made safe and there is no further imminent threat of release. The longer-term phase follows the emergency phase and continues until no further remedial measures are required. This may be a matter of weeks, months or years. Counter-measures which may be implemented during all 3 phases of an incident are as follows, further information is at Appendix 3:

3.1.1 *Sheltering* - the public would be advised to stay indoors, close doors and windows and follow advice given by local radio and television stations. Sheltering reduces the risk of exposure to direct radiation and the inhalation of radioactive material;

3.1.2 *Taking stable iodine tablets* - to minimize the effects of any uptake of radioactive iodine from the passage of the plume. These tablets work by saturating the thyroid gland with non-radioactive iodine to reduce the uptake of radioactive iodine (it should be noted that radioactive iodine is only likely to be present in an accident involving a nuclear reactor);

3.1.3 *Evacuation* - from a downwind sector from the site to reduce the risk of exposure to radioactivity in the plume or deposited on the ground;

3.1.4 *Control of contaminated/potentially contaminated food supplies* - in accordance with advice from the Food Standards Agency. Control would be established by Order made under the Food and Environment Protection Act 1985;

3.1.5 *Control of contaminated/potentially contaminated water supplies* - in accordance with advice from the Scottish Executive Environment and Rural Affairs Department.

J3.2 In the longer term further measures may need to be implemented including:

J3.2.1 *Relocation* - the longer-term removal of people away from the contaminated area to avoid the accumulation of high long-term radiation doses from the ground deposition of radionuclides. It may be implemented either following evacuation or as a separate action;

J3.2.2 *Decontamination of land and property* - following assessment of alternative means of decontamination and of any resultant waste disposal, major civil engineering to immobilise material to prevent, for example, its resuspension in air might be required.

J3.3 The key factor in determining whether, when and how to implement or cease any counter-measure is that it should do more good than harm, especially as regards human health. NHS Boards should thus ensure that they are fully involved in the assessment and decision making process.

## J4 ARRANGEMENTS FOR CASUALTIES

### Radiation Hazards

J4.1 The principal hazard is the release from safe containment of materials emitting ionising radiation. The amount, type and form of the material would depend on its source and the nature of the incident. For example, radioactive material might be released from a nuclear reactor, from a wide variety of substances in transit or from products in storage or use industrially, in research or health care. Radioactive material released in an incident is likely to be carried by the wind, behaving like a plume of smoke, dispersing into the air and depositing activity on the ground. People may thus incur:

J4.1.1 Exposure to direct radiation from a radioactive plume following a substantial airborne release, or from radionuclides deposited on the ground or in buildings;

J4.1.2 Exposure to radiation from radionuclides contaminating the body surface, clothing or possessions;

J4.1.3 Internal exposure to radiation following inhalation or ingestion of radioactive substances as a result of direct atmospheric or environmental contamination or, subsequently, by radioactive material in water or food.

J4.2 Although incidents involving radioactive materials used in industry, medicine, research, teaching or agriculture will be more limited in their environmental impact, they are likely to occur much more frequently than nuclear site incidents and can have serious health consequences. Plans should anticipate the possibility of contamination, and of radiation injury, to both workers and members of the public

### Casualties

J4.3 It is anticipated that non-essential personnel would be evacuated from a nuclear site before any significant release of radiation occurs, thereby limiting the number of casualties. Possible casualties can be considered under 3 headings:-

J4.3.1 *Conventional Injury* Conventional injuries could arise from events leading to the incident, such as fires or steam leaks; or follow incidents and panic.

J4.3.2 *External Exposure* People bringing the plant under control or attempting to save life, as well as injured individuals immobilised close to the reactor or plant could receive significant doses of **external radiation** affecting the whole or parts of their bodies.

J4.3.3 *Contamination* People may become **externally contaminated** either by exposure to a radioactive cloud or by contact with contaminated surfaces. In addition, particles from the radioactive cloud could be inhaled or ingested with resultant **internal contamination**.

J4.4 The casualties require different handling depending on the radiation exposure, however it is an important principle that **treatment of life threatening injury should take priority over monitoring or decontamination**.

J4.4.1 *Physically injured and known not to have received a significant dose of radiation and known not to be contaminated with radioactive material* - These patients require no special facilities relating to radiation. They present no hazard to attendants, vehicles and treatment facilities. They will require a full assessment and subsequent medical counselling.

J4.4.2 *Exposed to a high radiation dose whether physically injured or not* - Treatment should be directed to managing the effects of the received dose. Unless they are also contaminated with radioactive material, they present no hazard to attendants and there is no risk of contamination of vehicles or treatment facilities. However, if they also have physical injuries then this can seriously affect their prognosis and medical management. (See Appendix 4.)

J4.4.3 *Contaminated or possibly contaminated whether physically injured or not* - Contaminated casualties are those who have radioactive material on their skin or clothing or who have inhaled or ingested radioactive material. This material will continue to emit radiation so long as it is active and not removed thus adding to the radiation dose received by the individual if the contamination persists. Transfer of contaminating material to attendants or to the patient's surroundings can cause a small risk of individuals other than the patient receiving a radiation dose. Precautions will be required to reduce the spread of contamination to attendants, vehicles and treatment facilities. Decontamination is required to prevent or reduce further radiation doses, to remove the risk of inhalation or ingestion of contaminating material, or the transfer of such material to others (see Section J5). Patient clothing, dressings, swabs etc. and excreta should be bagged, labelled and retained for analysis.

### **Action at the Scene of an Incident**

J4.5 Contingency plans for major nuclear installations do not envisage ambulance or other NHSScotland staff having to enter an area where they would be exposed to high levels of radiation or to heavy contamination. Similarly, it is extremely improbable that staff attending a nuclear industry or MoD off site incident would be exposed to levels of radiation that would cause a significant health risk. However, there are precautions which should be taken at an incident site and in the handling of possibly contaminated casualties.

J4.6 Monitoring facilities and/or expert advice may be available at the incident site to permit a rapid assessment of any contamination of the casualty. If monitoring facilities are not available, any casualty must be assumed to be externally contaminated and handled accordingly. (Handling casualties with internal radioactive contamination alone normally requires no special protective clothing above what is already familiar to ambulance staff.) Significant external contamination is unlikely to be found outside a major nuclear establishment that would have its own staff to deal with immediate medical treatment and casualty handling. However, in the extremely unlikely event of staff having to deal with casualties who might be significantly externally contaminated or enter an area that is grossly contaminated the main priority will normally be to minimize the risk of internal contamination due to inhalation of airborne radioactive materials. The use of PPE issued to the ambulance service and NHSScotland for protection against radioactive materials will be part of the associated training programme. Site operators would be responsible for assessing the risk and for issuing any additional or alternative protective clothing. Where possible, advice from an NHS Radiation Protection Adviser should be sought.

J4.7 Precautions should be taken to reduce the spread of possible contamination. Placing a plastic sheet beneath the patient can reduce contamination of the stretcher or the ambulance. Placing a similar sheet over the patient's body can further reduce spread of contamination (in the absence of plastic sheets, ordinary sheets and blankets may be used). On arrival at a hospital they should not remove such sheets until the patient has entered the hospital.

J4.8 Potentially contaminated casualties should not be given either food or drink (unless oral medication is urgently required - this may include stable iodine where appropriate - but in all cases must not prejudice management of the casualty's injuries and must be preceded by local facial decontamination) nor be allowed to smoke until they have been monitored and if necessary decontaminated. Ambulance and other NHSScotland staff who have handled potentially contaminated casualties should take similar precautions.

### **Transport to Hospital**

J4.9 Where the casualty's condition permits, he should be taken to a hospital designated to receive contaminated casualties (see para J4.11 below). Where this would result in unacceptable delay in obtaining treatment for serious or life-threatening injuries, the casualty should be taken to the nearest Accident & Emergency department. In either event, the hospital must be notified before arrival that a casualty who is or may be contaminated with radioactive substances is to be expected so that appropriate arrangements can be made.

J4.10 After the patient has been delivered to the hospital, the ambulance should be parked in a designated area to await monitoring and decontamination. The ambulance crew should remain at the hospital until they can be monitored and, if necessary, decontaminated. Any used protective clothing should be placed in a plastic bag for subsequent monitoring.

### **Designated Hospitals**

J4.11 Each NHS Board should make arrangements for, and designate in its emergency plan, a hospital or hospitals prepared to accept casualties arising within its area who are contaminated with radioactive material. Minimum requirements for such designation are:

- 24-hour Accident and Emergency cover
- ready availability of medical physics facilities capable of measuring the extent and distribution of the contamination;
- appropriate facilities for decontamination.

J4.12 While contaminated casualties should normally be taken to a designated hospital, the physical condition of the casualty or other circumstances might require treatment to be given in any hospital with Accident & Emergency facilities. Thus, it is important that all such hospitals should have contingency arrangements to deal with contaminated casualties. It will usually be possible to seek further advice from a designated hospital before proceeding beyond the initial treatment stage. Nevertheless, staff should be aware of the basic precautions to allow them to treat contaminated casualties without risk to themselves, and of procedures for obtaining expert advice and assistance. A series of suggested management criteria are presented at Appendix 4.

J4.13 Not all hospitals designated to accept casualties contaminated with radioactive material will be able to treat those affected by a high radiation dose. Also, not all casualties exposed to high external radiation doses (for example in incidents involving irradiation facilities and industrial radiography) will have residual contamination with a radioactive substance. Any necessary decontamination, initial monitoring and first aid treatment might be carried out on the premises where the incident occurred, or in a hospital designated to receive casualties contaminated with radioactive material. Casualties exposed to high doses of radiation should then be transferred to a hospital able to provide the necessary specialist treatment and care.

### **Preparation of Casualty Reception and Treatment Areas**

J4.14 The selection of a suitable area for the reception and treatment of suspected contaminated casualties may present considerable difficulty. Ideally, an area which is physically separate from the main area of the Accident & Emergency department and has its own outside entrance or a room(s) within the department which can be closed off should be selected, in order to minimize disruption to normal working during the treatment of the contaminated patient and during any necessary subsequent monitoring and decontamination procedures. Any monitoring and decontamination equipment and

other material specifically required for the handling of contaminated casualties should be stored as near to the designated area as is practicable. If no accommodation can be provided with adequate separation from the main Accident & Emergency department, consideration may have to be given to closing or restricting the normal use of the department during the handling of the incident, and diverting routine work elsewhere.

J4.15 The selected area should be equipped to allow resuscitation and emergency treatment, as well as decontamination to be carried out. The need for these facilities might preclude the setting aside of accommodation specifically to cover such a rare event. Other factors which should be considered include:

J4.15.1 Ventilation: the ventilation arrangements should be such as to minimize the risk of contamination from the designated area being transmitted to other parts of the hospital by this means.

J4.15.2 An adequate water supply is essential for decontamination purposes and the drainage system should be such as to allow discharge only of amounts of radioactive materials within the permissible limits for this method of disposal, under the supervision of the Radiation Protection Adviser.

J4.15.3 Adequate means of communication should be available to minimize the necessity for staff to move to and from the potentially contaminated areas.

J4.15.4 Mobile X-ray equipment should be considered to obviate the need to take a possibly contaminated casualty into the main X-ray department.

### **Measures to Prevent the Spread of Contamination**

J4.16 Possible spread of contamination can be minimized by relatively simple measures and this will greatly simplify subsequent monitoring and decontamination procedures. Where time permits, detailed advice from the Radiation Protection Adviser should be obtained.

J4.17 Work surfaces etc. in the designated area can be protected by plastic sheeting, heavy-duty paper, blankets or sheets. Plastic sheeting on floors is not recommended. Similar means can be used to minimize contamination of ambulances, stretchers and trolleys. A plentiful supply of paper towels and tissues should be available.

J4.18 Entry to, and departure from the designated area should be strictly controlled. There should be facilities to allow such staff to change their footwear on leaving the designated area. However, ideally, nothing and no one should leave the area until monitoring and decontamination has been carried out to an acceptable level.

J4.19 Decontamination of the patient (see Appendix 4) should be carried out in the controlled area where this is compatible with the patient's need for treatment. However, the urgent treatment of injuries takes precedence over decontamination. If the patient needs to be transferred to the operating theatre or intensive care unit before decontamination can be completed, the main consideration should be the possibility of removal of clothing, where most of the radioactive contaminant is likely to reside. If transfer for treatment prior to full decontamination becomes necessary, the possible spread of contamination may be reduced by covering appropriate areas with plastic sheeting or other impervious material. If the patient does have to be transferred, this must be done by staff other than those who have been working in the controlled area.

J4.20 All material which might have become contaminated such as patients' clothing, dressings, items of equipment, staff protective clothing and fluid used for washing, if beyond safe discharge levels (see J4.15.2), should be retained within the area in suitable containers. Such containers, appropriately labelled, must not be disposed of except under the instructions of the Radiation Protection Adviser. Urgent laboratory specimens may be sent to the laboratory but the outside of containers should be swabbed to remove any contamination and the specimens labelled to indicate to laboratory staff the need for caution in handling and disposal.

J4.21 Any area in which a contaminated person has been handled must be monitored and, if necessary, decontaminated before it can be used for any other purpose.

### **Disposal of Bodies**

J4.22 Conventional cleansing of the body, with suitable precautions to prevent contamination of the attendant or the surroundings will usually reduce external contamination to an acceptable level. However, bodies contaminated by radioactive material must not be released for burial or cremation until radiation protection advice has been obtained on the proposed method of disposal. Until such a decision is reached, the spread of contamination can be prevented by enclosing the body in a heavy-duty plastic body-bag. In the case of certain radionuclides it may also be necessary to store the body in an area away from places to which members of staff and the public have access.

### **Protection of Staff**

J4.23 Suitable protective clothing should be made available for all staff engaged in the handling and treatment of contaminated patients. Overalls, rubber gloves and boots (e.g., operating theatre clothing) are likely to be adequate to deal with the majority of situations. However, in handling patients whose skin, hair or clothes might be with significantly contaminated by radioactive materials, the need for respiratory protection should be considered. Waterproof aprons should be worn by those staff who are expected to wash skin or wash out wounds etc.

J4.24 Careful handling procedures will minimize contamination of staff, the area and equipment. Any staff members who have handled contaminated patients or materials should be monitored and, if necessary, decontaminated before leaving the designated area. Staff must be warned not to eat, drink or smoke until monitoring and decontamination has been carried out.

### **Training**

J4.25 All Accident & Emergency staff should have sufficient knowledge of radiation protection to reduce, as far as practicable, hazards to the patient, to colleagues and themselves and to limit contamination of premises and equipment. Practical skills, including contamination monitoring and decontamination should be maintained through regular exercises of procedures.

## **J5 MONITORING AND DECONTAMINATION**

J5.1 Monitoring and any necessary decontamination of workers, casualties and others, including members of the rescue services, at a major nuclear site would normally be carried out by the operator's staff, the SAS and the fire brigades. Further monitoring, and where necessary decontamination, of casualties taken to hospital should be undertaken there as described in Appendix 4.

J5.2 There will also be a need to monitor all other people who may be contaminated, or who think they may be contaminated, as a result of the incident. NHS Boards should take the lead in co-ordinating off-site monitoring of people.

### **Planning a Monitoring Strategy**

J5.3 The very wide range of potential incidents involving the release of radioactive material is reflected in the correspondingly wide range of responses required. As a general principle, plans should give detailed guidance on how to carry out monitoring following the largest incident that can reasonably be foreseen; they should, however, also allow the response to be flexible, and should enable the response to be extended to deal with much larger (but much less probable) incidents, or demand from large numbers of members of the public for monitoring.

J5.4 In developing plans for personal monitoring, the underlying principles should be to enable measures that would significantly reduce doses to individuals to be carried out promptly, to ensure that scarce staff, equipment and other resources (e.g., showering facilities at a reception centre) are used effectively, and to keep members of the public who have been monitored fully informed. The administrative tasks of running a monitoring programme should not be underestimated.

J5.5 Priority should normally be given to monitoring for external contamination (i.e., activity deposited on the skin, hair or clothing). This involves the use of hand-held equipment and might indicate a need for decontamination measures such as washing exposed skin which can result in significant dose reductions. Monitoring for internal contamination (normally resulting from inhalation or ingestion of contaminated material) requires more specialist equipment and is for dose assessment rather than decontamination.

J5.6 In order of importance, the objectives of a radiation monitoring programme for members of the public following a major radiation incident are:

J5.6.1 To identify those who are externally contaminated at a level which requires urgent decontamination to avoid illness.

J5.6.2 To reassure those who are not so contaminated.

J5.6.3 To identify those who are externally contaminated at lower levels but for whom decontamination is still justified.

J5.6.4 Where radioactive iodine is involved, to inform assessments of thyroid uptake and radiation dose.

J5.6.5 To prioritise subjects for assessment of uptake of other radionuclides and resulting radiation dose.

J5.6.6 To provide information to individuals on their internal radiation dose, with the aim of providing reassurance where appropriate.

J5.6.7 To supply information on radiation doses received by members of the public for incident assessment purposes.

J5.7 Monitoring of people affected by emergency counter-measures (evacuation, sheltering, distribution of stable iodine) should be given a higher priority than monitoring other groups within the general population.

J5.8 The public's perception of risk from radiation, and their reaction to a radiation incident, will play a considerable part in determining the demand for personal monitoring.

J5.9 Within the term *monitoring* it is useful to distinguish *screening*, where an action level is set to decide between alternative courses of action; and *measurement*, where numerical values are recorded for the purpose of dose assessment. Several distinct phases of a monitoring programme can be identified:

J5.9.1 Early screening of possibly large numbers of people for external contamination;

J5.9.2 Subsequent screening of essentially the same group of people for internal contamination;

J5.9.3 At a later stage, more accurate measurement of radio-iodine thyroid uptake and/or assessment of uptake of other radionuclides using whole body monitor facilities with the aim of assessing internal radiation dose;

J5.9.4 Long-term follow-up studies to assess doses received by the general population in the affected area.

J5.10 If persons being monitored are externally contaminated, then avoidance of contamination of the monitoring area is essential. Measures should be put in place to monitor and control the spread of contamination as far as possible.

J5.11 All staff should be given training, or should have sufficient experience to be able to take on their allocated role.

J5.12 To illustrate the issues that need to be considered when planning a monitoring programme, guidance is given at Appendix 5 for 2 incident scenarios that would be among the largest that could reasonably be foreseen. The first scenario is a nuclear power reactor accident resulting in release of fission products, which requires monitoring for several hundred people. The second is a nuclear weapons accident (non-nuclear explosion or fire) resulting in localised dispersal of airborne plutonium oxide, also requiring monitoring for several hundred people. The first scenario is discussed in detail, the second only briefly.

J5.13 The guidance given for these scenarios is addressed primarily to NHS Boards within whose area the incident occurs. NHS Boards more distant from the site of an incident, whether within or outside the UK, may also need to implement a monitoring programme. Away from the immediate vicinity of the incident significant levels of external or internal contamination of people are unlikely to occur, and so simplified plans based on the guidance given in Appendix 5 could be developed. Nevertheless, there may well be demands for monitoring from very large numbers of people.

### **The Radiation Monitoring Unit (RMU)**

J5.14 NHS Boards may need to establish a temporary RMU to carry out the first two phases of monitoring listed in paragraph J5.9. This Unit would primarily be intended for monitoring evacuees. The later phases of monitoring are likely to be conducted at hospitals with medical physics departments (although other facilities are likely to be available, and their use should be considered). The establishment and operation of a RMU are discussed at Appendix 5.

Decontamination at the scene of an incident.

J 5.15 Arrangements for decontamination of casualties contaminated with chemical, biological or radiological materials at the scene of an incident are defined in a joint emergency services' guidance document "*Guidance for the emergency services on decontamination of people exposed to hazardous chemical, biological or radioactive substances*".

APPENDIX 1 TO ANNEX J

ARRANGEMENTS FOR PARTICULAR CONTINGENCIES

1J.1 OVERSEAS REACTOR INCIDENT

An incident involving a nuclear reactor overseas can lead to contamination of the environment within the UK (e.g. Chernobyl 1986). People and goods close to the scene may subsequently enter the UK.

LEAD UK GOVERNMENT DEPARTMENT                      Department for Environment, Food & Rural Affairs

SCOTTISH LEAD DEPARTMENT                      Environment and Rural Affairs Department

NHSScotland RESPONSE ROLES                      Monitoring of people, including returning travellers, who may have been exposed. Advice and information to the public on health effects.

Participation in validation monitoring to assess long term health effects.

EXISTING PLANS/REFERENCES                      **National Response Plan RIMNET (Radioactive Incident Monitoring Network) is a system of 92 monitoring sites across the UK incorporating alerting mechanisms, a central database for post incident radiological measurements, and associated communications to distribute information summaries and data.**

1J.2 UK CIVIL NUCLEAR REACTOR SITES

Civil Reactors are operated in Scotland at Hunterston B, Torness (British Energy) and Chapelcross (BNFL). Hunterston A (BNFL) and AEA Technology’s reactors at Dounreay are being decommissioned. The most Northerly of reactors in England are at Sellafield in Cumbria and Hartlepool.

SITE INCIDENT CONTROL                      Site operator, control of off-site activities established at Off Site Facility initially co-ordinated by police.

LEAD UK GOVERNMENT DEPARTMENT                      Department of Trade and Industry (DTI) (The Office for Civil Nuclear Security (OCNS) has been part of DTI since October 2000.)

SCOTTISH LEAD DEPARTMENT	Enterprise and Lifelong Learning Department
NHSScotland RESPONSE ROLES	<p>Treatment and care of casualties.</p> <p>Advice on health effects to authorities, the media and public.</p> <p>Advice on implementation of countermeasures to site operator, police and other authorities.</p> <p>Monitoring of people in the vicinity who may have been contaminated with radioactive material.</p> <p>Provision of health care services to people evacuated from the vicinity.</p> <p>Reassurance and validation monitoring as required.</p> <p>Participation in regular multi-agency exercises to test emergency response.</p>
EXISTING PLANS/REFERENCES	<p>HSE Guidance</p> <p>Site specific plan required to be produced by each operator in conjunction with local authorities and others, including NHS Boards, out to 40km from the site.</p>

### 1J.3 MILITARY NUCLEAR REACTOR INCIDENT

Nuclear powered warships are based at the Clyde Submarine Base (including HMS Neptune, Faslane, and the RN Armament Depot Coulport). A number of berths elsewhere in Scottish waters are designated for their use and dockyard facilities at Rosyth are used to refit nuclear submarines and to berth decommissioned vessels. The MOD’s VULCAN test reactor is operated at Dounreay.

SITE INCIDENT CONTROL	Under Military Co-ordination Authority, control of off-site activities co-ordinated by civil police at off-site facility.
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<b><u>LEAD UK GOVERNMENT DEPARTMENT</u></b>	Ministry of Defence (MOD)
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SCOTTISH LEAD DEPARTMENT	Justice Department
NHS RESPONSE ROLES	As for civil nuclear site (para 1J.2 above)
EXISTING PLANS/REFERENCES	Joint site specific plan (e.g. CLYDEPUBSAFE, ROSPUBSAFE) produced by local authority in conjunction with site operator and others including NHS Board.

#### **1J.4 NUCLEAR FUEL/WASTE IN TRANSIT (CIVIL OR MILITARY)**

Nuclear fuel and associated radioactive waste is transported in secure protective containers between reactor sites and reprocessing/storage facilities by road, rail, sea or air.

INCIDENT SITE CONTROL	Police with fire service and consignment owner support.
LEAD UK GOVERNMENT DEPARTMENT	(Civil) DTI's Office for Civil Nuclear Security (OCNS), (Military) MOD
SCOTTISH LEAD DEPARTMENT	(Civil) Enterprise and Lifelong Learning Department (Military) Justice Department
NHS RESPONSE ROLES	As for civil nuclear site (para 1J.2 above).
EXISTING PLANS/REFERENCES	RADSAFE brings together individual nuclear operators' plans. It provides expert assistance to the emergency services and others via a single focal point (0800 834 153)

#### **1J.5 NUCLEAR WEAPON TRANSPORT INCIDENT**

The dominant radioactive hazard involved in an incident in which both a nuclear weapon casing and its transport container were breached is alpha radiation from plutonium. All nuclear weapons movements, by road, air or sea, are conducted by specially trained personnel.

INCIDENT SITE CONTROL	Police, initially advised by convoy commander until arrival of Military Co-ordinating Authority.
LEAD UK GOVERNMENT DEPARTMENT	MOD
SCOTTISH LEAD DEPARTMENT	Justice Department
NHS RESPONSE ROLES	As for civil nuclear site (para 1J.2 above).  Specialist doctors, health physicists, monitoring and experts will be made available quickly from the MOD's Nuclear Accident Response Organisation (NARO) to provide any advice/assistance required.
EXISTING PLANS/REFERENCES	Local Authority and Emergency Service Information on Nuclear Weapons Transport Contingency Plans (LAESI) issued by the MOD.

### **1J.6 SATELLITE WITH NUCLEAR POWER OR MATERIAL RETURNING TO EARTH**

Should a satellite containing nuclear material, through malfunction or other cause, leave its orbit it might re-enter the earth’s atmosphere. While most will burn up and pose no hazard; some will reach the surface substantially intact, while others will break up scattering pieces widely. Such incidents are almost always predictable in terms of timing and broad geographical area of impact, but less so as to the damage they might bring.

SITE CONTROL	Police
LEAD UK GOVERNMENT DEPARTMENT	Home Office
SCOTTISH LEAD DEPARTMENT	Justice Department
NHS RESPONSE ROLES	As required

### **1J.7 INCIDENT ARISING FROM INDUSTRIAL/AGRICULTURAL/SCIENTIFIC/ EDUCATIONAL/MEDICAL USE OF RADIOACTIVE MATERIAL**

Under Health and Safety at Work legislation employers have a responsibility for protecting their employees and other people from any harmful effects of their work activities. In particular, Regulation 7(1) of the Ionising Radiation Regulations 1999 requires employers to assess the potential hazard of their use of radioactive material.

SITE CONTROL	Employer or Police.
LEAD UK GOVERNMENT DEPARTMENT	Depends on incident
SCOTTISH LEAD DEPARTMENT	Depends on incident (Note - SEHD for any incident involving NHSScotland use of material).
NHS RESPONSE ROLE	As required. Note - NHS Trusts using radioactive material should ensure their emergency plans cover incident management, liaison with the local authority and emergency services, the notification of HSE and SEPA where appropriate, and provide for the immediate notification of both the NHS Board and SEHD should any significant incident occur.
EXISTING PLANS/REFERENCES	HSE Guidance

## **1J.8 NATIONAL ARRANGEMENTS FOR INCIDENTS INVOLVING RADIOACTIVITY (NAIR)**

1J.8.1 The NAIR scheme is co-ordinated by NRPB to provide specialist advice where plans do not exist for specific events. Details of the scheme are available on the NRPB website at ([http://www.nrpb.org/radiation\\_incidents/nair.htm](http://www.nrpb.org/radiation_incidents/nair.htm)) and from the NAIR Handbook ([http://www.nrpb.org/radiation\\_incidents/nair\\_2000.pdf](http://www.nrpb.org/radiation_incidents/nair_2000.pdf)). Its function is to make available, to the police and other emergency services, advice on safety measures required at incidents involving, or thought to involve, radioactive substances. The scheme provides for assistance in 2 stages. The first stage enables an experienced person to advise the police whether a potential hazard from radioactivity exists, and if it does, on the action necessary to minimize and contain any danger. The second stage provides for more sophisticated resources should they be necessary. Each police force has been allocated first and second stage assistance centres. These are contacted by calling **0800 834 153** which connects the caller to the Atomic Energy Agency constabulary who will then co-ordinate communication with the appropriate assistance centres and will inform SEPA. Several first stage assistance centres are NHS medical physics departments; second stage centres are invariably major nuclear establishments.

1J.8.2 The arrangements are intended to cover incidents in public places (e.g., damage to containers, discovery of suspected radioactive substances) and incidents involving the public in premises where radioactive materials are not normally handled. NAIR is not intended to cover incidents in premises where radioactive substances are normally handled because in these cases staff should be available who are competent to deal with the problem. Nor are NAIR arrangements intended to cover on or off site incidents at civil nuclear installations, MoD establishments, or transport accidents involving nuclear fuel or weapon components as described at paragraphs 1J.2-1J.5 above. (For offsite transport, the RADSAFE provisions referred to in 1J.4 apply but the contact number is the same as that for NAIR). However, should the police consider that a danger to the public exists and if planned expert assistance is not immediately available, they may seek assistance via the NAIR arrangements. The NAIR arrangements are quite separate from NHS contingency plans. Specifically, the designation of hospitals prepared to accept contaminated or irradiated casualties is a matter for NHS Boards. Lists of such hospitals are held by NRPB for the purposes of NAIR response. NAIR does not cover arrangements for dealing with casualties or with arrangements for monitoring casualties or the public following an accident.

1J.8.3 Since NAIR is founded upon the use of individual specialists drawn from their normal duties as required, NHSScotland medical physics staff, and in particular Radiation Protection Advisers, may be participants in NAIR. Staff called out under the NAIR arrangements are working on normal NHSScotland duties, and thus subject to the provisions of the NHSScotland Superannuation and Injury Benefits Schemes as well as the Industrial Injuries Scheme.

**APPENDIX 2 TO ANNEX J**

**EMERGENCY REFERENCE LEVELS/INTERVENTION LEVELS**

2J.1 The NRPB’s published principles for intervention after a nuclear accident require the implementation of counter-measures which aim to do more good than harm, taking account of all likely consequences. The quantitative criteria recommended by NRPB for the introduction of counter-measures to protect the public are known as Emergency Reference Levels (ERLs).

2J.2 ERLs are expressed in terms of radiation dose to an individual that could be averted if the counter-measure is taken. For each counter-measure a lower and upper ERL is set. The lower ERL is the smallest reduction in dose likely to offset the disadvantages introduced by the counter-measure: it should be regarded as the threshold for considering implementation of the counter-measure. The upper ERL is the reduction in dose for which the counter-measure would be justified in nearly all situations, and above which strenuous efforts should be made to implement it.

2J.3 ERLs recommended by NRPB are:

<u>Counter-Measure</u>	<u>Dose Equivalent (mSv)</u>	
	<u>Lower ERL</u>	<u>Upper ERL</u>
Sheltering - Whole Body	3	30
	30	300
Evacuation - Whole Body	30	300
	300	3,000
Stable Iodine - Thyroid	30	300

2J.4 ERLs cannot of course be compared directly with measurements in the field, or with the results of measuring samples of materials from the environment. It is necessary therefore for “trigger” or site specific intervention levels, expressed in the same quantities as measurements are expressed, to be calculated for each site and for each possible counter-measure. Trigger levels should be explicitly included in local plans and be compatible with ERLs.



## COUNTER-MEASURES

### Sheltering

3J.1 In this context sheltering refers to staying indoors, with doors and windows closed and ventilation systems turned off. It provides protection from external irradiation from radioactive material in the air and that deposited on the ground, and from inhalation of radioactive material. Typical dose reductions for solidly built and reasonably airtight UK housing are a factor of 10 for external exposure and a factor of 3 for inhalation of particulates. However, the dose reduction for inhalation of vapours (e.g., elemental radioiodine) is negligible, and the protection against external irradiation afforded by light constructions, such as caravans, is very small. The level of protection afforded will not, in general, be significantly affected by occasional opening and closing of outside doors, or short trips out of doors for essential activities.

3J.2 If a release to atmosphere occurs, there are 4 main situations for which sheltering is likely to be the optimum counter-measure:

- a release consisting mainly of radioisotopes of noble gases (to reduce the external dose);
- a release which would result in relatively low doses;
- a release which would result in very large short-term doses, for which evacuation could not be carried out in advance of the release;
- circumstances in which evacuation either is not possible or would entail considerable risk to the evacuees.

3J.3 Where radioiodine is known to form a significant part of the release, the administration of stable iodine (to reduce the dose to the thyroid from inhalation of radioiodine) in conjunction with sheltering (to reduce the amount of radioactive materials inhaled and the external irradiation dose) can form a very effective counter-measures strategy. However, it is important not to overlook the inhalation dose likely to be received from other radionuclides. It must also be remembered that the benefit of sheltering is strongly dependent on the type of buildings available to accommodate people and the available means of communicating the advice to shelter and cease sheltering. It is therefore important to take these factors into account when formulating emergency plans for specific sites.

### Evacuation

3J.4 In this context, evacuation is defined as the removal of people from an area in order to avoid (or potentially to avoid) relatively high short-term exposures. The primary purpose of evacuation is to protect the population against the inhalation of radionuclides and external exposure from radionuclides in the air and deposited on the ground. It is distinct from relocation, which is the removal of people from the contaminated area for periods of weeks, months or years to avoid chronic, long-term exposures, although relocation may be carried out as an extension to evacuation.

3J.5 Evacuation is the only counter-measure which has the potential to prevent virtually all exposure to a release. However, this is only achieved if the evacuation is carried out before the release occurs. In other situations partial dose savings will usually be achieved, although it is possible that evacuation may result in higher doses than alternative counter-measures or than no counter-measures, if it is incorrectly implemented. While people are in transit, their protection against external irradiation and inhalation of radionuclides is likely to be very much less than the protection they would receive from remaining inside solidly constructed buildings. It is therefore not advisable to evacuate people through areas where radionuclide concentrations in air are relatively

high, unless it is judged that the dose which they would receive if any other counter-measures strategy were implemented (including taking no counter-measures) would be higher than the dose received during the evacuation.

3J.6 Evacuation can be effective for reducing doses following many different types of accidental release. It can be effective in situations involving an accidental release to atmosphere, or localised contamination of the environment following, for example, the breakage of a radiography source or the crash of a nuclear-powered satellite. Five main situations can be identified in which evacuation is likely to be the optimum early counter-measure:

- precautionary evacuation, in response to the threat of a probable release;
- in response to a large release of predictable duration or size, particularly one for which there is sufficient advance warning for people to be moved before it begins;
- in response to an accident for which the release to atmosphere may be prolonged, and the size of a release is very uncertain and potentially large;
- after the cessation of a release to atmosphere, to avoid doses from short-lived radionuclides deposited on the ground;
- after the cessation of any release, to avoid external exposure while localised, short-term decontamination is carried out.

3J.7 As with sheltering, where radioiodine is known to form a significant part of the release, the administration of stable iodine in conjunction with evacuation can form a very effective counter-measures strategy. However, it should be noted that it is not necessary to administer stable iodine if precautionary evacuation has been carried out, or the evacuation was achieved very quickly after the start of the release.

### **Administration of Stable Iodine Tablets**

3J.8 Where material escaping after an incident at a nuclear installation contains radioactive iodine this may be inhaled, or ingested via contaminated food or water. This will give a radiation dose, in particular to the thyroid which concentrates and stores any form of iodine. A radiation dose from ingestion can be averted or minimized by restrictions in the supply of food - most likely milk and milk products. Uptake of inhaled radioactive iodine to the thyroid can be blocked by the administration of stable (i.e., non-radioactive) iodine. Whilst most effective if given shortly before or immediately after exposure, stable iodine will still block uptake of radioactive iodine to a useful extent up to some hours after exposure.

3J.9 *Planning Requirement* Emergency plans drawn up to deal with incidents at major nuclear sites should include detailed arrangements for the supply, storage, authorisation to issue and rapid distribution of stable iodine tablets to staff on the site, to responding emergency services personnel and to members of the public in the DEPZ. Plans should also address, in outline, how those detailed arrangements might be extended beyond the DEPZ in the unlikely event that distribution might be required there. While it is also unlikely that incidents other than those involving a major nuclear reactor site will require this counter-measure, outline arrangements to secure tablet supplies and effect distribution should be developed by all NHS Boards.

3J.10 *Planning Responsibility* Responsibility for taking the lead on planning the distribution of stable iodine tablets to the public rests with lead HNS Boards, as defined at paragraph J1.3. Development and maintenance of effective plans will require Boards to secure the active co-operation of the site operator, local authority, emergency services and other agencies which might be able to make people available to assist in the task.

3J.11 *Authority to Issue* Tablets should only be issued to the public on the authority of the Director of Public Health. To ensure that tablets can be issued without delay when required, Directors of Public Health should give prior authorisation for the commencement of issue in the event of specific, pre-determined conditions. Precise parameters should be set for this including “trigger” measurements derived from application of NRPB’s Emergency Reference Levels to site specific modelling, predicting the nature, extent, direction and mobility of any release.

3J.12 *Stocks of Tablets* Bulk stocks of tablets are required to be provided and maintained by site operators. To facilitate rapid distribution when required, some of this stock might be pre-positioned in reception centres, schools, health centres, emergency services’ stations or other premises with appropriate and secure storage facilities. In such cases the quantity of tablets held in each place should be detailed, together with responsibilities for their custody, periodic inspection and issue.

3J.13 *Distribution Planning* Detailed plans should be drawn up for the rapid distribution of stable iodine tablets to all people within the DEPZ. The effectiveness of the tablets for thyroid blocking depends on administration shortly before, or as soon as possible following, exposure to radioiodine. 60-70% blocking can be obtained at 3 hours, but 50% of radioactive iodine uptake will still occur at 5½ hours. As indicated in paragraph 3J.3 above, the combination of sheltering with the administration of stable iodine is important. Immediate sheltering followed by stable iodine at 3 hours can avert up to 95% of the dose to the thyroid, even after 6 hours sheltering the taking of stable iodine can avert up to 90%.

3J.14 *Pre-Distribution* Pre-distribution of stable iodine tablets to less accessible households or communities may have to be considered if detailed local feasibility appraisal concludes that no means can be found to effect distribution to them at the time sheltering was implemented. Before approval to pre-distribution is given, Scottish Executive Health Department should be consulted. [DN. Do we want to retain this?] A report should be submitted stating in clear terms the nature of the problem, attempts made and with whom to overcome it, and details of arrangements for the safe storage and keeping in date of pre-distributed tablets.

3J.15 *Issue* Those who may be available to assist in the issue of stable iodine tablets include people employed by the site operator, emergency services and local authority, as well as NHSScotland staff. Sufficient manpower should be earmarked not only to issue tablets at reception centres, but also in circumstances where evacuation is not implemented and the population is advised to shelter. Those issuing tablets to the public and acting under the authority of the Director of Public Health will be indemnified by Scottish Ministers against legal liability arising from the issue of tablets.

3J.16 *Advice to the Public* When tablets are issued they must be accompanied by clear instructions on their use, on contra-indications and on any necessary follow-up. To facilitate this, leaflets have been printed and are stored with bulk stocks of the tablets. In the event of an incident in which there was no requirement for the issue of stable iodine, arrangements should be made for the public to be told that the risk from exposure to radioactive iodine had been assessed as being low and therefore tablets will not be issued.

**Food Counter-measures**

3J.17 The ingestion of contaminated food following an accident can be reduced by a wide range of controls and remedial actions, including measures introduced at the farm, the use of food processing and preparation, and controls or restrictions on the sale or distribution of foods. Controls may also be placed on the use of contaminated animal feeds. The most extreme, but often the simplest measure, particularly where food supplies are plentiful, is the banning of all food contaminated above a specified level. In any consideration of such measures NHS Boards should collaborate with representatives of the Scottish Executive Environment and Rural Affairs Department and the Food Standards Agency

3J.18 Regulations have been issued by the Council of the European Union specifying intervention levels (here termed CFILs) for radioactive contamination in marketed foods and animal feeds. The levels specified for foods are consistent with the latest advice from the International Commission on Radiological Protection (ICRP). If restrictions were imposed on food at the levels of the CFILs, then the doses received by most individuals in the UK would be very small. Estimates of the upper levels of dose that would be received are, at most, similar to those from natural radiation exposure. The Council Regulations do not provide intervention levels for drinking water supplies. NRPB recommends UK Action Levels for drinking water that are equal to the CFILs specified for liquid foods. The CFILs and NRPB's Action Levels for drinking water supplies are listed in the tables below:

**Council Food Intervention Levels in Major Foods (Bq/Kg)\***

<b>Radionuclide</b>	<b>Baby Food</b>	<b>Milk &amp; Cream</b>	<b>Other Foods (not minor foods)</b>	<b>Liquid Foods</b>
Isotopes of strontium	75	125	750	125
Isotopes of iodine	150	500	2000	500
Alpha-emitting isotopes of plutonium and transplutonium elements	1	20	80	20
Others (t½ > 10 days)	400	1000	1250	1000

\* These levels are associated with specific exclusions and restrictions, as detailed in the Council Regulations.

**UK Action Levels for Drinking Water Supplies**

<b>Radionuclide</b>	<b>Action Level (Bq/l)</b>
Isotopes of strontium	125
Isotopes of iodine	500
Alpha-emitting isotopes of plutonium and transplutonium elements	20
Others (t½ > 10 days) (excluding tritium, carbon-14 and potassium-40)	1000

**CASUALTY RECEPTION AND TREATMENT**

4J.1 All persons involved in a radiation accident should be carefully interviewed; a full, detailed description of the radiation situation should be made as soon as possible. For purposes of dose assessment it is often useful, by means of a diagram, to show the position of each person present at the accident site.

4J.2 **The first priority** is the treatment of life-threatening injuries (shock, bleeding, thermal burns, fractures etc.) by whichever type of specialist is appropriate for the condition.

4J.3 **The second priority** is the assessment of the extent and magnitude of contamination, and decontamination as necessary. Any person with external contamination should be specially and separately treated. The most effective decontamination procedure is washing, subject to control by monitoring. (See Appendix 5).

4J.4 **The third priority** is that if there is suspected internal contamination, a quick assessment of its nature and degree should be made so that appropriate measures to reduce internal contamination may be started as soon as possible.

4J.5 **Suggested Management Criteria**

<b>Type of Exposure</b>	<b>Possible Consequences</b>	<b>Treatment</b>
<b>I. EXTERNAL EXPOSURE</b>		
<i>Localised Exposure more often to hands</i>	<i>Localised erythema with possible development of blisters, ulceration and necrosis.</i>	<i>Clinical observation and treatment.  Specialist advice may be sought.</i>
<i>Total or partial body exposure with minimal and delayed clinical signs</i>	<i>No clinical manifestation for 3 hours or more following exposure. Not life threatening. Minimal haematological changes.</i>	<i>Clinical observation and symptomatic treatment. Sequential haematological investigations.</i>
<i>Total or partial body exposure with early prodromal signs</i>	<i>Acute Radiation Syndrome of mild or severe degree dependent on dose.</i>	<i>Start treatment as above  Specialist advice should be sought  Patient requires specialised treatment. Full blood count and HLA typing are essential before transfer to a designated hospital if feasible.</i>
<i>Total or partial body exposure with thermal, chemical or radiation burns and/or trauma</i>	<i>Possible severe combined injuries, life threatening.</i>	<i>Treat life-threatening conditions. Recommended that early transfer to a specialist hospital should take place. Meanwhile carry out actions as above.</i>

## National Health Service in Scotland: Responding to Emergencies

Type of Exposure	Possible Consequences	Treatment
<b>II. EXTERNAL CONTAMINATION</b>		
<i>Unlikely. Possible mild radiation burns.</i>	<b>Low level contamination</b> <i>intact skin which can be cleaned promptly</i>	<i>Decontaminate skin and monitor.</i>
<i>Possible radiation burns. Possible percutaneous intake of radionuclides.</i>	<b>Low level contamination</b> <i>intact skin where cleaning is delayed</i>	Specialist advice may be sought.
<i>Possible internal contamination.</i>	<b>Low level contamination</b> <i>with thermal, chemical or radiation burns and/or trauma</i>	Specialist advice should be sought.
<i>Likely internal contamination.</i>	<b>Extensive contamination</b> <i>with associated wounds</i>	Specialist advice should be sought.
<i>Possible severe combined injuries and internal contamination.</i>	<b>Extensive contamination</b> <i>with thermal, chemical or radiation burns and/or trauma.</i>	<i>First aid, plus treatment of life threatening injuries.</i>  <i>Early transfer to a specialist hospital is recommended.</i>
<b>III. INTERNAL CONTAMINATION</b>		
<i>No immediate consequences.</i>	<b>Inhalation and ingestion of radionuclides</b> <i>insignificant quantity (activity)</i>	+ Specialist advice should be sought.
<i>No immediate consequences.</i>	<b>Inhalation and ingestion of radionuclides</b> <i>significant quantity (activity)</i>	Nasopharyngeal lavage important. Early transfer to a specialist hospital is essential to enhance excretion of radionuclides.
<i>No immediate consequences.</i>	<b>Absorption through damaged skin</b> <i>(see II above)</i>	+ Specialist advice should be sought.
<i>Severe combined radiation injury.</i>	<b>Major incorporation</b> <i>with or without external total, or partial body or localised irradiation, serious wounds and/or burns</i>	+ Treat life threatening conditions and transfer to a specialist hospital.

+ Stable iodine should be administered to casualties who have potentially been exposed to radioactive iodine; if the casualty's condition precludes administration specialist advice should be sought.

4J.6 **Laboratory Samples** The following samples should be collected from patients who may have incurred internal radiation. All biological samples should be retained for subsequent analysis.

**A. Blood, approximately 20-30ml for the following analyses:**

1. Full blood count
2. Cytogenetic analysis (24 hrs after exposure is optimum time)
3. Biochemical analysis (serum amylase)
4. Analysis for radionuclide content

**B. High Nasal (bilateral) and throat swabs - dry swabs stored in labelled holders without transport medium. Should be taken as early as possible and the time recorded. Will need to be sent to laboratory specialising in the measurement of radionuclides.**

**C. Urine:**

1. Routine analysis
2. Biochemical (creatinuria)
3. Analysis for radionuclide content

**D. Stools (for estimation of radionuclide contents).**

4J.7 The following initial decontamination procedures should be followed:

- Experience has shown that washing with water will effectively remove contaminated material from the skin in most cases. Initial treatment and any necessary washing to remove as much of the suspected contamination as practicable should be done in the controlled area.
- Open wounds should be irrigated and the irrigate saved and labelled. Special care needs to be taken to prevent the spread of possible contamination to other parts of the body and in the cleaning of areas near the eyes and mouth.
- It is inadvisable to excise wounds unless contamination is obvious, or unless surgically indicated, before monitoring assistance is available.

## **RADIATION MONITORING FOR MEMBERS OF THE PUBLIC**

### **ESTABLISHING A RADIATION MONITORING UNIT**

5J.1 The RMU should, where possible, be located at, or adjacent to, a reception centre established by the local authority and specified in the site Emergency Plan. However, suitable NHS or other premises nearby may need to be utilised. Police and the local authority should be consulted when selecting a site. Premises with the following facilities will be required:

- A segregated area where potentially contaminated people can await monitoring. Direct access from outside is desirable; control is needed to prevent their mixing with people known to be free of external contamination.
- An area adjacent to it for external contamination monitoring.
- An area immediately adjacent to that which can be used for decontamination of people. It should have running hot and cold water for washing and, if possible, showering facilities.
- A separate area adjacent to the external monitoring area where internal contamination monitoring can take place.
- Storage for spare outdoor clothing and shoes.
- Storage, well separated from other areas, for contaminated clothing and other contaminated material which may include valuables such as personal jewellery.
- A reporting/recording area with telephone and fax.
- An area, well separated from the monitoring areas, reserved for counselling concerned individuals.
- Separate exit.

It is advisable to develop layout plans for the RMU in advance.

Those attending the RMU should be given a leaflet describing what will happen to them and why. The leaflet should instruct people to minimize movement within the waiting area; this will reduce the possibility of cross-contamination.

### **Suggested Operational Protocol for the RMU**

5J.2 The responsibility for operation of the RMU will lie with the most senior Medical Physicist present.

#### **Staffing**

5J.3 Typical staffing might be:

- Medical Physicist in charge
- Medical Physicist/Technicians (or similar grade staff from other organisations)
- Nurses
- Clerks

Arrangements exist in some areas for the nuclear site operator to provide additional staff capable of carrying out monitoring measurements. NRPB may also be able to provide staff to assist with monitoring.

### **Equipment**

5J.4 The following monitoring equipment is suggested:

- contamination monitors e.g., Mini Instruments EP15, Nuclear Enterprises BP4, Berthold LB1210B;
- iodine-in-thyroid monitors e.g., Mini 44A or 44B with ratemeter;
- check sources.

In addition, spare instruments of each type in use should be available. A suggested list of other specialised equipment is at the end of this Appendix.

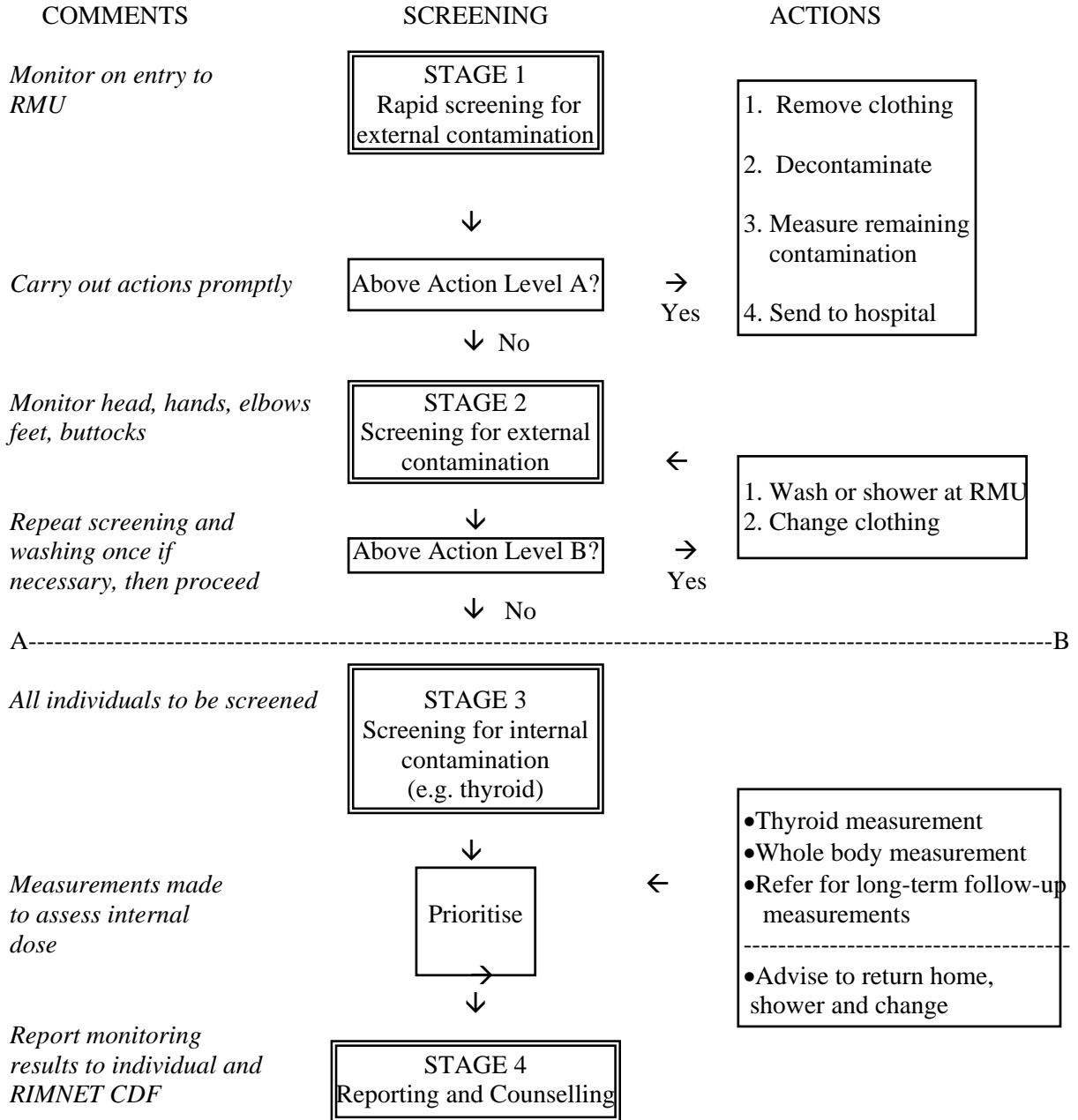
### **Preparation of the Unit**

5J.5 It is suggested that the following steps should be taken to prepare the area:

- Clear all unnecessary furniture if time allows.
- Identify the areas to be used for the purposes specified in 5J.1 taking due account of the needs of individual dignity/modesty. If necessary, use partition screens and tape barriers to create separate areas.
- Arrange the waiting area in a way that discourages unnecessary movement, perhaps by setting up a queue using tape barriers. Chairs may be provided but must be covered with polythene sheet, to be removed when the person leaves the waiting area.
- Place “tacky mats” (disposable mats with an adhesive surface that removes contamination from the soles of shoes) at all entrances and exists to the area.
- Cover heavily used areas of the floor throughout the RMU (e.g., doorways) with e.g., heavy-duty paper. The floor area between the monitoring area and the decontamination area must be covered. Tape all joins.
- Fix signs at the entry and exit to the RMU prohibiting entry to unauthorised persons.
- Provide protective clothing for the staff.
- Each staff member should ensure that they have been provided with the necessary equipment and supplies to carry out the task to which they are allocated.

**Operational Protocol for a Nuclear Power Reactor Incident**

5J.6 The operational protocol suggested for a nuclear power reactor incident resulting in release of fission products is summarised in the following flow diagram. It illustrates the decisions to be made and the sequence of events for each person entering the RMU. A discussion of 'action levels' and the various stages in the process follows.



**Action Levels**

5J.7 Appropriate action levels would be recommended at the time of the accident by NRPB, taking account of the specific circumstances of the accident, and in particular the radionuclide composition of the release. Illustrative values for action levels are given below for **planning purposes only**.

5J.8 **Action Level A** should be set so as to identify levels of contamination that could cause deterministic effects on skin (radiation burns), or that could result in committed effective doses of the order of 10 mSv if the activity is ingested. In most cases, the latter criterion is more restrictive than the former, and satisfying it therefore leaves a margin of safety for the avoidance of deterministic effects. Ingestion dose coefficients are generally higher for children than for adults, and so the former must be used when setting the Action Level. If it is assumed that activity distributed over an area of skin of 10cm<sup>2</sup> might be ingested before the contamination is removed by normal processes, then the intake criterion corresponds to an activity concentration of the order of 10<sup>4</sup> Bq cm<sup>-2</sup> for a typical  $\beta$ -emitter such as <sup>131</sup>I. The localised skin dose rate from contamination of 10<sup>4</sup> Bq cm<sup>-2</sup> over an area of 10cm<sup>2</sup> would be of the order of 10 mSv h<sup>-1</sup>. The corresponding reading on an EP15 contamination monitor would be **about 100 counts per second at a distance of 30cm** from the contaminated area. (Note: full scale on the EP15 is 600 counts per second).

5J.9 **Action Level B** should be set so as to identify those who are externally contaminated at lower levels, but for whom immediate decontamination at the Unit is still justified. The action level should be based on prioritising the use of the available decontamination facilities to benefit those in most need, and on the general ALARA principle of taking simple steps to minimize doses. It is not a boundary between high and low risk. In setting it, account would need to be taken of the available resources and numbers requiring monitoring. For example, an action level of **300 counts per second at a distance of 1cm** from the contaminated area measured using an EP15 monitor would correspond to an activity of about 1000 Bq distributed over an area of 10cm<sup>2</sup>. This could give rise to an ingestion dose to a child of the order of 0.1 mSv for a typical  $\beta$ -emitter such as <sup>131</sup>I, or a localised dose rate to the skin of the order of 0.1 mSv/hour.

### Stage 1

5J.10 People arriving at the facility should be rapidly screened to identify those in need of urgent decontamination. (If the person is identified as someone who has earlier been asked to evacuate or shelter or who has been offered stable iodine, then that person should be given priority for the rapid screening measurement and for subsequent monitoring measurements.) This is the first priority of the facility because the actions to be taken will reduce the risk of injury, even though it is extremely unlikely that such levels of contamination would occur. It is important to identify and treat such people as quickly as possible so as to maximise the dose reduction (they should not be kept waiting while others are monitored), and also to reduce the potential for them to contaminate other people and the facility. If Action Level A is exceeded, the person should be sent immediately for decontamination. A measurement should then be made of the amount and location of any surface contamination remaining. All persons who exceed Action Level A on the first measurement must be sent directly to a hospital designated to receive contaminated casualties.

5J.11 Persons found to be below Action Level A should proceed to the second stage of external contamination screening (waiting in a segregated part of the reception area if necessary).

5J.12 The tasks of Stage 1 could be carried out by one medical physicist, one nurse and 2 clerks. A throughput of about 100 per hour should be possible (although additional clerks would be needed to achieve this). If levels of contamination above Action Level A are encountered, then additional nursing staff would be required to carry out decontamination procedures.

### Stage 2

5J.13 Here, more detailed contamination monitoring would be carried out. Persons found to be above Action Level B should proceed to the decontamination area. Measurements above this action level should be recorded, those below it only if time permits. Following decontamination, the person

should return for a second screening measurement. One further pass through the decontamination procedures may be advised, but the person should then pass on to Stage 3. Persons below Action Level B could be advised to shower and change as soon as convenient on their return home if this is considered necessary.

5J.14 Persons remaining between Action Levels A and B after decontamination could have a wide range of levels of external contamination. Action Level B would be set on the assumption that activity on the skin would be removed within a few days by normal processes. Consideration should therefore be given to carrying out follow-up measurements after a few days have elapsed.

5J.15 The tasks of Stage 2 could be carried out by teams consisting of one medical physicist, one clerk to record measurements, and one nurse working in the decontamination area. A team would have a throughput of about 20 per hour (assuming most do not need decontamination). To deal with 300 people, at least 3 such teams would therefore be advisable.

### **Stage 3**

5J.16 It is possible that internal contamination may be found in circumstances where no external contamination is present (e.g., the person may already have washed and changed clothes; intake may have been by ingestion, etc.). If the accident resulted in release of radioiodine then measurements of iodine-in-thyroid using hand-held detectors would be the most useful screening method. For other accidents involving fission products, similar measurements of, for example, the chest or abdomen may be feasible, depending on the circumstances of the release.

5J.17 Monitoring results should be used to prioritise people for more accurate uptake measurements, probably comprising iodine-in-thyroid measurements and whole body measurements of other fission products. This prioritisation could include the use of an exemption level below which no further measurements are required. All screening measurements should be recorded, as it may be feasible to use them to provide dose estimates.

5J.18 Body monitoring facilities for uptake assessments could be provided by some medical physics departments. NRPB may be able to provide additional facilities, including a mobile body monitoring system. Some nuclear industry site operators may also be able to provide assistance.

5J.19 The tasks of stage 3 could be carried out by teams consisting of one medical physicist and one clerk to record measurements. A team would have a throughput of about 50 per hour.

5J.20 Internal contamination monitoring has a lower priority than external contamination monitoring. Resources may need to be fully utilised in order to complete the latter within a reasonable time, and in such circumstances it would be acceptable to delay internal monitoring. For instance, individuals who have passed through the external contamination resources for internal contamination monitoring become available.

### **Stage 4**

5J.21 Arrangements should be made for recording the monitoring results of each person passing through the Unit. Monitoring will fall into 2 categories:

- a. internal contamination;
- b. external contamination.

Examples of report forms are at the end of this Appendix.

5J.22 NHSScotland Medical Physics Departments that wish to submit internal monitoring data to the RIMNET Central Database Facility (CDF) need to be Approved RIMNET Data Suppliers. This status can be achieved via a number of routes. One of these is through the Department of Health which will accredit hospitals that meet specific criteria already demonstrated under the Medicines (Administration of Radioactive Substances) Regulations 1995. This route, unlike others, will not incur cost. Hospitals participating in this scheme will send data to NRPB, in its capacity as co-ordinator of monitoring information.

5J.23 The same departments will be invited to submit summaries of external monitoring data to NRPB. These will not be entered onto the RIMNET CDF, but will give valuable information in the context of population exposure. Details of this scheme, including the accreditation process and precise data formats, will be given under a separate notification.

5J.24 Results of monitoring should also be reported to the individuals monitored. Any doses assessed should be reported, but information given will need to be put into the context of implications for health. This could be achieved by providing a report form, prepared in advance, for the various categories defined in the screening process. An example of such a report form is attached. Trained staff should be available for counselling concerned individuals.

### **Control of Contamination in the Radiation Monitoring Unit**

5J.25 If external contamination is found on persons being monitored, then a member of staff should be allocated to the task of monitoring and controlling contamination of the RMU. Heavily used areas should be regularly monitored, with particular attention paid to tacky mats, floors and seating. Tacky mats and polythene covers should be replaced regularly. Thyroid monitoring probes should be sealed in polythene bags when in use. Checks on background count rates for all of the monitoring instruments in use should be made frequently. Monitoring and decontamination staff should use protective, disposable clothing, and should avoid direct contact with persons being monitored. The Physicist in Charge should be kept informed.

5J.26 Conversely, if external contamination is not found, then contamination control measures should be relaxed as soon as possible in order to minimize unnecessary alarm in members of the public.

### **Staff Duties**

#### **5J.27 Reception/Waiting Area Team**

(a) **Medical Physicist**

- Carry out rapid screening for external contamination on people as soon as possible after they arrive at the Unit, as discussed in paragraphs 5J.10-15. The screening measurement could be made on people queuing in the waiting area, or at the entrance to the Unit provided this does not cause queues to build up outside the Unit. Using an EP15 or similar instrument, rapidly scan (in about 20 seconds) the body at a distance of about 30cm, concentrating on head, hands, elbows, feet, buttocks. If Action Level A is exceeded, then send the person immediately to the decontamination area, first removing and bagging shoes if they are contaminated; overshoes should be provided.

(b) **Clerks**

- Give appropriate directions to people at the entrance to the Unit. Fill in parts 1 to 9 of the Report form for each person. If the person is identified from the answer to part 2 as someone who has earlier been asked to evacuate or shelter, or who has been offered stable iodine, then that person should be sent immediately for the rapid screening measurement.

Otherwise, send people one at a time for rapid screening as requested by the medical physicist. Pass on the Report form. Do not step onto uncovered floor areas.

- All staff members should remain in the waiting area until the last person has been sent through. Then pass through the monitoring areas to be checked for contamination before leaving the unit.

#### 5J.28 **External Contamination Monitoring Area Team**

##### **Medical Physicist and Clerk**

- Carry out the second stage screening for external contamination, as discussed in paragraphs 5J.13-15. Using an EP15 or similar instrument, scan the body slowly at a distance of about 1cm, concentrating on those areas of the body most likely to have been contaminated (head, hands, elbows, feet, buttocks). The full scan should take at least 3 minutes.
- Identify contaminated areas on the Report form and indicate the measured count rates, and the instrument type. If the person is being re-monitored, indicate that this is the case.
- Where contamination exceeds Action Level B, ask the person to proceed to the decontamination area, first removing and bagging shoes if they are contaminated; overshoes should be provided. Pass the report form to the nurse. On return from the decontamination area, the person should be monitored immediately.
- Where contamination is found to be below Action Level B, ask the person to proceed to the internal contamination monitoring area. Pass the report form to the staff member there.
- Ask for the next person from the waiting area but do not step on to the covered floor area. After all people from the waiting area have been checked and passed through to the internal contamination monitoring area, monitor each other and then proceed into that area to be checked before leaving the unit.

#### 5J.29 **Decontamination Area Staff**

- Carry out decontamination procedures discussed in paragraphs 5J.10-15. These are similar for Stage 1 and Stage 2, but would clearly be more urgent for Stage 1.
- Ask the person to remove contaminated clothing. This, together with shoes, should then be bagged, given an identifying tag, and stored. A receipt for contaminated clothing, jewellery etc. must be given.
- Encourage and assist the person to remove contamination from the identified area(s) using soap and water. Light scrubbing may be used but care must be taken to avoid damaging the skin, or spreading the contamination to other parts of the body or into cuts and grazes. The person may shower, but it is important to avoid washing radioactive material into the nose or mouth. Ordinary towels should be used for drying; they should then be bagged and stored.
- Provide any necessary alternative clothing.
- Ask the person to go to the external contamination monitoring area. Pass the Report form to the staff member there.

- Do not enter the external contamination monitoring area until all persons have been checked. Then proceed to the external contamination monitoring area to be monitored.

5J.30 **Internal Contamination Monitoring Team**

- Carry out the internal contamination monitoring as described in paragraphs 5J.16-20. Using Mini Instruments Type 44A or similar instrument, position the end of the probe at the front of the neck, as close as possible without making contact. The measurement should take approximately one minute.
- Record the measured count rate and ask the person to proceed to the Physicist in Charge. Pass on the Report form.

5J.31 **Physicist in Charge**

- Supervise the layout of the RMU before admission of the first person. People may be allowed to proceed to the reception and waiting areas once they are ready and staffed. Subsequent preparation of the RMU will then be carried out from the internal contamination monitoring end.
- Once people have entered the external contamination monitoring area, there must be no movement of staff against the direction of flow (with the exception of any staff member assigned to contamination control).
- Depending on the level of contamination found, decide what further external or internal contamination measurements are necessary and give each person an information sheet (see Report form). Arrange for attendance at an Uptake Measurement Unit if appropriate. Record the details in sections 10 and 11 of the form.
- Discuss with the Radiation Protection Adviser the arrangements for dealing with contaminated clothing and valuables. Consider decontamination of any clothing and provision of alternative outdoor clothing.

5J.32 **Decommissioning of the Radiation Monitoring Unit**

- The Physicist in Charge will be responsible for planning and carrying out decommissioning of the unit.
- When all people have passed through the RMU, a full survey of all areas including the entrance should be made to identify contaminated surfaces. All contaminated objects should be placed in polythene bags. Contaminated sheeting should be folded and also placed in polythene bags.
- All bags containing contaminated waste should be sealed, labelled with the maximum count rate measured at the surface of the bag, and removed for storage. Request advice from the Radiation Protection Adviser on disposal.
- A final radiation survey should be arranged before the area is put back into general use.

**Operational Protocol for a Nuclear Weapons Accident**

5J.33 Similar arrangements for external contamination monitoring as for a nuclear reactor accident could be put in place. The relevant stages in the screening process are those shown in the preceding flow diagram above the line A---B (see para 5J. 6).

5J.34 Contamination would be by alpha-emitting radionuclides, and so action levels would need to be set on the basis of inhalation or ingestion of material deposited on the skin, rather than on the basis of deterministic effects to the skin. If it is assumed that activity distributed over an area of skin of  $10\text{cm}^2$  might be inhaled before the contamination is removed by normal processes, then a committed effective dose of the order of 10 mSv could result from an activity concentration of the order of  $30\text{ Bq cm}^{-2}$  of  $^{239}\text{Pu}$  oxide. A value for **Action Level A** set so as to identify this level of contamination would correspond to a reading on an EP15 contamination monitor of **15 counts per second at a distance of 1 cm**. (Note that although not intended for alpha measurements, this type of instrument is sensitive to alpha radiation.) A value for **Action Level B** would be determined from a consideration of available resources, as discussed in previous sections.

5J.35 External contamination screening measurements could be used to prioritise people for subsequent internal contamination measurements. These would include radiochemical analysis of urine and faecal samples, and lung monitoring using specialised detectors. Facilities for carrying out such measurements are available primarily within the nuclear industry. The NRPB would advise on available resources. Assistance would be provided by MoD personnel at the site of the accident.

**SUGGESTED LIST OF SPECIALISED EQUIPMENT FOR RADIATION MONITORING UNIT**

**Equipment for controlling movement**

Warning signs  
Barrier tape  
Barriers

**Protective clothing**

Paper Coveralls (e.g., Tyvek)  
Latex gloves (large, medium, small)  
Plastic overshoes

**Material for prevention of contamination**

Tacky mats  
Small polythene bags  
Polythene sheeting and Kraft paper  
Vinyl sealing tape

**Personal decontamination equipment**

Mild soap  
Lanoline  
Dilute Cetrimide  
Plastic sponges  
Soft nail brushes  
Towels  
Polythene bags (to hold clothing etc.)  
Adhesive labels with trefoil symbol  
Disposable trousers, tops, slippers

**Building decontamination equipment**

Polythene buckets  
Decon  
Soap powder  
Plastic sponges  
Scrubbing brushes

**Stationery and communications**

Record forms, Information sheets  
Notebooks  
Wax pencils  
FAX machine

**Monitoring instruments**

See paragraph 5J.4

**DO NOT UNDER-ESTIMATE THE AMOUNTS REQUIRED**

**EXAMPLE OF A SUBJECT REPORT FORM**

**QUESTIONNAIRE FOR USE AT RADIATION MONITORING UNIT**

A. To be completed on arrival

1. Name (Title, Forename, other initials, Surname):
  
2. Have you been asked:
  - a. to evacuate; or YES/NO
  - b. to shelter; or YES/NO
  - c. have you been offered stable iodine? YES/NO
  
3. Date of Birth (Day/Month/Year):
  
4. Sex:
  
5. Address:  
  
Telephone No: (Home) (Work)
  
6. Date and time of arrival at Radiation Monitoring Unit:
  
7. Details of movement during the emergency:
  
8. Have you seen or been treated by your GP or any hospital within the past month? If so, please give details:
  
9. Name and Address of GP:

B. To be completed after monitoring, form to be retained by Physicist in Charge

10. Report Form issued:  
  
Follow-up action necessary: 11 12 13 14 15 (circle one)

**EXAMPLE OF A MONITORING/CONTAMINATION REPORT FORM**

**EXTERNAL CONTAMINATION REPORT FORM**

**To be retained by the Physicist in Charge**

Area of Body	Count rate (s <sup>-1</sup> )		Instrument
	Before Decontamination	After Decontamination	
Head			
Left/Right Hand			
Left/Right Elbow			
Feet			
Buttocks			
Other			

**INTERNAL CONTAMINATION REPORT FORM**

**To be retained by the Physicist in Charge**

	Radionuclide	Count rate (s <sup>-1</sup> )	Activity (Bq)	Effective Dose (if estimated) (mSv)
THYROID				
WHOLE BODY				
OTHER				

**REPORT FORM**

(Delete paragraphs not applicable)

**To be retained by the person monitored**

YOU ATTENDED THE RADIATION MONITORING UNIT

AT ..... ON .....

11 Monitoring has been carried out, and no radioactive contamination has been detected. No further action is required.

12 Monitoring has been carried out. A small amount of radioactive contamination has been detected on your skin. You are advised to return home, take a shower or bath as soon as convenient, put on clean clothes and wash those you were wearing; no further action beyond this is required.

13 Monitoring has been carried out. A small amount of radioactive contamination has been detected on your skin. You should have already been offered facilities to wash, and to change your clothing, in order to remove this material. No further action is required.

14 Monitoring has been carried out. A small amount of radioactive contamination has been detected on your skin. You should have already been offered facilities to wash, and to change your clothing, in order to remove this material. You should attend the Uptake Measurement Unit at ..... hospital for follow-up measurements. The hospital Medical Physics Department will contact you within a few days with appointment details. Further information and advice will be given.

15 Monitoring has shown that you may have swallowed or inhaled small amounts of radioactive material. You should attend the Uptake Measurement Unit at ..... hospital for follow-up measurements. The hospital Medical Physics Department will contact you within a few days with appointment details. Further information and advice will be given.

**Other Information:**

If you have any concerns or wish to discuss this matter further, please contact your GP.

Signed ..... Physicist in Charge .....

## MANAGEMENT OF OUTBREAKS OF HEALTHCARE ASSOCIATED INFECTION (HAI)

1) Material in this Annex is of a provisional nature, given that a number of initiatives are currently in progress, notably the establishment of the HAI Task Force. Specific tasks within the remit of the Task Force relating to healthcare outbreaks and incidents will include development of:

- a) model infection control policies and procedures
- b) a code of practice for local management of hygiene
- c) training programmes for HAI outbreak management
- d) surveillance of HAI, including outbreaks

2) Many or most of the principles laid out in the main document apply to outbreaks or incidents in the healthcare setting. The primary difference lies in the roles and responsibilities of the hospital Infection Control Doctor (ICD) and the Infection Control Team in first-line management of outbreaks and incidents.

3) Many incidents will be managed effectively within the hospital, and the Outbreak or Incident Control Team would normally be chaired by the ICD. However, the NHS Board Public Health department should be involved at an early stage where there are, or may potentially be, significant risks to the public health, or where an incident is unusually extensive or complex.

4) SCIEH should be involved where the issues require specialist expertise or assistance with special investigations such as case-control studies. SCIEH would normally be invited to attend by the CPHM. Even when not required to attend, SCIEH provides information and advice by phone on a 24-hour basis.

5) Issues relating to the impact of an outbreak in a healthcare setting may include:

- a) the effect of ward closures on service provision
- b) making alternative provision for key clinical services
- c) provision of post-discharge advice for patients discharged early
- d) minimisation of rotation of staff and movement of patients between wards or care areas

6) Surveillance of outbreaks, including HAI outbreaks, is co-ordinated within Scotland by SCIEH. Specifically, SCIEH should be informed about outbreaks of gastrointestinal infection: surveillance of other outbreaks is another area under development.

7) Decisions on the appropriate level of action required can be complex, and a draft risk matrix is attached which attempts to relate multiple criteria of seriousness with specified risk levels and appropriate actions. This matrix is taken from the Watt Report (2002) and represents a pragmatic interim tool for Infection Control Teams pending further work on risk matrices by the HAI Task Force.

8) Clear communications with agencies beyond the hospital (Trust, NHS Board, SCIEH, Food Standards Agency, SEHD and others) are essential, and their extent is largely defined by the nature and scope of the incident in question. One of the functions of the attached risk matrix is to assist in deciding the required communications actions based on specific criteria.

9) **In addition to the criteria specified in the attached matrix, SEHD should be informed immediately if the incident is likely to cause significant disruption to healthcare delivery, or if there is likely to be Press interest.**

**Healthcare associated infection (HAI) outbreak/incident risk matrix** [adapted from the Watt Report 2002]

The Infection Control Team will quantify the infection control risk criteria and ascertain the associated risk, which will determine the appropriate action to be taken. Four infection risk categories can be identified: Red - High Risk, Orange - Moderate Risk, Yellow - Low Risk, Green - Very Low Risk

Criteria	Quantification Criteria	Risk Category	Action Required	Communications
3 or more met	Death and/or serious illness Major implications for public health Exceptional or unusual infection episode Major disruption of health and/or public services Major public anxiety and concern	Red - High Risk	Implement Area Major Outbreak Plan	Full (e.g., Trust, Health Board, SCIEH, FSA, SEHD) and others as appropriate (e.g., Local Authority, Water Authority, SEPA, HSE etc.)
1 or 2 met	Death and/or serious illness Major implications for public health Exceptional infection episode Major disruption of health and/or public services Major public anxiety and concern	Orange - Moderate Risk	Implement Trust Outbreak Plan - Full Outbreak Control Team	Full (e.g., Trust, Health Board, SCIEH, FSA, SEHD) and others as appropriate (e.g., local authority, water authority, SEPA, HSE etc.)
3 or more met	Serious illness and/or moderate infection episode and/or cases Moderate impact on public health Short-term disruption of health and/or public services Moderate public anxiety and concern	Yellow - Low Risk	Implement Trust Outbreak Plan - Infection Control Team	Trust and Health Board communications
All 4 met	Minimal infection episode and/or case Minimal impact on public health Minimal disruption of health and/or public services Minimal public anxiety and concern	Green - Very Low Risk	Implementation- Infection Control Team Investigation	Trust communications

N.B. Infection risk category coding may vary slightly from Trust to Trust. No more than four risk categories should apply to this infection control risk matrix.

## **STATUTORY AGENCIES' RESPONSIBILITIES (other than NHS and local Authority Organisations)**

### **Food Standards Agency**

The Food Standards Agency is an independent food safety watchdog set up by Act of Parliament in 2000 to protect the public's health and consumer interests in relation to food. Its UK headquarters are in London, but the Agency also has a Scottish office in Aberdeen. The FSA provides advice and information to the public and Government on food safety from farm to fork, nutrition and diet. It also protects consumers through effective food enforcement and monitoring

### **State Veterinary Service**

The State Veterinary Service (SVS) covers England, Wales and Scotland but not Northern Ireland. Its head is the Chief Veterinary Officer for Great Britain. The SVS is the lead agency responsible for animal health matters. It exercises the Scottish Executive's statutory responsibilities for responding to notifiable diseases in animals including those which can be transmitted to humans. The SVS in Scotland is an integral part of the Scottish Executive Environment and Rural Affairs Department.

### **Drinking Water Quality Unit**

Under the Terms of the Water Industry (Scotland) Act 2002, a Drinking Water Quality Regulator for Scotland was appointed in April 2002. He and his staff form the Drinking Water Quality Unit, which has the general functions of monitoring and enforcing drinking water quality standards on the public networks (provided by Scottish Water) and of supervising local authority enforcement of any private water supplies within their remit.

### **Scottish Water**

Scottish Water was created from a merger of the three former Water Authorities in Scotland in response to The Water Industry (Scotland) Act 2002. Scottish Water has a duty to provide wholesome water for drinking and under the Water Supply (Water Quality) (Scotland) Regulations 1990, to ensure that in doing so a series of standards for sampling, analytical and reporting systems are met.

### **Police**

Police Forces have a range of responsibilities which overlap with NHS Boards in managing public health incidents. They are responsible for co-ordinating the activities of all of those responding at and around the scene of a major incident. They liaise with NHS Boards in providing essential services in protecting the public from exposure to hazards in chemical incidents and other public health emergencies and in ensuring safety measures, which help prevent accidental injury, are in place and being observed.

### **Fire Service**

At declared major incidents involving exposures to hazardous agents, the police will delegate responsibility for the management of all operations within a defined "inner cordon" to the fire service. This includes safety management for all personnel working within the inner cordon. Recovery of exposed individuals from within the inner cordon will normally be the responsibility of the fire service who have the appropriate training and equipment.

## **Health and Safety Commission and Executive**

The Health and Safety Commission is responsible to Government Ministers for implementation of the Health and Safety at Work etc Act 1974 throughout Great Britain. The Commission has general oversight of the work of the Health and Safety Executive (HSE). HSE's aim is to ensure that risks to people's health and safety from work activities are properly controlled. Its remit includes people outwith the workplace who may be harmed by the way work is done and, in some situations, the way work affects the environment. HSE develops new health and safety laws and standards, inspects workplaces, investigates accidents and cases of ill health, enforces good standards, publishes guidance and carries out research.

## **National Radiological Protection Board**

The National Radiological Protection Board was created by the Radiological Protection Act 1970. Its functions are to advance the acquisition of knowledge about the protection of mankind from radiation hazards and to provide information and advice to persons (including Government Departments) with responsibilities in the United Kingdom in relation to the protection from radiation hazards either of the community as a whole or of particular sections of the community

## **Scottish Environmental Protection Agency**

The Scottish Environmental Protection Agency (SEPA) is the public body responsible for environmental protection in Scotland. It was established under the Environment Act 1995. SEPA's main aim is to provide an efficient and integrated environmental protection system for Scotland, which will both improve the environment and contribute to the Government's goal of sustainable development. SEPA regulates potential pollution of natural waters and the air and the storage, transportation and disposal of controlled waste as well as the keeping of radioactive materials. SEPA provides extensive guidance and advice to regulated organisations and works in partnership with others to deliver environmental goals through non-statutory means.

## **The Procurator Fiscal Service**

Procurators Fiscal are responsible for criminal investigations and any consequent court proceedings as a result of infractions of legislation related to health protection.

## A TEMPLATE FOR AN INCIDENT CONTROL TEAM REPORT

### 1. INTRODUCTION

A brief summary of the incident and setting the scene. Details of ICT and other relevant organisational arrangements. Brief description of how incident recognised, immediate measures taken and the timings of these.

### 2. BACKGROUND

If necessary, background information on features of actual or likely clinical cases, incubation period, dose, source and modes of exposure, diagnosis and treatment, and if relevant, prevalence of the relevant disease locally, nationally and globally.

### 3. INVESTIGATION OF THE INCIDENT

#### 3.1 Epidemiological

##### i Descriptive:

description of initial cases, case definition and hypothesis generation, enhanced surveillance

##### ii. Analytical:

description of any case control and/pr cohort studies.

#### 3.2 Environmental

details of investigation/detection of main routes of exposure, sources of these, if possible levels of exposure and circumstances leading to exposure

#### 3.3 Microbiological/Toxicological

local labs, reference labs, etc, clinical, food/water and environmental samples

#### 3.3. Results

Epidemiological

Environmental

Microbiological/toxicological

### 4. CONTROL MEASURES

4.1 Prevention of further exposure to hazardous agent (primary and secondary) – including details of relevant enforcement/regulatory action

4.2 Care of cases

### 5. COMMUNICATIONS

5.1 Intra and inter agency communications

5.2 Communications with the public (including media handling)

### 6. DISCUSSION AND CONCLUSIONS

### 7. LESSONS LEARNED AND RECOMMENDATIONS

**APPENDICES (if necessary)**