





# Decontamination guidance for hospitals

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## Foreword

The *Decontamination guidance for hospitals* has been developed to assist health services prepare practical decontamination and mitigation strategies for a chemical, biological, radiological (CBR) or HAZMAT emergencies. The guidelines provide principles for managing decontamination and highlight important issues that health services need to consider when managing patients involved in a CBR or HAZMAT emergency.

Health service intervention strategies for CBR type incidents need to consider immediate decontamination of self-presenting casualties without contaminating the emergency department or other areas of the hospital.

The guidelines identify important hospital staffing preparedness activities, especially protecting staff involved in direct contact with contaminated patients. As part of the planning and preparedness process, it is important for hospitals to develop relationships with their local fire services, who may be able to offer assistance during these types of emergencies.

The guidelines were developed by a multi-agency working group that included expert representatives from hospitals, DHS, the Victorian ambulance and fire services.

## Acknowledgments

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# 1. Introduction

## 1.1 Decontamination

Decontamination is defined as “the process of removing or neutralising a hazard from the environment, property or life form. Its objectives are to prevent further harm and optimise the chance for full clinical recovery or restoration of the object exposed to the contaminant”.<sup>1</sup>

Chemical biological and radiological (CBR) agents have the potential to seriously threaten community health and safety, property and the environment. While these agents—especially chemicals—may be accidentally released, a deliberate and malicious act of contamination may have more catastrophic effects and cause mass casualties. People exposed to these agents will require decontamination.

The Tokyo subway sarin gas attack in March 1995 highlighted the vulnerability of a large community to a planned and intentional release of a chemical agent. Following the incident, a reported 5,510 casualties sought medical treatment. Included in this number were 12 deaths, 17 critically ill, 37 casualties considered seriously ill and 984 moderately ill. An estimated 4,000 casualties had not been exposed to any significant amount of chemical agent, but still sought medical attention. The sarin was of relatively low purity and the release method was rudimentary.<sup>2</sup> The low number of deaths has been attributed to these factors.<sup>3</sup>

The lack of decontamination facilities and protocols resulted in secondary sarin exposure to 110 hospital staff and 135 emergency service and paramedic personnel—about 10 per cent of responders.<sup>4</sup> Up to 60–80 percent of individuals had bypassed emergency services response (police, fire service and ambulance) and self-presented or were brought by others to the hospital.<sup>5</sup>

## 1.2 Contingency planning

Hospital emergency and disaster plans must include a decontamination contingency plan, to be widely distributed within the hospital to those who are likely to fill a response and/or support role. Decontamination plans need to be regularly updated and adjusted whenever the facility’s infrastructure changes. This is vital in preparing for events and incidents that require an escalated medical and facility-wide response capability.

Decontamination contingency plans need to take into account:

- Notification procedures
- Decontamination set-up plans
- Decontamination procedures
- Job action cards
- Lockdown and security measures to protect staff, patients, visitors and facility
- Triage and treatment planning
- Recovery and post event management plan.

A decontamination contingency plan must be actionable 24 hours a day, 7 days a week. Around-the-clock availability of functional staff requires a core of personnel with good knowledge of decontamination and PPE technology. Staff with practical response roles, or decontamination unit set-up functions, must be trained and have access to training updates and decontamination exercises.

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1 Chemical & Biological Terrorism: Research & Development to Improve Civilian Medical Response, 1999.

2 Emergency Management Australia (EMA). *Health aspects of Chemical, Biological and Radiological (CBR) Hazards Part III Emergency Management Practice, Volume 2 – specific Issues, Manual 3*. Attorney General’s Department, 2000.

3 Emergency Management Australia (EMA). *Health aspects of Chemical, Biological and Radiological (CBR) Hazards Part III Emergency Management Practice, Volume 2 – specific Issues, Manual 3*. Attorney General’s Department, 2000.

4 Soldier and Biological Chemical Command (SBCCOM). *Guidelines for Mass Casualty Decontamination During a Terrorist Chemical Agent Incident*, U.S. Army, January, 2000.

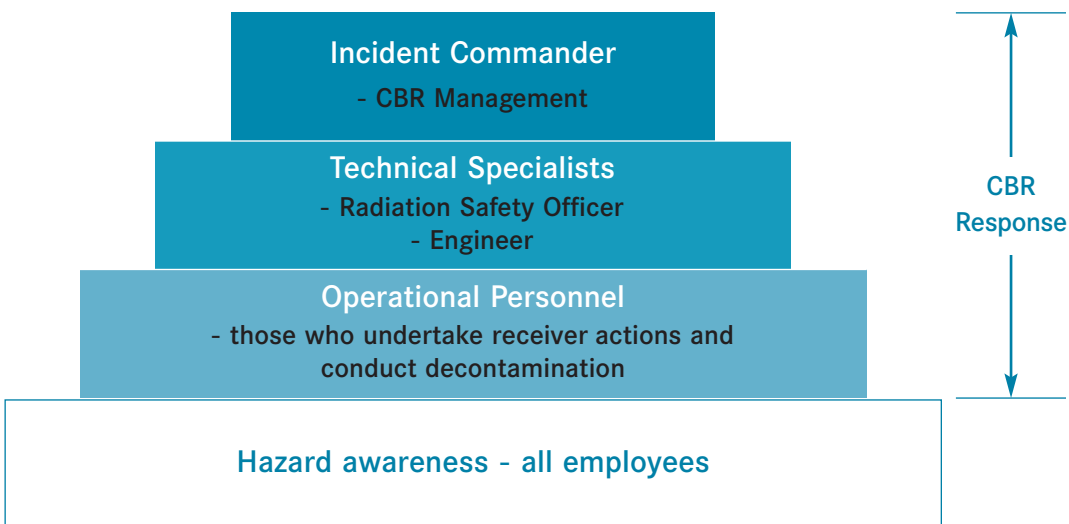
5 Tetsu, et al, *The Tokyo Subway Sarin Attack: Disaster Management*, Academic Emergency Medicine, 1998.

Staff to be trained should include, but may not be limited to:

- Emergency department staff—medical, nursing and patient service assistants
- Hospital executive and administrators responsible for incident coordination or emergency control roles
- Hospital occupational health and safety staff, or those nominated to fulfil a safety officer role
- Engineering and duty engineer staff
- Security personnel.

The level of training is in direct relation to the complexity of the role. Training should be based on the ability to demonstrate competency in the expected tasks. These challenges can be overcome somewhat by using a tiered approach to training. The following is an example:

**Figure 1: Tiered decontamination training**



## 2. Quick reference procedure

This ready reckoner is provided to hospitals as a rapid reference in the event of a chemical biological radiological (CBR) incident, either accidental or intentional. The following headings are outlined in greater detail in the *Decontamination standard operating procedures*.

### Preparation:

- Notify hospital personnel
- Alert security
- Establish name and toxicity of chemical agent when possible
- Evaluate casualties for radiological contamination
- Assemble and brief decontamination team
- Commence decontamination team register
- Set-up decontamination hot/warm/cold zones.

### Protection:

- Move casualties outside to limit facility contamination
- Safeguard facility lock-down and cordon off entries
- Crowd management
- Provide scripted information to casualties awaiting decontamination
- If hospital is contaminated, isolate and clean.

### Decontamination:

- Ensure decontamination teams are in place
- Conduct triage
- Basic life support delivered at triage, or in the decontamination area
- Undress casualty and ensure privacy
- Remove dressings prior to decontamination
- Double-bag and secure clothing, effects and linen
- Tag belongings and valuables
- Assist non-ambulant casualties
- Consider special needs patients
- Head to toe, flush, soap and water wash, then rinse
- Monitor/decontaminate staff in PPE.

### Treatment:

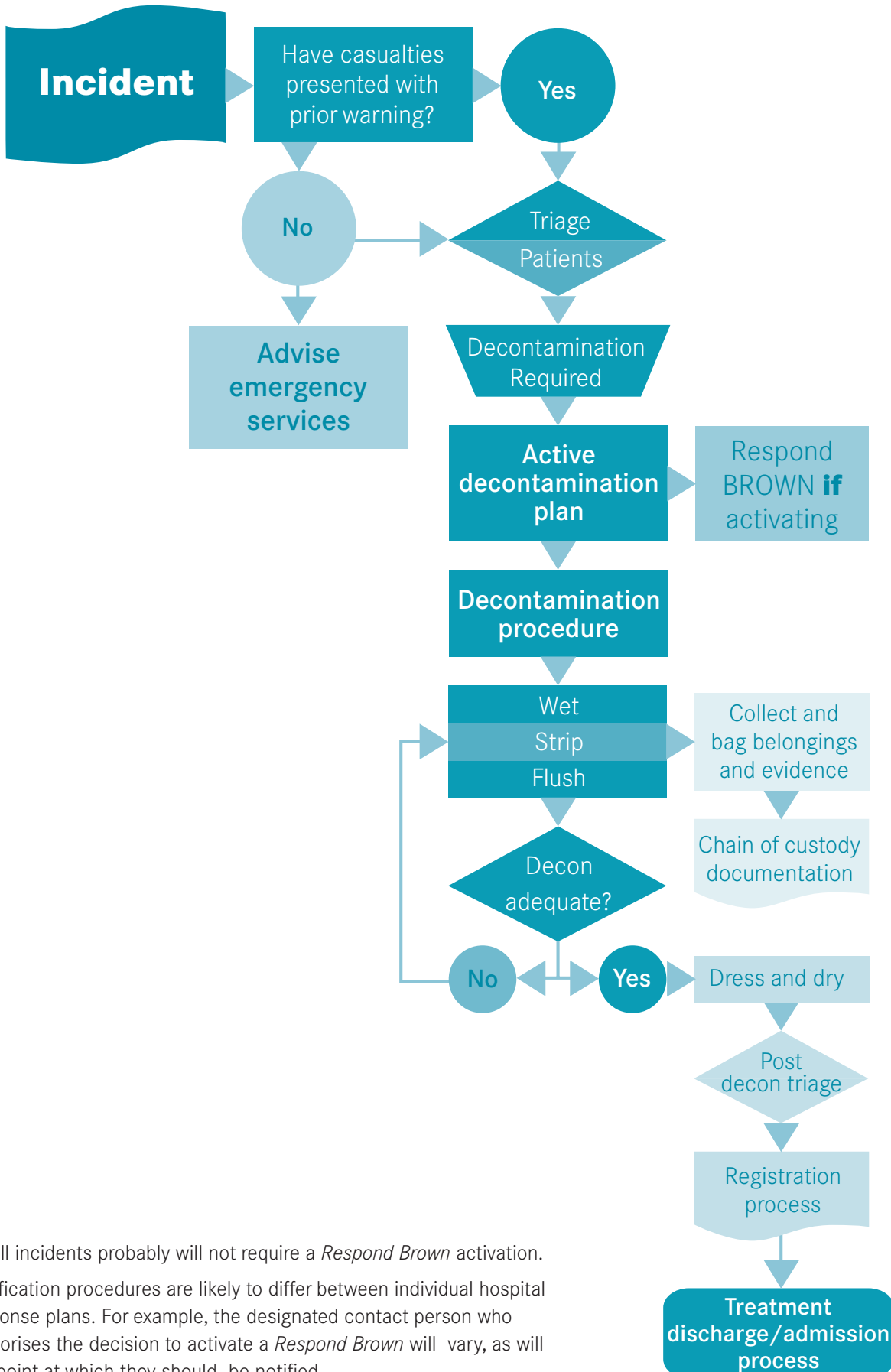
- Establish duration and route of exposure
- Assess clinical effect/toxidrome
- Obtain additional advice
- Provide medical and physical supportive care
- Consider antidote
- Commence inpatient treatment regime
- Consider off-gassing potential<sup>6</sup>
- Isolate if necessary
- Consider additional ventilation/extraction fans
- Plan and consult if transfer required for off-gassing patient.

### Recovery:

- Decontaminate exposed staff
- Clean up affected sites
- Seek advice re disposal of clothing
- Contact hazardous waste contractor
- Debrief staff, advising of potential health effects
- Advise authorities when normalcy restored
- Revise protocols as necessary
- Patient discharge planning
- Follow-up clinical effects short/long term.

<sup>6</sup> Little M, Murray L. *Consensus statement: Risk of nosocomial organophosphate poisoning in emergency departments*, Emergency Medicine Australasia 2004; 16: 456-458.

Figure 2: Contamination Incident Flow Chart



Small incidents probably will not require a *Respond Brown* activation. Notification procedures are likely to differ between individual hospital response plans. For example, the designated contact person who authorises the decision to activate a *Respond Brown* will vary, as will the point at which they should be notified.

## 3. PPE and deployable decontamination units

### 3.1 Personal Protective Equipment (PPE)

PPE is any device, equipment or clothing worn or used by workers to protect against injury from, or exposure to, the hazardous conditions they encounter while performing their duties. The major components of PPE include respirators, ear and eye protection, chemical protective suits, boots and gloves.

The key considerations in selecting and purchasing PPE for Victorian public hospitals were:

- Protection levels must comply with current Australian Standards. PPE must offer the level of protection required for hospital decontamination receiver roles involving chemical, biological and radiological casualties.
- The training and equipment maintenance requirements should add no significant additional burden.
- The chosen PPE should minimise restriction of movement or work practice.

Hospitals must provide instruction and training in the effective use, limitations and maintenance of PPE and clothing to all emergency department and other designated departments with response staff—such as security—who would be required to operate around the decontamination facilities. Refresher training must be provided at regular intervals—at least half-yearly.

#### Levels of protection

PPE has been divided into four categories: A, B, C and D, based on the level of protection afforded.<sup>7</sup>

These categories are agreed on by:

- The United States National Institute of Occupational Safety and Health (NIOSH)
- The United States Occupational Health and Safety Agency (OSHA)
- The United States Environmental Protection Agency (EPA)

#### Level A

Provides the greatest level of skin, respiratory and eye protection. Components include:

- Vapour-protective suits: Totally Encapsulated Chemical Protective Suit (TECPS) with integrated gloves, visor and boots
- Self Contained Breathing Apparatus (SCBA), with full-face piece.

#### Level B

Provides the same level of respiratory protection, but where a lesser level of skin protection is required. This is not a one-piece fully encapsulated unit. Components include:

- Self Contained Breathing Apparatus (SCBA), with full-face piece
- hooded chemical-resistant clothing (CRC)
- under-suit clothing (disposable coveralls or surgical scrubs, to absorb perspiration)
- gloves (internal) – nitrile recommended; gloves (external) – nitrile or butyl, depending on chemical involved
- PVC boots (chemical resistant)
- chemical resistant tape.

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<sup>7</sup> Emergency Management Australia (EMA). *Health aspects of Chemical, Biological and Radiological (CBR) Hazards Part III Emergency Management Practice, Volume 2 – specific Issues, Manual 3*. Attorney General's Department, 2000.

### Level C

This level of protection is used when the concentration and type of airborne substance is known and the criteria for using air purifying respirators are met. It is equivalent to that used in a hospital receiver role for chemical incidents. Components include:

- Full-face mask with sealed visor
- air purifying respirator (APR) with NBC canister
- hooded chemical-resistant clothing (CRC)
- under-suit clothing (disposable coveralls or surgical scrubs, to prevent wetting)
- gloves (internal) – nitrile recommended; gloves (external) – nitrile or butyl, depending on chemical involved
- PVC boots (chemical resistant)
- chemical resistant tape.

### Level D

A work uniform, offers minimal protection. It is equivalent to that used in a hospital receiver role for radiation and biological incidents. Components may include:

- coveralls
- gloves
- boots/shoes
- safety glasses, splash goggles or face shield
- surgical cap.

**Table 1: (PPE) Level C and Level D comparison**

Equipment	Level C	Level D
<b>Mask</b>	Full face mask with visor fit tested	N95 (P2) Surgical mask and visor
<b>Air Purifying Respirator (APR)</b>	M95 NBC canister	Radiological – no APR required Biological – certain agents will require High Efficiency Particulate Filter (HEPA)
<b>Gloves (Inner)</b>	Nitrile single use gloves	Nitrile single use gloves
<b>Gloves (Outer)</b>	<ul style="list-style-type: none"> <li>• Nitrile</li> <li>• Butyl</li> </ul> <i>(Choice is chemical specific)</i>	Single use medical or Sterile surgical gloves
<b>Suit</b>	Chemical Protective Clothing <i>(Minimum CPF3 rated)</i>	Surgical gown and cap
<b>Inner clothing</b>	Surgical scrubs or disposable coveralls	Surgical scrubs
<b>Boots</b>	PVC work boots	Surgical over boots
<b>Tape</b>	Chemical protective tape	Radiological – masking tape Biological – no tape required

### 3.2 Decontamination procedure considerations

When contingency planning for Decontamination procedures:

- Involve fire service staff in decontamination exercise planning.
- Choose decontamination site and set-up arrangements, taking into account locations of fire hydrant, access, wastewater drainage and casualty marshalling area.
- Determine location and access to external power supply and lighting considerations.
- Develop a site map and fire hose placement plan with unobstructed trolley and wheelchair access into and exit from the decontamination corridor.
- Include an equipment and PPE staging area.
- Determine a site for a staff rest, rehydration and rehabilitation area. Position it out of the line of sight of the decontamination area, so staff can focus entirely on their own mental and physical recovery.

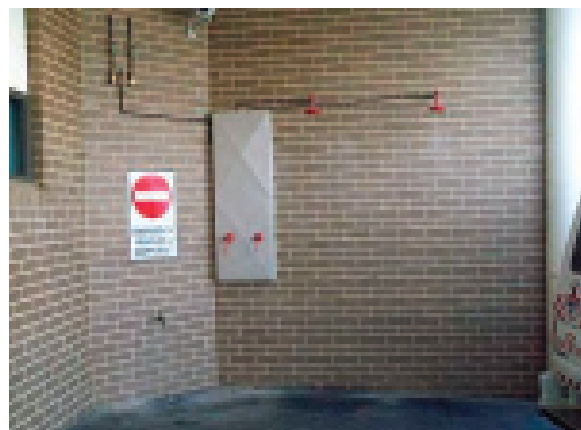
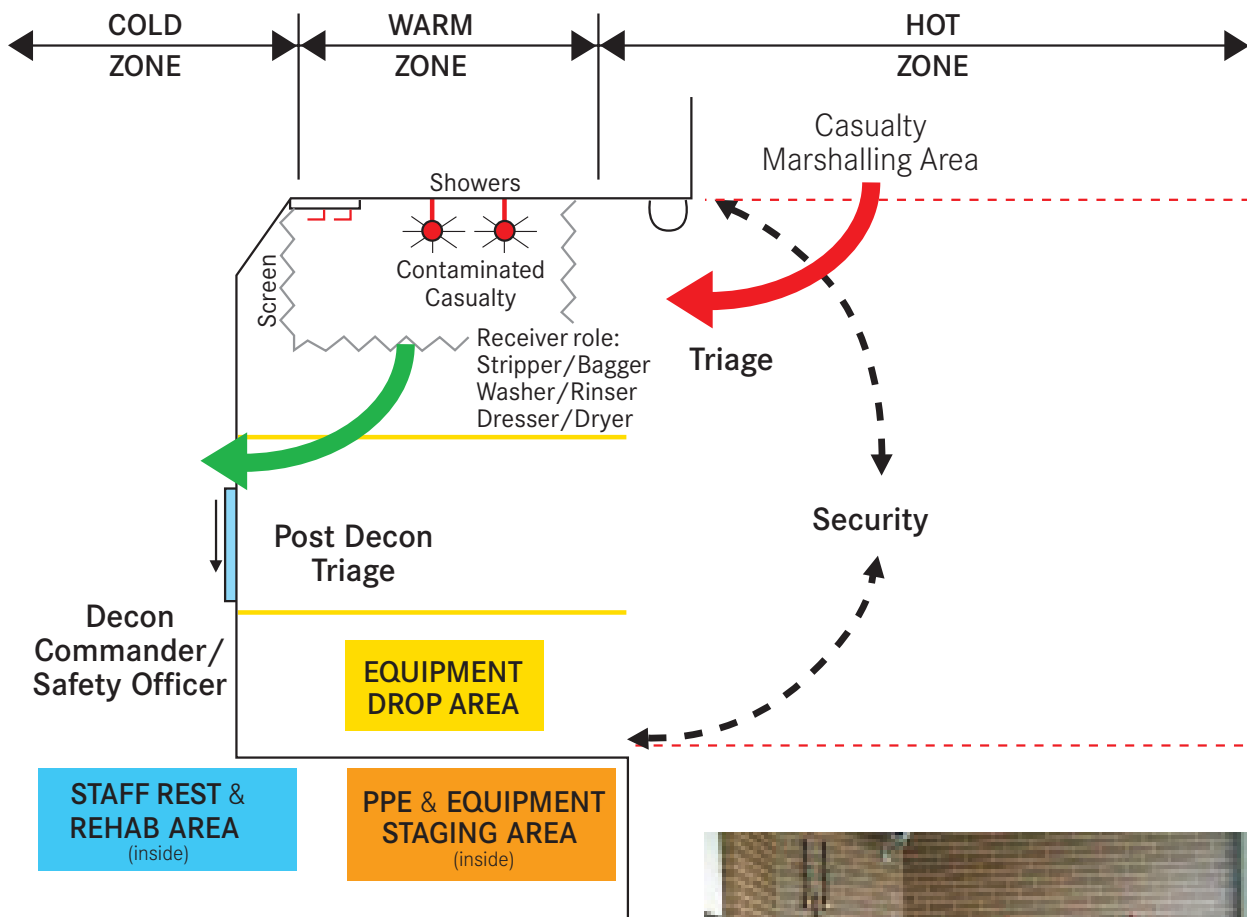
### Fixed facility (1–20 plus casualties per/hr)

Generally, there is a rapid set-up procedure. The decontamination process uses the hospital’s existing fixed or prefabricated facilities. Small to moderate numbers of casualties may be decontaminated in a short period of time using this method. Figure 3 shows an existing fixed facility and a basic decontamination team response.

**Table 2. Fixed decontamination facility**

Fixed decontamination facility (1-20 plus casualties per/hr)			
Task	Deploy	Operation	Dismantle
Minimum Personnel Required	1 staff	3 (1 strip/bag/wash/rinse/dry/dress, 1 security and 1 decon commander)	1 staff
Escalated Personnel Required	1 staff	5 (1 strip/bag, 1 wash/rinse, 1 dry/dress, 1 Security and 1 Decon Commander)	1 staff

**Figure 3: Fixed decontamination facility**





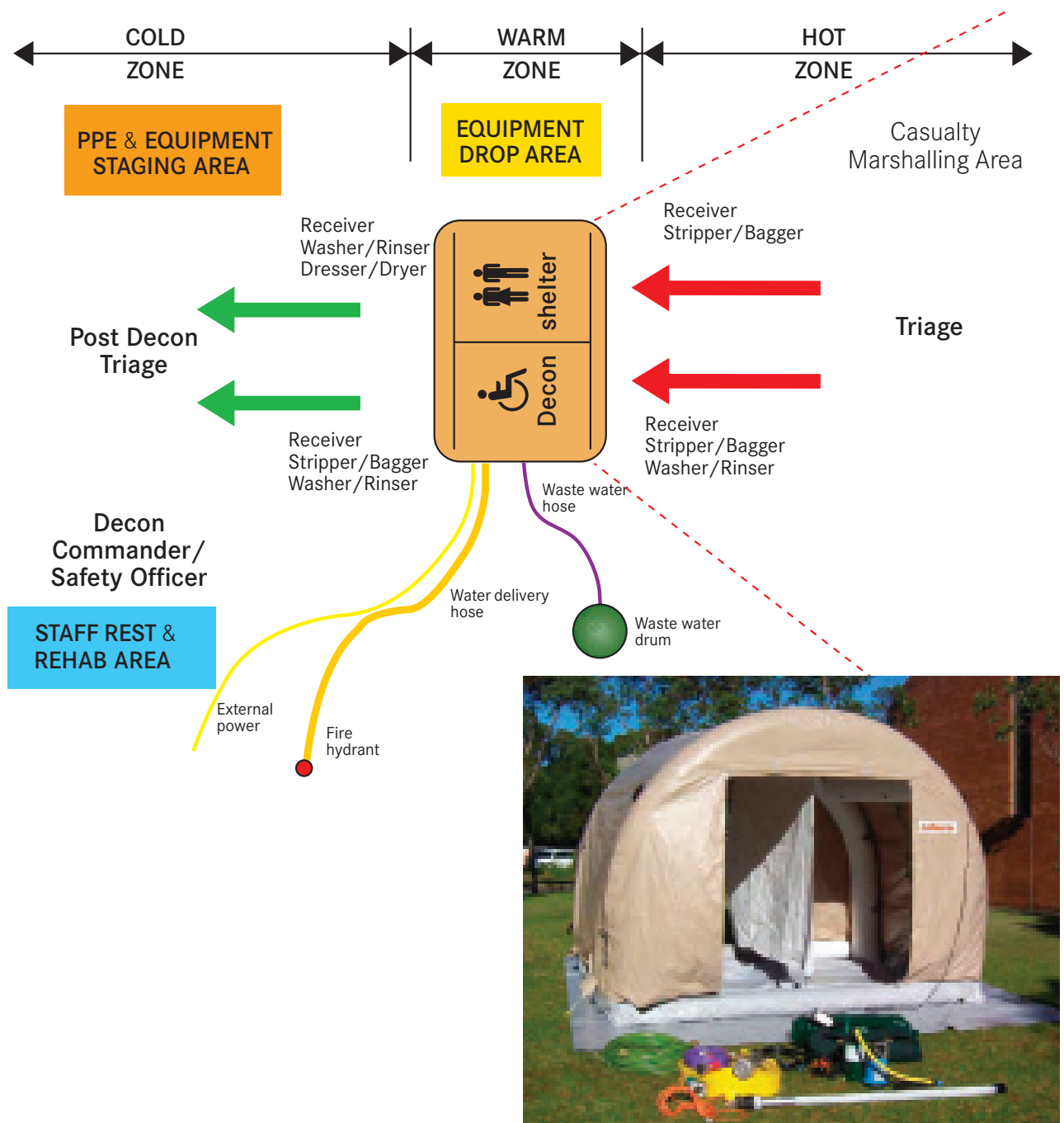
### Deployable units (30 casualties per/hr)

Multiple casualty decontamination procedure using the State-owned Covertex® deployable shelter and equipment. Moderate numbers of casualties may be decontaminated in a short period of time using this method. Figure 4 shows a Covertex® unit deployed and a decontamination team positioned.

**Table 3: Deployable decontamination facility**

Covertex® decontamination unit (30 casualties per/hr)			
Task	Deploy	Operation	Dismantle
Personnel Required	2 staff	4 (2 strip/bag/wash and 2 rinse/dry/dress)	2 staff

**Figure 4: Deployable decontamination unit**



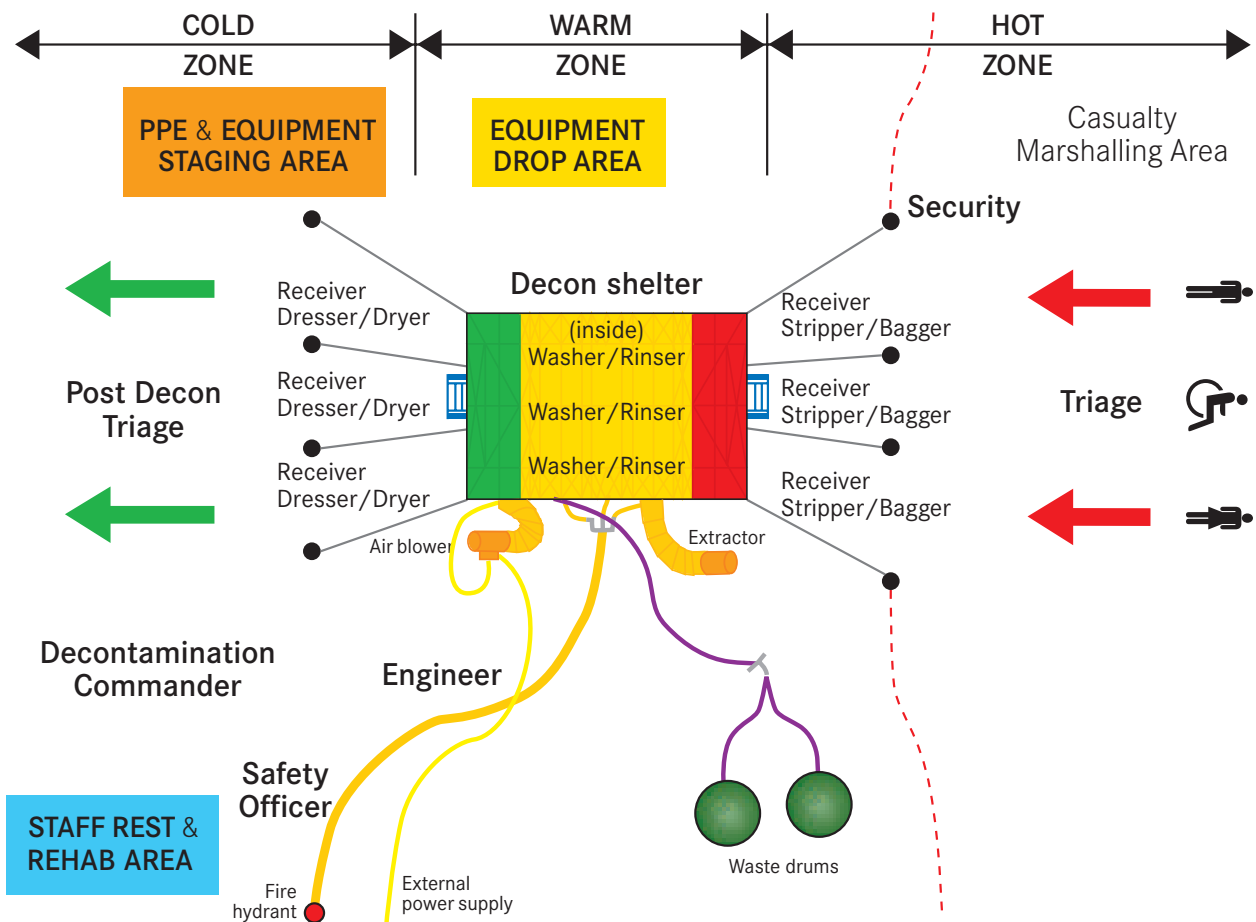
### Deployable decontamination unit (120 casualties per/hr)

Using State-owned TVI® deployable shelter and equipment, large numbers of casualties may be decontaminated in a short period of time. Figure 5 shows a TVI® unit deployed and a decontamination team positioned.

**Table 4: Deployable facility for mass decontamination**

TVI® decontamination unit (120 casualties per/hr)			
Task	Deploy	Operation	Dismantle
Personnel Required	4 staff	7 (2 strip/bag, 3 wash/rinse, 2 dry/dress)	4 staff

**Figure 5: Deployable decontamination unit**



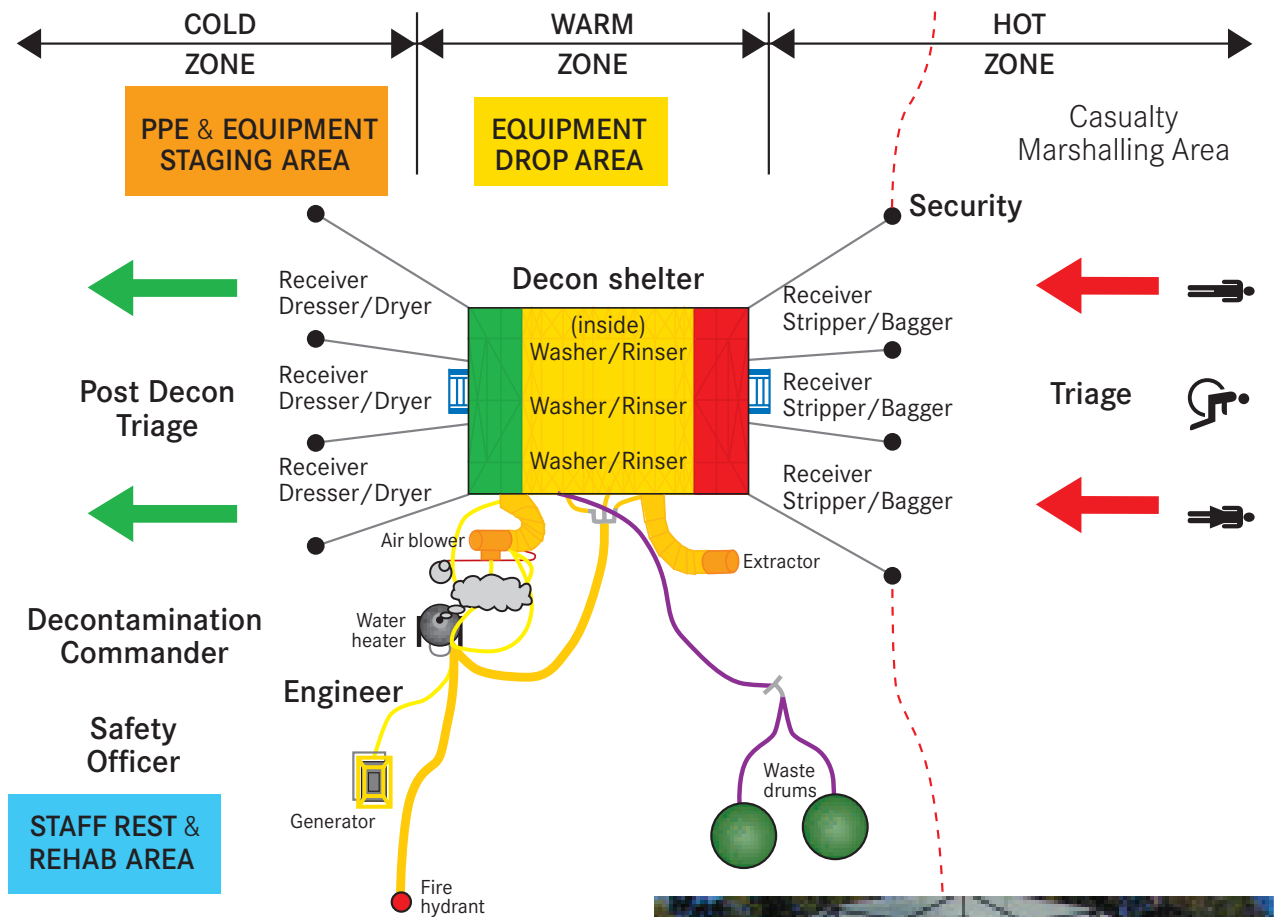
### Deployable decontamination unit (65–90 casualties per/hr)

Mass decontamination procedure using the Federally supplied deployable equipment. Large numbers of casualties may be decontaminated in a short period of time using this method. Figure 6 shows a TVI® unit deployed and a decontamination team positioned.

**Table 5: Deployable decontamination unit**

TVI® decontamination unit (65- 90 casualties per/hr)			
Task	Deploy	Operation	Dismantle
Personnel numbers	4 staff	9 (3 Strip/bag, 3 wash/rinse, 3 dry/dress)	4 staff

**Figure 6: Deployable decontamination unit**



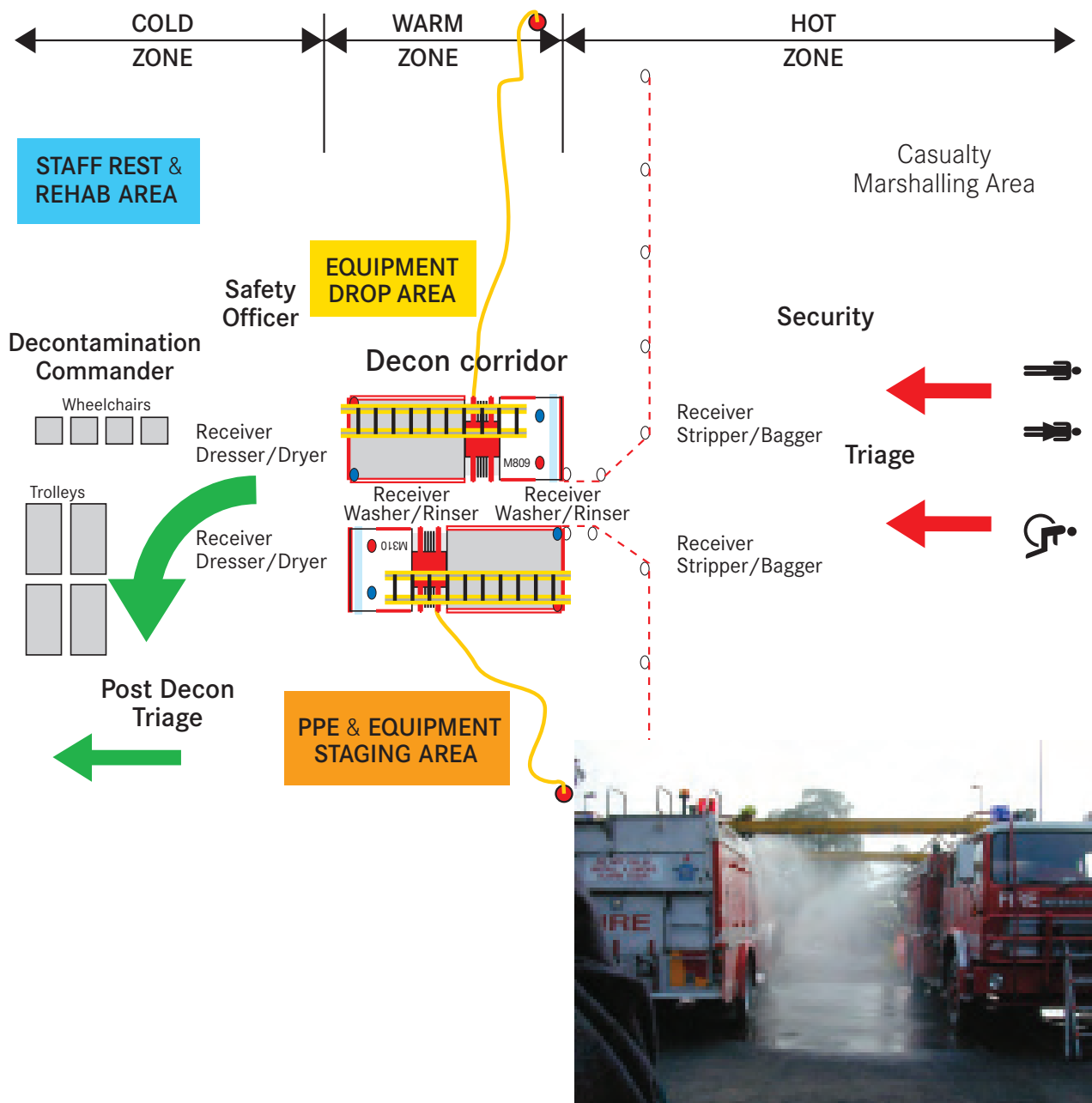
### Fire truck decontamination corridor (80+ casualties per/hr)

Notify the fire service through standard '000' activation protocol. Large numbers of casualties may be decontaminated in a short period of time using this method. A decontamination corridor can be operational within 30 minutes of the fire service arriving on site. Preparation and planning is required to identify decontamination corridor set-up areas and fire hydrant locations.

**Table 6: Fire Service decontamination**

Fire truck decontamination corridor (80+ casualties per/hr)			
Task	Deploy	Operation	Dismantle
Personnel numbers	Fire service operational deployment of a fire truck decontamination corridor will be dependent upon their available human resources		

**Figure 7: Fire truck decontamination corridor**



The fire services decontamination method is as follows:

- A decontamination corridor is set up using two fire appliance vehicles stationed parallel and approximately three metres apart, to create a corridor.
- Fire hoses are secured overhead that direct high volume low-pressure water into this decontamination corridor. Additional fire appliance vehicles can be added end-to-end, to increase the decontamination capability.
- Drop-down polytarp® screening of corridor can be set up for privacy.

Meetings between local fire service and hospital personnel are essential to:

- Identify and agree on management roles and responsibilities.
- Identify 24 hr contact for hospital emergency management role.
- Maintain up-to-date emergency contact lists with fire service.
- Involve fire service staff in decontamination exercise planning.
- Predetermine decontamination site and set-up arrangements taking into account locations of fire hydrant, access, wastewater drainage and casualty marshalling area.
- Determine location and access to an available external power supply and lighting considerations.
- Develop a site map and fire hose placement plan that provides unobstructed trolley and wheelchair access into and exit from the decontamination corridor.
- The fire service will require an equipment and PPE staging area included in plan.
- Additional fire vehicles may need to be accommodated on hospital site.
- A hardstand parking surface is required for all vehicles.



## 4. Decontamination teams

### 4.1 Overview

Hospitals must develop and maintain their own all-hours decontamination capability and establish a decontamination team. Public hospital decontamination teams should be designed to support decontamination operations, by providing trained personnel and a standard cache of equipment. This requires a significant amount of organisational and institutional commitment. However, existing resources both within and external to the hospital may help to reduce the effort.

At each hospital, clear leadership for the decontamination response must be established. This leadership most often comes from either the safety department or the emergency department. A partnership between these departments is essential. The safety department has expertise in safety training, facility regulations, operations and policy, while the emergency department brings patient management, disaster response, and clinical care expertise. Additional stakeholders such as facility engineering staff, medical and nursing administration services must be identified and involved.

A training program must identify appropriate personnel and train them to the level expected of their task description. Training should be based on the ability to demonstrate competency in the expected tasks. Incident management system integration and appropriate initial and ongoing education will ensure not only the safety of the facility and its personnel, but that contaminated patients receive timely and appropriate care.

### 4.2 Roles and responsibilities

Decontamination team operations must be integrated into the incident management framework of the health care facility. This improves organisational effectiveness and lines of authority. The Hospital Emergency Incident Command System<sup>8</sup> known as (HEICS) can be utilised, placing responsibility for the decontamination team under the Operations Section.

Healthcare facilities should develop role-compatible job action cards for decontamination team roles. These action cards need to be tested in exercise situations, to confirm that each person's responsibilities are clear.

### 4.3 Action cards

Allocate job action cards as incident size dictates. (*Action cards attached as appendices 1- 11*)

The following roles are described:

- Decontamination Commander
- Decontamination Safety Officer
- Decontamination Set Up/Support Leader
- Decontamination Site Access Leader
- Self-decontamination Instructor
- Decontamination Team Members:
  - Stripper/Bagger
  - Washer/Rinser
  - Dryer/Dresser
- Decontamination Triage Leader
- Post-decontamination Triage Leader

## 4.4 Decontamination team

### Decontamination Commander

Responsible for overall management of decontamination operations. This position may change hands as more experienced staff become available during an incident. Emergency department or occupational health and safety staff should fill this role.

### Decontamination Safety Officer

Monitor the decontamination area for developing hazards and assures the overall safety of the team including: appropriate donning of PPE, preservation of warm and cold zones, adequacy of security, strict non-smoking rule, appropriate staff and equipment time/exposure limits.

### Decontamination Set Up/Support Leader

Set up and provide supplies to the decontamination corridor, for patient(s) or for the Decontamination Team. Supervise the clean-up of contaminants and equipment. Manage contaminated items.

### Decontamination Site Access Leader

Establish a safe refuge area for decontamination team. Prevent access or re-entry by casualties, or run-off of substances into the facility.

### Self-decontamination Instructor

Direct patients to decontamination shower. Instruct patients on how to remove and package contaminated clothing and personal items. Observe removal of personal items/clothing and placement into labelled bags, in the event police evidence collection is requested.

### Decontamination Team Members

Control clothing, perform decontamination, or facilitate patient decontamination and drying/dressing procedure:

- Stripper/Bagger
- Washer/Rinser
- Dresser/Dryer

Team members then aid in transferring the clean patient through the cold zone.

### Decontamination Triage Leader

Provide medical assessment of contaminated patients, basic life-saving interventions where appropriate, and prioritise patients for decontamination.

### Post-decontamination Triage Leader

Sort decontaminated casualties according to priority: ability to ambulate, level of symptoms and patient disposition on exiting decontamination corridor. Direct initial stabilisation and movement of casualties to primary care.



## 4.5 Decontamination team deployment

In decontamination events allocation of specific duties will increase proportionately to the number of incoming casualties. (*Decontamination corridor chart is attached as Appendix 12*).

**Table 7: Decontamination team constitution guide**

Staff	Single Casualty	2-10 Casualties	10-100 Casualties	100+ Casualties
Security	1	1	2	3
Stripper/Bagger		1	1	2
Washer/Rinser		1	2 - 4	4
Dresser/Dryer		1	1 - 2	2
Triage Leader		1	1	1
Decontamination Commander	1	1	1	1
Decontamination Safety Officer				1
Self-Decontamination Instructor	NIL	NIL	1	1

## 4.6 Decontamination team precautions

### Brief decontamination team

- Inform staff of what is known as well as what is not known, the contaminant involved and expected toxicity.
- Explain that staff will be monitored during and after response procedures and should immediately report any suspicion of ill effects.

### Commence decontamination team register

- All response staff entering decontamination zones must be logged in and recorded (*Decontamination procedure suit time log is attached as Appendix 13*).
- Call-in staff also need to be logged in on arrival, at a predetermined log-in point.

### Monitor staff in PPE

- Given the physical demand upon staff in PPE, a brief medical check and documentation of vital signs to check fitness of staff before donning PPE is prudent. (*PPE rehabilitation log is attached as Appendix 14*).
- A suitably qualified or experienced person should take the role of Safety Officer.
- Established hand signals should be used by responders wearing PPE, to mitigate any communication problems with decontamination staff. (*A decontamination hand signal chart is attached as Appendix 15*).
- Determine in advance the accepted PPE confinement time limit, considering 'best practice' evidence. Consider factors that determine tolerance of PPE confinement and onset of staff fatigue, including:
  - general pre-existing physical fitness
  - air temperature and humidity and shade from direct sunlight
  - number of victims requiring decontamination.
- Base decisions on incident variables, such as the number of staff on duty who are adequately trained in PPE and decontamination procedures.

### Decontaminate exposed staff

- Decontamination planning should cover any staff suspecting or reporting a PPE suit breach; such staff must also undertake decontamination.
- The suit and equipment must be inspected. If there is any doubt about suit integrity, it must be disposed of.

## 5. Decontamination: standard operating procedures

Following proper procedures when managing casualties of hazardous materials accidents and CBR incidents will ensure minimum exposure to hospital staff, the patient population and the hospital facility.

### 5.1 Preparation

#### Recognising contaminated patients

The earliest possible recognition of contaminated patients presenting to a hospital (and particularly the emergency department) may be by:

- identifying signs and symptoms and the history of events from the index casualty
- prior alert from a primary information source, such as ambulance control centre or ambulance Duty Team Manager (DTM)
- secondary information source, such as electronic media coverage of an event
- staff notification, after viewing media report or eyewitness situation.

#### Roles and notification

In the event of a chemical or radiological agent release, the initial notification will most likely come from the local 000 call centre. A biological agent release will most likely be identified through disease surveillance and notification procedures.

In any situation requiring urgent action, the more detail obtained in the initial receipt of information, then the more likely the urgency of the situation will be recognised at an executive level and increase the likelihood that it will be acted on in a timely manner.

Once notified of a potential or actual event, the call taker should ascertain the following information:

- exact location of incident
- type of incident and substance/s involved
- known number of patients and extent of their injuries.

Commence a critical incident action log. (*A critical incident log is attached as Appendix 16*).

Contact hospital emergency response coordinating personnel (as per local unit emergency plan). (*An incident message form is attached as Appendix 17*).

Notify key staff and distribute emergency response procedure action/task cards, as directed. When authorised, activate staff call-in procedure, as per emergency plan.

#### Security

Activate security plan and brief security staff. Ensure security staff are appropriately trained and attired in PPE.

#### Establish name and toxicity of chemical agent

Obtain specialist advice by contacting Poisons Information Centre **13 1126**, as per existing operational procedures. Also consult with fire brigade/HAZMAT and Public Health Division of Department of Human Services (DHS) 24 hr Emergency contact number **1300 790 733**.

#### Establish source and level of exposure to radiation dose

Obtain specialist advice by contacting the Emergency Coordinator, Public Health (DHS) 24 hr Emergency contact number **1300 790 733**. Contact the hospital on-call health physicist or radiation safety officer (RSO) to attend the Emergency Department. (*The Standard Operating Procedures For Hospitals For Suspected Radiation Incidents 2005; is attached as Appendix 18*).

### Assemble decontamination team

- Brief decontamination team.
- Allocate action cards and clarify roles.
- Decontamination team then don PPE, as per standard operating procedures.
- Use a buddy system to ensure PPE is applied safely.
- Distribute decontamination equipment and supplies.
- Station decontamination team as per standard operating procedures.
- Determine and brief back-up decontamination team members.

### Set-up decontamination hot/warm/cold zones

- Establish locations for victim marshalling and locations for decontamination set-up prior to the event.
- Consult ambulance communications centre if ambulance bays compromised.
- Establish hot, warm and cold zones.
- Remove non-essential items from the decontamination area.
- Provide for shelter from the elements, using existing structures where available.
- Set-up decontamination facility, as per local capacity and design.
- Establish casualty triage point.

## 5.2 Protection

### Move casualties outside

- Isolate and move the contaminated casualties outside.
- Keep casualties away from waiting room and patient care areas until decontamination is completed.
- Locate vehicle/s involved in transporting the index patient and subsequent casualties to hospital. Lock vehicle/s, segregate with barrier tape and inform authorities.

### Safeguard facility

- Undertake steps to isolate treatment areas and close all doors and windows.
- Consult with health facility's engineers to isolate air-conditioning.
- Set-up access and control cordon, to protect the facility from contamination by self-presenters.

### If hospital contaminated, isolate and clean

- Clearly identify route of contaminated patients arrival and ingress into health facility.
- Determine any additional contacts, such as hospital enquiry desk, public enquiry phones or security points.
- Seek confirmation of the agent and specific management plan.
- Activate decontamination countermeasures, to clean up these areas at the earliest opportunity.
- Initiate a clean-up process. Cleaning staff will not require additional PPE unless there is visible (or detectable in the case of radiation) contamination. e.g. spills, drips.

## Crowd management

- Advise victims and responders of your intention to decontaminate the site.
- Secure internal and external access points, cordon off and isolate contamination sources.
- Assess whether lock-down procedures need to be enforced.
- Victorian Police liaison may be required to assist in maintaining control cordons. Request assistance as per predetermined interagency and hospital emergency response plans.
- Contain and control casualties, to prevent dispersion or re-entry.

## Scripted information for casualties awaiting decontamination

- Provide information via pre-prepared flyers, a taped message or by trained staff with megaphone.

## 5.3 Decontamination

### Individuals decontaminated at incident site

Casualties may arrive tagged by the fire service/HAZMAT personnel at the scene as DECONTAMINATED. These casualties from the incident scene have already undergone decontamination procedures.

### Triage

- Consider the number of casualties requiring urgent decontamination. Triage using the accepted Australian triage guidelines.
- Ensure that the tracking and registration of casualties is in place.

### Lifesaving care delivered at triage or in the decontamination area

- Predetermine accepted emergency measures that will be used at triage and during the decontamination process.
- Arrest any haemorrhaging.
- Manage the airway.
- Stabilise cervical spine.
- Limited intervention e.g. oxygen, auto injectors (when authorised).

### Undress casualty and ensure privacy

- Decontaminate casualties as soon as possible.
- Remove clothing from the top down.
- Leave casualties underwear on if privacy is insufficient.
- Address modesty concerns, to aid in casualty compliance during decontamination.
- Provide cover of area for privacy.
- Segregate sexes for greater cooperation.
- If compliance is resisted steadfastly, consider decontaminating these casualties clothed and mitigate the situation later.

## Double bag and secure clothing, effects and linen

- Double bag clothing and valuables.
- Maintain a chain of custody of belongings and forensic evidence<sup>9</sup>
- Establish a method of patient receipting and tracing system for clothing and personal belongings is in place. (*the Hospital emergency incident exhibit log is attached as Appendix 20*).
- Double bag linen and determine how linen is to be cleaned.

## Tag belongings and valuables

- Tag belongings include casualties name if known. Otherwise, allocate individual sequential numbers.

## Non-ambulant casualties

- Decontamination procedure plans should cover non-ambulant casualties.
- Wheelchairs, patient trolleys and spine boards are required in the hot zone, to aid transfer of non-ambulant casualties through the decontamination shower.
- Trolleys and wheelchairs must not proceed beyond the warm zone.
- Return trolleys and wheelchairs to the hot zone for other non-ambulant needs.

### Special needs patients

- Develop contingency plans for:
  - The physically and cognitively impaired
  - Communicating with the culturally and linguistically diverse
  - Casualties reliant upon prostheses, vital aids or service animals
  - Casualties suffering from chronic long-term illness
  - Toddlers, as they are liable to increase self-contamination by sucking thumb or explore their nasal cavity and eyes. Pacifiers must be avoided, as a potential contamination risk.
- Small children should be decontaminated as a priority, as they are likely to become fearful and are susceptible to chemical uptake through skin.
- Mother-baby combinations should be decontaminated separately, if possible.
- Cold-water decontamination is contraindicated in infants; prepare a bucket of tepid water. Response planning should include keeping a baby bath on hand.

## Head to toe, soap and water wash

- Water flushing is generally considered the best method of decontamination. Do not delay process waiting for soap—use plain water.
- Gentle washing is required, use sponges or soft bristle brushes only and do not abrade skin.
- Start wash from head and move down.
- If the contaminant is a water-reactive agent, decontaminate using gauze or paper towelling to pad-off gross amounts, then use an alternate decontaminant such as vegetable oil, flour, bicarbonate of soda, fuller's earth, kitty litter or even dirt.

## 5.4 Treatment

### Establish duration and route of exposure

- Determine history of exposure and proximity of the casualty to point of contaminant release.

### Assess clinical effect/toxidrome

- Investigate and observe casualties.

### Obtain additional advice

- Consult with emergency services HAZMAT, police, Poisons Information Centre and Public Health Division–Department of Human Services.

### Provide supportive care

- Predetermine social work and mental health staff availability, to provide emotional support to casualties.

### Consider antidote

- The use of COMBIPEN® auto-injectors is strictly controlled under Section 18a of the *Therapeutic Goods Act*; a cache of auto injectors exists at staged sites.
- Auto-injectors will be released to paramedics for pre-hospital treatment when authorised by either the Chief Medical Coordinator (Medical DISPLAN), or the Chief Health Officer (Public Health), if clinical diagnosis dictates or the collected evidence confirms the presence of the contaminant.

### Inpatient treatment regime

- Attend to ongoing treatment of patients, as incident dictates.

### Consider off-gassing potential–isolate or transfer if necessary

- Alert staff to observe for signs and symptoms of cross-contamination or somatic responses.
- Off-gassing does NOT occur following decontamination of victims who received only dermal and/or respiratory exposure.
- Off-gassing is NOT a problem which results from ingestion of organophosphates.
- Observe for excretion of contaminant and by-products in treating and nursing casualties, where relevant.<sup>10</sup>
- Consult with ambulance service about transferring suspected off-gassing patient. Consider benefits and risks of transfer.
- If ingestion of selected chemicals has occurred, consider treatment in a well-ventilated area and consult Poisons Information Centre 24 hrs **13 11 26** and the Public Health Division (DHS) 24 hr Emergency contact number **1300 790 733**.

### Assess need for additional ventilation/extraction fans

- Utilise local facility resources and consult with fire brigade.

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<sup>10</sup> Little M, Murray L. Consensus statement: *Risk of nosocomial organophosphate poisoning in emergency departments*, *Emergency Medicine Australasia* 2004; 16: 456-458.

## 5.5 Recovery

### Decontaminate exposed staff

- Decontamination planning should cover any decontamination team members suspecting or reporting a PPE suit breach. Such staff must also disrobe and undertake decontamination.
- The suit and equipment must be inspected. If there is any doubt about the suit's integrity, dispose of it.

### Clean up affected sites

- Pre-establish local facility decontamination area clean-up activation plans. PPE is essential for this task.

### Seek advice re disposal of clothing

- Before disposing of any clothing or belongings, inform the owner and consult Victoria Police regarding possible forensic requirements. The Incident Control agency can provide advice regarding the safe management of contaminated clothing and belongings.

### Contact hazardous waste contractor

- Contact local facilities' existing waste management contractors. Determine a plan for waste management removal and clean-up.

### Debrief staff and advise of health effects

- Immediate ('hot') debriefs should always be offered after critical incidents, staff should be encouraged to attend and contribute. Debriefs must exclude apportioning of blame.
- Qualified staff *only* should conduct staff debrief. However, staff may wish certain trusted staff included. Matters raised that are considered serious should be followed up promptly.
- Staff contaminant exposure concerns and information on follow-up need to be addressed at debriefing.

### Advise authorities of restoration of normalcy

- Discuss intention to 'stand-down' from emergency response with facility's department heads, to determine readiness to resume normal operations, *before* alerting emergency services of stand down.
- Consider a partial resumption of operations if recovery of certain services may be protracted.

### Revise protocols as necessary

- Post-incident review of emergency response procedures is essential, to ensure the plan is robust and to mitigate shortcomings or risk of future reoccurrence.

### Patient discharge planning: follow up clinical effects

- Complete registration of patients and contaminant-specific discharge planning advice. Consult with Public Health Division of DHS 24 hr Emergency contact number **1300 790 733** regarding follow-up screening and exposure event register.



## 6. Decontamination capacity and facilities

### 6.1 Background

Since 2000 and the Sydney Olympics preparations, many hospitals have done significant work to provide a decontamination capacity for self-presenting casualties. The ability of public hospitals to respond in a timely, appropriate manner to incidents involving particular CBR agents and mass casualties is limited, as hospitals do not have access to mass casualty decontamination equipment and rely upon fire service assistance.

In June 2004, the Australian Government—as part of ongoing counter-terrorism planning—provided two deployable decontamination units to the State of Victoria, to be stationed at selected public hospitals. The Department of Human Services (Victoria) supplemented these resources with 10 additional decontamination units, thus providing an all-of-state deployable decontamination capacity.

Selected Victorian metropolitan and rural public hospitals have received an increased decontamination capability. These were determined by taking into account their status as a critical major centre for the surrounding community, the trauma service rating and subacute forecast grouping. Other determinants in selecting sites were the degree of heavy industry, populations of 60,000 or more within immediately proximity or surrounding area<sup>11</sup> and mass transit infrastructure (major arterial road and rail) near each hospital. Rural hospital siting decisions were also made by judging the significant impact consequence, against risk likelihood.

#### Metropolitan hospital deployable decontamination units

The two Australian Government-supplied deployable decontamination systems are stationed in Melbourne for deployment if required.

State-supplied deployable decontamination units are to augment current decontamination capability at:

- Royal Melbourne Hospital (Melbourne Health)
- The Alfred Hospital (Bayside Health)
- St Vincent's Hospital (St Vincent's Health Service)
- Dandenong Hospital (Southern Health)
- The Northern Hospital (Northern Health)

#### Rural hospital deployable decontamination units

State-supplied deployable decontamination units are to augment current decontamination capability at:

- Ballarat Base Hospital (Ballarat Health Service)
- Bendigo Base Hospital (Bendigo Healthcare Group)
- Latrobe Regional Hospital–Traralgon (Gippsland Region)
- The Geelong Hospital (Barwon Health)
- Goulburn Valley Health (Shepparton).

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11 The World Gazetteer – current populations of cities and towns (Victoria 2005)

## 6.2 Capacity

'Decontamination capacity' and 'capability' are commonly used interchangeably. In the context of decontamination, capacity means a specific number that can be accommodated in a given area, or under available showers. *Capability* is the ability to absorb that number, perform decontamination and process those casualties.

All hospitals with emergency departments should be able to decontaminate a moderate number of contaminated casualties. This number can be expressed as patients/hr and is calculated by the use of a formula based on each hospital's annual number of patient visits to their emergency department:<sup>12</sup>

### Formula

$$\frac{\text{Annual Number of ED Visits}}{1000} = \text{Patients Per Hour Capacity}$$

The rationale in determining this formula is as follows. A hospital that treats, for example, 40 thousand emergency department patients a year, is identified as having an emergency service patronised by self-referring patients. Secondly, such a hospital will be more likely to have the necessary staff and infrastructure capability to decontaminate up to 40 patients per hour, 24 hours a day. Hospitals need to have a primary decontamination plan that receiving personnel can rapidly implement, together with an advanced plan to employ when additional personnel and equipment becomes available.

If it becomes apparent the size and nature of the incident is beyond the hospital's resources, seek assistance from the fire service. The patient per hour capacity must be sustainable for at least 90 minutes, to allow for emergency service arrival, set-up and full operational status to be achieved.

### Decontamination capacity formula

To establish how many casualties a facility can decontaminate per hour, use this formula.

Estimated hourly capacity (number of casualties able to be decontaminated hourly) = **60** (mins per/hour) *divided* by the predetermined shower duration per casualty **T** (minutes) *multiplied* by **S** (number of shower heads available).

$$\text{Capacity} = \frac{(60 \times S)}{T}$$

### Assumptions

- There are sufficient trained staff to run the decontamination facility at full capacity.
- The contaminant is known and decontamination procedures can progress without delay.
- A consistent water supply is available to the facility (low pressure/high volume water), estimated at 60-90 pounds per square inch (PSI) of pressure.
- The contaminant's consistency is not persistent or overly viscous, requiring additional time and effort to perform the decontamination procedure.

<sup>12</sup> The Capital Region Metropolitan Medical Response System. *Rapid Access Mass Decontamination Protocol*. Connecticut (USA); January 2003

### 6.3 Facilities and set-up

Decontamination facility set-up is defined as the assembly of equipment, supplies and the human resources required to commence and maintain decontamination proceedings, until completed or relieved.

Decontamination equipment set-up should be practiced and widely understood within each hospital. Set-up procedures need to be developed to deliver a 24-hour capacity, for urgent response, regardless of environmental conditions.

The images below display a sequence of the TVI decontamination unit being set up.

The following considerations apply to all decontamination facilities—fixed, portable or deployed from elsewhere:

- Select a large, well-ventilated area.
- Use natural features to facilitate set-up:
  - Curbing
  - Roadways/paths
  - Walls/fences
  - Existing external lighting.
  - Provide shading in high-heat environments:
    - Tarpaulins
    - Buildings or trees.
  - Provide shelter in cold environments:
    - Wind barriers
    - Heaters
    - Warm water source for showers.\*
- Ensure the following:
  - Hydrant water accessible
  - Ensure direction of contaminated water run-off is away from clean zone
  - Security perimeter set-up to control site access
  - Sufficient marshalling area for contaminated casualty (Uphill and upwind from the safe haven area)
  - Trolley and wheelchair staging points in both hot and cold zones
  - Triage point in safe haven area
  - Waste management containers
  - Linen and equipment staging area.

\* The temperature of water at the skin should not exceed 26°C; higher temperatures may result in vasodilation and increased chemical absorption. Warm water systems must be flushed weekly to prevent the accumulation of Legionella bacteria.

## 6.4 Deployable facilities

### Covertex® Mini Decontamination Unit (State units)

Covertex® shelters are manufactured in New Zealand. Covertex® currently supply the Australian Army and Australian Emergency Services. The seven Covertex® inflatable shelters are a fully self-contained design, enabling a simple unfold>inflate>connect to equipment process. Specifications and equipment details are given below.

#### Dimensions and weight

Dimensions: 280cm x 340cm x 250cm (LxWxH)

Storage dimensions: 90cm x 80cm x 60cm

Weight: 85kg

#### Bunding system

2 x 200mm(8in) inflatable bund tubes (removable) are fitted into the bund base at the front and rear of the shelter. The bund base incorporates a heavy-duty polyurethane base (2.8m x 3.4m), with vertical perimeter wall of 200mm for fluid containment and attachment to the shelter cover. The bund tube fabric is 700gsm polyester reinforced polyurethane.

Each tube includes:

- 1 x inflation/deflation valve
- 1 x overpressure release valve

#### Shelter cover

The shelter roof/cover providing roof and end walls is fully removable from the banded base. Connection is by way of 50mm Velcro joining. Fabric is 450gsm polyester reinforced PVC.

#### Partition

A removable fabric partition is fitted along the length of the shelter, to provide two corridors. The partition is attached to the roof and floor by elastic straps and hooks, providing a gap top and bottom to allow air to circulate and water to drain away. The partition can remain fitted permanently, or fitted during set-up.

#### Waste water package

- waste water pump and containment drum (3000 litre capacity)
- hoses (3 x 6m minimum length)
- manifold (3-way stainless steel).

#### Clean water package

- hoses (30m minimum length)
- manifold
- shower booms
- nozzles
- hand sprays
- hydrant adaptors - both Metropolitan Fire Brigade(MFB) and Country Fire Authority (CFA) compliant hydrant adaptors are included with each unit.

**Lighting**

Single unit IP68-rated waterproof 32v 36 watt fluorescent light, with 5m lead and 240v-32v step-down transformer.

**Equipment kit**

Each shelter is provided with a standard equipment kit, including:

- manual pump
- repair kit
- hammer
- ground pegs
- 4 x storm guys with tension hook and 600mm steel ground anchors
- ground tarpaulin: 650gsm polyester reinforced PVC ground tarpaulin 4m X 4m, to provide additional protection to both the bund base and containment of contaminants
- laminated instructions.



Image 1 Covertex® Decontamination Unit (20 patients per/hr) can be deployed by two people and made fully functional within 10 minutes.

## TVI® Corporation Decontamination Unit (State units)

The three TVI® corporation shelters are manufactured in the United States. TVI® Corp currently supply to the Australian Government and Australian Emergency Services. The TVI® shelters are designed as stand-alone units; they are a fully self-contained design that enables a simple erect-and-connect-equipment process. The only externally supplied prerequisite is a hydrant-based water supply and 240-volt mains power supply. Specifications and equipment details are given below.

### Dimensions and weight

Dimensions: 3900cm x 3400cm x 2500cm (LxWxH)

Storage dimensions: 1120cm x 1220cm x 1120cm

Weight: 96 kg

### Waste water package

- waste water pump and containment drum (3000 litre capacity)
- hoses (3 x 6m minimum length)
- manifold (3-way stainless steel).

### Clean water package

- hoses (30m minimum length)
- manifold
- nozzles/hand sprays
- hydrant adaptors - both Metropolitan Fire Brigade (MFB) and Country Fire Authority (CFA) compliant hydrant adaptors are included with each unit.

### Lighting

Six x IP68 Rated waterproof 32v 36 watt fluorescent lights (ganged) and 240v-32v step down transformer.

### Equipment kit

Each shelter is provided with a standard equipment kit, including:

- manual pump
- repair kit
- hammer
- ground pegs
- 4 x storm guys with tension hook and 600mm steel ground anchors
- 4m x 4m ground tarpaulin 650gsm polyester reinforced PVC
- laminated instructions.



Image 2 The TVI® Decontamination unit (120 patients per/hr) can be deployed by four people and made fully functional within 20 minutes.

## TVI® Corporation Decontamination Unit (Federal units)

The two Federal Government decontamination shelters are manufactured in the United States by TVI® Corporation, supplied to The Australian Government and distributed under the control of Emergency Management Australia (EMA) to each state jurisdiction. The TVI® shelters are designed to operate as stand-alone units. If required, these units can be joined end-to-end in series. The shelters are a fully self-contained design that enables a simple erect-and-connect-to-equipment process. The only externally supplied prerequisite is a hydrant-based water supply and 240 volt mains power supply. Specifications and equipment details are given below.

### Dimensions and weight

Dimensions: 6100cm x 3400cm x 2500cm (LxWxH)

Storage dimensions: 1120cm x 1220cm x 1120cm

Weight: 120 kg

### Waste water package

- waste water pump and containment drum (3000 litre capacity)
- 3 x hoses (6m minimum length)
- 1 x manifold (3-way stainless steel).

### Clean water package

- hoses (30m minimum length)
- 2 x manifold
- nozzles/hand sprays
- hydrant adaptors - both Metropolitan Fire Brigade (MFB) and Country Fire Authority (CFA) compliant hydrant adaptors are included with each unit.

### Lighting

Six x IP68 Rated waterproof 32v 36 watt fluorescent lights (ganged)and 240v-32v step down transformer.

### Equipment kit

Each shelter is provided with a standard equipment kit, including:

- manual pump
- repair kit
- hammer and ground pegs
- 4 x storm guys with tension hook and 600mm steel ground anchors
- 4m x 4m ground tarpaulin 650gsm polyester reinforced PVC
- laminated instructions.



Image 3 The TVI® Decontamination unit (65 - 90 patients per/hr) The Australian Government-supplied decontamination system can be deployed by six people and made fully functional within 30 minutes.

## Setting up the TVI® decontamination unit



1-5. Deployment and raising shelter structure.

6-7. Positioning water collection pool and duckboard flooring.

8. Non-ambulant conveyor system and hand spray units.

9. Ambulant casualty line, water jets spray from both sides and above.

10. Water delivery manifold and hoses.

11. Warm air heater and air extraction unit.

12. Completed structure.

Photos courtesy of Melbourne Metropolitan Fire Brigade (Images 4-12).



## 7. Decontamination escalation plan

Most Victorian metropolitan and rural public hospitals have the facilities to provide a small-scale decontamination response. A number of hospitals have facilities capable of treating larger numbers.

In a large contamination event, one or more neighbouring health facilities may be confronted with multiple contaminated casualties. Escalation plans should prevent health facility cross-contamination and address patient convergence issues.

In order to plan for mass contamination events and subsequent decontamination response, escalation plans must offer an inter-facility capability.

### 7.1 Level C/D PPE cache

A cache of level C PPE kits was secured prior to the Sydney Olympics. Metropolitan and regional hospitals had between 10 and 20 level C kits distributed to them, for staff who would otherwise be exposed to contaminated casualties without any form of adequate respiratory or skin contact protection.

A cache of level C PPE kits has been established for state use. The Department of Human Services will authorise their deployment if collected evidence confirms the presence of a contaminant, or where clinical diagnosis dictates.

### 7.2 Off-site deployment

Hospitals where deployable decontamination units are stationed will need to develop and maintain an off-site deployment capability. Deployable decontamination teams and equipment may be asked to mobilise and aid in set-up and decontamination procedures off campus, at another health facility. This will involve additional training and clear understanding and familiarisation with equipment.

#### Inter-hospital preparedness

Discussions with neighbouring health facilities will be needed, to determine contact staff and partnerships for decontamination escalation planning. Inter-hospital decontamination training exercises will help familiarise personnel with neighbouring facility infrastructure, access routes and topography.

#### Mobilisation

If deployment is required, movement of a Mass Casualty Decontamination Unit and staff would be by coordinated by DHS through request utilising emergency Service arrangements.



## 8. Fire services assistance

In a mass contamination incident where hospital capacity is exceeded, fire services assistance may be required.

The Department of Human Services are finalising a memorandum of understanding with fire services to prioritise resources to assist hospitals as soon as reasonably practicable in undertaking decontamination by contributing appliances and operational personnel to assist DHS and hospitals in the protection of its clients, health facilities and personnel from a hazardous material or those affected who may pose a risk from contaminant/s.

If Fire service assistance is required:

- Contact '000', as per standard procedures and providing incident-specific information to emergency services communications centre
- inspect and clear the decontamination set-up site, then cordon off and make ready
- activate plans to provide access and greeting for fire service responders
- brief hospital decontamination team, as per plan
- brief fire service personnel on arrival
- identify the hospital facility and fire service liaison roles
- Ensure communication channels are identified and maintained for fire service and hospital Incident Commander roles.

**Figure 8: Fire truck decontamination set-up**





## 9. Glossary of terms and definitions

This glossary provides common definitions for emergency responders dealing with hazardous materials incidents. It is not exhaustive, nor is it intended to be a legal or scientific reference.

### Absorption

- 1) The process of ‘picking up’ a liquid hazardous material to prevent spread of the contaminated area.
- 2) Movement of a toxicant into the circulatory system by oral, dermal (skin), or inhalation exposure.

### Access control point

The point of entry and exit regulating traffic to and from control zones.

### Adsorption

When liquid or gas molecules adhere to the surface of a solid or liquid.

### Air Purifying Respirators (APR)

Personal Protective Equipment; a breathing mask with chemical cartridges and/or particulate filters absorb contaminants before they enter the worker’s breathing zone. Use only in atmospheres where the chemical hazards and concentrations are known.

### Asphyxiant

A vapour or gas that can cause unconsciousness or death by suffocation (lack of oxygen).

### Biohazard

Infectious agents presenting a risk or potential risk to living organisms, either directly through infection, or indirectly through disruption of the environment.

### Biological agents

Microorganisms and toxins capable of causing acute or long-term damage to living organisms.

### Boiling Liquid Expanding Vapour Explosion (BLEVE)

A container failure, with a release of energy—often rapid and violent—accompanied by a release of gas to the atmosphere and propulsion of the container or container pieces, due to an overpressure rupture.

### Breakthrough time

The elapsed time between first contact of the hazardous chemical with the outside surface of a barrier—such as protective clothing—and when the chemical can be detected at the inside surface of the material.

### Buddy system

Organising employees into work groups, so that each employee is designated to be observed by at least one other. Designed to provide rapid assistance to employees in an emergency.

### Chemical protective clothing material

Any material (or combination of materials) used in an item of clothing to isolate parts of the wearer’s body from contact with a hazardous chemical.

### Chemical protective suit

Single or multi-piece garment made of chemical protective clothing materials and configured to protect the wearer’s torso, head, arms, legs, hands, and feet.

### Chemical-resistant materials

Materials specifically designed to inhibit or resist the passage of chemicals into and through the material.

### Clean-up

At an incident scene, correctly removing hazardous materials and other contamination, then returning the site to as near a normal state as existed prior to the incident.

### Clean-up operation

Where hazardous substances are removed, contained, incinerated, neutralised, stabilised, or otherwise processed or handled, with the ultimate goal of making the site safer for people or the environment.

### **Cold zone**

The area outside of the warm zone, where resources are assembled to support the hazardous materials operation. Equipment and personnel are not expected to become contaminated in this area.

### **Combustible liquid**

Liquid with a flashpoint above 37.8° C (100° F)

### **Command**

Directing an organisation's members and resources to perform designated roles and tasks. Authority to command is established in legislation, or by agreement within an organisation. Command structures operate vertically.

### **Command post**

The location from which the primary command functions are executed, usually co-located with the incident base.

### **Contact**

Being exposed to a substance that may threaten health and safety.

### **Containment**

All activities necessary to stabilise the incident and establish a greater degree of safety than existed upon arrival.

### **Contamination**

An uncontained substance or process that poses a threat to life, health, or the environment.

### **Contamination control line**

The established line around the contamination reduction zone separating it from the support zone.

### **Contamination reduction zone**

The area of moderate hazard where threat of contamination spread to the immediate surrounding area is low. It is immediately outside the inner hot zone. (See *warm zone*.)

### **Contingency plan**

A pre-planned document with an organised and coordinated plan of action to limit potential pollution in case of fire, explosion, or discharge of hazardous materials. It defines specific responsibilities and tasks.

### **Decontamination (Decon)**

The process of reducing and preventing the spread of contamination from persons and equipment used at a hazardous materials incident. (Also called contamination reduction). The physical or chemical process of removing or neutralising a hazard from the environment, property or people. The objectives are to prevent further harm and optimise the chance for full clinical recovery or restoration of the object exposed to the contaminant.

### **Decontamination team**

A group of personnel and resources operating within and around a decontamination operation.

### **Personal Protective Equipment (PPE)**

Any device, equipment or clothing required by workers to protect themselves and mitigate the risk of injury from, or exposure to, hazardous conditions during the performance of their duties. PPE includes respirators, ear and eye protection, chemical protective suits, boots and gloves.

### **Degradation**

The loss in physical properties of an item of protective clothing, due to exposure to chemicals, extended use, or ambient conditions.

### **Delayed toxic exposure effect**

Where symptoms of toxicity are not present immediately afterwards, but are delayed for a short period (such as pulmonary oedema a few hours after an inhalation exposure).

**DHS**

The Department of Human Services.

**Diversion (hazardous waste)**

The intentional, controlled movement of a hazardous material, relocating it to an area where it will pose less harm to the community and the environment.

**Diversion (ambulance arrivals)**

An agreed process between medical centres and the ambulance service to divert less urgent patient transports to other tertiary care, in times of Emergency Department congestion.

**Dose**

The amount of substance ingested, absorbed, and/or inhaled per exposure period.

**Downwind**

In the direction in which the wind is blowing.

**Emergency Operations Centre (EOC)**

Secured site where government and agency officials centrally coordinate an emergency. The EOC serves as a resource centre and coordination point for additional field assistance.

**Emergency Operations Plan**

Document identifying available personnel, equipment, facilities, supplies, and other resources, and describing coordinated actions to be taken by individuals and government services in the event of natural, man-made, and attack-related disasters.

**Emergency response personnel**

Staff assigned to respond to different types of emergency situations.

**Evacuation**

Removing potentially endangered, but not yet exposed, persons from an area threatened by a hazardous materials incident.

**Explosive**

Any chemical compound, mixture, or device, of which the primary or common purpose is to function by explosion.

**First responder**

The first trained person(s) to arrive at the scene of a hazardous materials incident. May be from the public or private sector of emergency services.

**Flammable liquid**

Any liquid with a flash point below 37.8° C (100° F).

**Flashpoint**

The minimum temperature at which a liquid gives off vapours fast enough to form an ignitable mixture with air. It will flash when subjected to an external ignition source, but will not continue to burn.

**Fully encapsulating suits**

Chemical protective suits designed for full body protection, including Self Contained Breathing Apparatus (SCBA), are gas-tight, and meet the international design criteria and safety standards.

**Fume**

Airborne dispersion of minute solid particles, arising from heating a solid material such as lead, as distinct from a gas or vapour. This physical change is often accompanied by a chemical reaction, such as oxidation. Fumes flocculate and sometimes coalesce. Odorous gases and vapours should not be called fumes.

### **Hazard**

Any situation that has the potential to damage life, property, and/or the environment.

### **Hazardous chemical**

Any chemical that poses a risk to individuals or groups in the community, or to employees in the workplace.

### **Hazardous material**

A substance (or combination of substances) which, because of quantity, concentration, physical, chemical or infectious characteristics, may cause (or significantly contribute to) an increase in deaths or serious illness; and/or pose a substantial present or potential hazard to humans or the environment.

### **Hazardous waste facility**

Any location used for the treatment, transfer, disposal or storage of hazardous waste.

### **Hot zone**

The area immediately surrounding a hazardous materials incident. Extends far enough to prevent adverse effects to personnel outside the zone. This is also referred to as the 'exclusion zone', the 'red zone', and the 'restricted zone', in other documents.

### **Immediately dangerous to life or health (IDLH)**

An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life, or would cause irreversible or delayed adverse health effects, or interfere with an individual's ability to escape from a dangerous atmosphere.

### **Incident**

An event involving a hazardous material. A release or potential release of a hazardous material.

### **Incident Action Plan (IAP)**

A plan developed at the field response level, containing objectives reflecting the overall incident strategy, specific tactical actions and supporting information for the next operational period. The plan may be oral or written.

### **Incident command**

A organised method of management, established for the specific purpose of control and direction of resources and personnel.

### **Incident Commander (IC)**

The individual responsible for overall management of the incident at the field level.

### **Hospital Emergency Incident Command System (HEICS)**

The combination of facilities, equipment, personnel, procedures and communications operating within a hospital organisational structure, with responsibility for managing the resources to accomplish objectives pertinent to an incident.

### **Irradiation**

The absorption by tissues or substances of ionising radiation. This does not render the object radioactive.

### **Irritant**

An irritating, noxious or toxic material that can cause extreme annoyance or discomfort.

### **LC<sub>50</sub> (lethal concentration, 50%)**

The amount of toxicant in air deadly to 50 per cent of the exposed laboratory animal population, within a specified time.

### **LD<sub>50</sub> (lethal dose, 50%)**

The amount of a toxicant administered by other than inhalation, which is deadly to 50 per cent of the exposed laboratory animal population within a specified time.



**Level of protection**

Designated types of personal protective equipment:

- **Level A** - Vapour protective suit and Self Contained Breathing Apparatus (SCBA) for hazardous chemical emergencies.
- **Level B** - Liquid splash protective suit and SCBA for hazardous chemical emergencies.
- **Level C** - Limited use protective suit and Air Purifying Respirator (APR) for hazardous chemical emergencies.
- **Level D** - A work uniform affording minimal protection, used for 'nuisance' contamination only.

**Material Safety Data Sheet (MSDS)**

A document containing information on the specific identity of hazardous chemicals, including information on health effects (limited), first aid, chemical and physical properties, and emergency phone numbers.

**Mitigation**

Any actions to contain, reduce, or eliminate the harmful effects of a spill or release of a hazardous material.

**Operations**

The coordinated tactical response of all field operations, in accordance with the Incident Action Plan.

**Oxygen deficient atmosphere**

An atmosphere with an oxygen content less than 19.5 per cent by volume, at sea level.

**Parts per million (ppm)**

A unit for measuring the concentration of a particular substance. Equal to 1 unit combined with 999,999 other units.

**Pathogen**

Any disease-producing organism, including viruses.

**Penetration**

Movement of liquid molecules through chemical protective clothing, suit, garment or material.

**Permeation**

Movement of vapour or gas molecules through chemical protective garment material.

**Permissible exposure limit (PEL)**

Permitted exposure limit to any material listed.

**Personal protective equipment (PPE)**

Equipment provided to shield or isolate a person from any chemical, physical, and thermal hazards encountered at a hazardous materials incident. Adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. Includes clothing, self-contained positive pressure breathing apparatus, and air purifying respirators.

**Plume**

A vapour, liquid, dust or gaseous cloud formation which has shape and buoyancy.

**Powered Air Purifying Respirator (PAPR)**

An APR with a portable motor that forces air through the filtering/purifying cartridges. Use only in atmospheres where the chemical hazards and concentrations are known.

**Radioactive**

The spontaneous disintegration of unstable nuclei, accompanied by emission of ionising radiation.

**Radioactive material**

Any material, or combination of materials, that spontaneously emits ionizing radiation and has a specific activity greater than 0.002 microcuries per gram.

### **Radiological contamination**

The deposition of radioactive material on skin or in wounds or incorporated into the body resulting in detectable radiation.

### **Safety Officer**

A person at an emergency incident responsible for ensuring that all operations performed at the incident are done so with respect to the highest levels of safety and health. The Safety Officer shall report directly to the Incident Commander.

### **Scene**

The location impacted, or potentially impacted, by a hazard.

### **Self Contained Breathing Apparatus (SCBA)**

A positive pressure, self-contained breathing apparatus (SCBA), or combination SCBA/supplied air breathing apparatus, for use in atmospheres that are immediately dangerous to life or health (IDLH).

### **Short Term Exposure Limit (STEL)**

See Threshold Limit Value –Short Term Exposure Limit (TLV-STEL).

### **Solubility**

The ability or tendency of one substance to blend uniformly with another.

### **Staging area**

The area established for temporary location of available resources closer to the incident site, to reduce response time.

### **Termination**

That portion of incident management where personnel are involved in documenting safety procedures, site operations, hazards faced, and lessons learned from the incident. Termination is divided into three phases - debriefing, post-incident analysis, and critique.

### **Threshold Limit Value (TLV)**

The value for an airborne toxic material that is to be used as a guide in the control of health hazards. It represents the concentration to which nearly all workers may be exposed 8 hours per day over extended periods of time, without adverse effects.

### **Toxic**

Poisonous: relating to or caused by a toxic substance; able to cause injury by contact or systemic action to plants, animals or people.

### **Traffic control/crowd control**

Action(s) by law enforcement to secure and/or minimise public exposure to unsafe conditions resulting from emergency incidents, impediments and congestion.

### **Vapour**

An air dispersion of molecules of a substance that is normally a liquid or solid, at standard temperature and pressure.

### **Vulnerability**

The susceptibility of life, the environment, and/or property, to damage by a hazard.

### **Warm zone**

The area where personnel and equipment decontamination and hot zone support takes place. It includes control points for the access corridor, thus reducing the spread of contamination. This is also referred to as the 'decontamination', 'contamination reduction', 'yellow zone', or 'limited access zone' in other documents.

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## Appendix 1: Decontamination Commander

**YOU REPORT TO:** Emergency Incident Controller

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Organising and directing aspects related to the Decontamination Team.
  - Carrying out directives of the Emergency Incident Controller.
  - Coordinating with the Decon Safety Officer and Decon Site Access Leader.
  - Supervising the Decon Triage Leader and Decon Set Up/Support Unit Leader.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm-band).
- Ensure that hospital response plan has been activated.
- Ensure that appropriate notifications have been initiated.
- Ensure that communications with the Ambulance service has been initiated.
- Initiate and maintain communications with the Emergency Incident Controller (EIC).
- Initiate Critical Incident log.
- Activate the Decon Response Team.
- Brief Decon Response Team and allocate their duties.
- Review hand signals and emergency response procedures.
- Monitor and supervise the operations of the Decon Response Team.
- Monitor and supervise establishment of the decontamination Corridor - if not pre-established
  - (may be delegated).
- Initiate predetermined flow plan of hospital personnel, equipment, and patients through the Decontamination Corridor.
- Control the movement of people/equipment within the Decontamination Corridor
  - (may be delegated).
- Monitor and determine resource needs.
- Anticipate/request additional resources through the (EIC); as required.
- Maintain communications with and coordinate operations with Decon Site Access Leader, Decon Triage Leader and other Decon Team members (bagger/stripper, washer/rinser, dryer/dresser).
- Monitor number and medical needs of patients reporting through decontamination.
- Initiate, maintain, and update communications with the (EIC) on number and status of patients.

- Coordinate the transfer of decontaminated patients requiring medical attention to the Decon Triage Leader.
- Coordinate the handling, storage, and transfer of equipment and contaminants within the Contamination Zone.
- Ensure that all clothing, personnel property, and equipment is properly bagged, labelled, stored, and secured.
- Ensure the maintenance of a chain of custody where applicable.
- Supervise the deactivation of the Decon Response Team and decontamination Corridor.

**INTERMEDIATE:**

- Arrange for the appropriate disposition of contaminated (or potentially contaminated) items and products of decontamination.
- The Decon Commander will be responsible for all contaminated items in the Decontamination Corridor until proper transfer is completed and recorded in the critical Incident log.

**FORMS:**

- Critical incident log.
- Incident message form.
- Decontamination corridor flow chart.
- Hand signals chart.

## Appendix 2: Decontamination Safety Officer

**YOU REPORT TO:** Emergency Incident Controller

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Monitoring and have the authority over the safety of decontamination operations and hazardous conditions.
  - Organising and enforcing employee protection and traffic security.
  - The Safety Officer has the authority to modify, alter, or stop the decontamination process and order personnel leave the area.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm band).
- Acquire resource material as needed (i.e., resource manuals, notification lists).
- Initiate and maintain Safety Plan.
- Initiate and maintain communications with Decon Commander, Decon Set Up/Support Unit Leader, and Emergency Operations Centre Safety Officer.
- Provide technical support to Decon Commander and Decon Set Up/Support Unit Leader.
- Coordinate medical baseline on Decon Response Team.
- Retain medical baseline information and continue to monitor Decon Response Team.
- Ensure that proper PPE is selected and donned correctly.
- Review hand signals and emergency response procedures.
- Fill in decon suit log.
- Continue to monitor PPE protective ability to hazardous substances.
- Establish and maintain verbal contact with Decon Response Team members.
- Monitor Decon Response Team members for stress or adverse events. Report immediately any change in status to Decon Commander.
- In conjunction with Decon Set Up/Support Unit Leader, establish environmental monitoring of the Decontamination Corridor.
- Monitor access to the Safe Refuge Area to ensure that it is not subject to the spread of contamination.
- Establish communications and coordinate operations with Technical Specialist hazardous materials resources as needed and if available.
- Check communications with resources such as Poison Information, Public Health, Hospital Lab, Local Fire service and Hazmat Team etc.
- Seek and review sources of reference material.

- If the contaminate is known, identify and report hazards to team and Decon Commander.
- Continuously evaluate and recommend facility/staff protective action options to Decon Commander.
- Advise the Decon Commander of deviations from safe work practices or of any dangerous situations.
- Ensure the protection of the Decon Response Team members from physical, environmental, biological, chemical hazards or exposures.
- In conjunction with the Decon Commander, the Decon Safety Officer has the authority to alter, suspend, or terminate any activity that may be judged to be unsafe.
- Assess resource inventory and needs, report to Decon Commander.
- When Decon Response Team deactivates or during fatigue rotation, Decon Safety Officer coordinates medical assessment of resource team members.

**INTERMEDIATE TASKS:**

- Provide debrief report prior to deactivation or release.
- File Safety Plan with Forward Incident Commander.

**FORMS:**

- Critical incident log.
- Incident message form.
- Decontamination corridor flow chart.
- Hand signals chart.
- Decon suit log.



## Appendix 3: Decontamination Set-up/Support Unit Leader

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Setting up and providing supplies to the Decontamination Corridor, for patient(s) or for the Decon Response Team.
  - Supervising the clean up of the contaminants and equipment.
  - Arranging the disposition of contaminated items.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm-band).
- Ensure that appropriate notifications have been initiated.
- Initiate and maintain communications with Decon Commander.
- Review hand signals and emergency response procedures.
- Give Decon Set Up/Support personnel their assignments.
- Monitor and determine resource needs.
- Anticipate/request additional resources through Decontamination Commander as required.
- Assure that Decon Set Up/Support personnel have necessary PPE (as appropriate).
- If donning PPE, report for medical baseline assessment.
- Oversee set up of Decontamination Corridor and set up of access control.
- Oversee set up of tarps, privacy corridors, decon showers, containment measures, and ancillary equipment.
- Oversee distribution of Decon Response Team supplies.
- Communicate with Decon Response Team.
- If directed by decon commander, establish a Safe Refuge Area.
- Don and check PPE.
- Assist the Decon Response Team as needed (i.e., aid donning PPE).
- Coordinate availability of supplies and equipment as requested by Decon Commander.
- Standby to assist in emergency retrieval of personnel if needed (using proper PPE).
- Oversee and assist in the deactivation of Decon Response Team and Decontamination Corridor.

**INTERMEDIATE TASKS:**

- Provide debrief report prior to deactivation or release.
- File Safety Plan with Forward Incident Commander.

**FORMS:**

- Critical incident log.
- Incident message form.
- Decontamination corridor flow chart.
- Hand signals chart.

## Appendix 4: Decontamination Initial Contact Leader

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Hot Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Greeting contaminated patient(s) Triage & escort to the Decontamination Corridor to be decontaminated.
  - Communicating between the Decon Response Team (dirty zone) and the Decontamination Commander (clean area).
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm-band).
- Identify predetermined Forward command Post.
- Acquire communication UHF radio from Forward Command Post.
- Check and test UHF radios.
- Initiate and maintain communications with Decon Commander regarding the Hot Zone and Warm Zone.
- Report for medical baseline.
- Don appropriate PPE.
- Establish and maintain visual/verbal contact with the Decon Response Team members.
- Review hand signals with Decon Response Team members.
- Observe Decon Response Team members for unsafe practices, stress, adverse reactions and immediately report any change in status to the Decon Safety Officer
- Check Decon Response Team members PPE.
- Assume position as point Triage Leader outside the ED/ Decontamination Corridor.
- Check the setting of boundary zones (Hot Zone, Warm Zone, and Cold Zone) is secure with bollards and tape. Coordinate with Decon Commander.
- Triage arriving patients non-contaminated, contaminated, ambulant, non-ambulant, male/female, symptomatic in order for decontamination.
- Patients triaged as per triage Sieve/Sort method: Immediate, delayed, minor, deceased and expectant.
- Ensure all arriving patients are ushered through Decontamination corridor regardless of absence of obvious contamination.
- Direct pooling and provision of mobility aids for Hot/Warm zone use.
- Communicate with Decon Response team, Decon commander of change in patient condition whilst waiting or during Decontamination.
- Alert Decon Response Team for patients requiring simple airway management or patients requiring spinal alignment precautions.

**INTERMEDIATE TASKS:**

- Establish communications with Fire Service/Hazmat Team on scene (at hospital). Coordinate with Fire Service/Hazmat Team.
- Initiate and maintain communications with Decon Site Access Leader.
- Verbally and visually guide contaminated patients to Decontamination Corridor.
- May assist bagger/washer if patient census allows.
- At deactivation or fatigue rotation, Decon Initial Contact Leader reports through Decontamination Corridor and performs self-decontamination.
- Report for medical monitoring prior to release or reactivation.

**FORMS:**

- Critical incident log.
- Incident message form.
- Decontamination hand signal form.
- Decontamination corridor flow chart.

## Appendix 5: Decontamination Site Access Leader (Security)

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Hot Zone Area

**Radio No.**

---

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Establishing a Safe Refuge Area.
  - Preventing access and egress from contaminated patients or substance into the facility.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm-band).
- Ensure that appropriate notifications have been initiated.
- Initiate facility lockdown.
- Ensure that appropriate action is taken to prevent the spread of contamination.
- Ensure potentially contaminated patients are directed to the Decontamination Corridor.
- Give Decon Site Access personnel their assignments.
- Assure that Decon Site Access personnel have appropriate PPE, if necessary.
- Monitor and determine decon site access resource needs (flags, barrier tape, bollards, signs).
- Anticipate/request additional resources as required.
- Monitor communications.
- Assist in the setup of access control at the Decontamination Corridor.
- Assume authority and responsibility for traffic control.
- Assume authority and responsibility for scene control and patient access to Decontamination Corridor.
- Coordinate activities with local law enforcement, fire and Hazmat Team.
- Communicate with Decon Response Team.
- Monitor activities of Decon Response Team.
- Maintain incident log.
- Ensure that security personnel report through self-decon and medical monitoring if appropriate.

**INTERMEDIATE TASKS:**

- Establish communications with Fire Service/Hazmat Team on scene (at hospital). Coordinate with Fire Service/Hazmat Team.
- Initiate and maintain communications with Decon Site Access Leader.
- Verbally and visually guide contaminated patients to Decontamination Corridor.
- Continue visual and verbal contact with contaminated patients to assist in maintaining a secure patient flow through the Decontamination Corridor.
- May assist bagger/washer if census allows.
- At deactivation or fatigue rotation, Decon Initial Contact Leader reports through Decontamination Corridor and does self decon.
- Perform self-decontamination.
- Report for medical monitoring prior to release or reactivation.

**FORMS:**

- Incident log.
- Incident message form.
- Decontamination hand signal form.
- Decontamination corridor flow chart.

## Appendix 6: Self Decontamination Instructor

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Instructing ambulatory patient(s) to Decontamination shower.
  - Instructing patient(s) how to remove and bag contaminated clothing and how to cleanse, while maintaining patient privacy.
  - Instructing patient(s) where to place contaminated clothing and personal items for possible future retrieval.
  - Observing removal of personal items/clothing and placement into labelled bags in the event police evidence collection is requested.
- 

### IMMEDIATE TASKS:

- Awareness of possible hazardous materials exposure.
- Keep distant and stay upwind from patient(s). Do NOT touch the patient(s).
- Identify the hazardous material if possible.
- Alert the Emergency Department management that directed Self-Decon is in process.
- If presenting victim numbers or protocol dictate, request activation of decontamination response procedures.
- Escort patient(s) to Decontamination shower. Maintain distance and keep upwind of patient(s)
- If patient(s) entered the building, ensure they use the same path to exit the premises.
- Provide instruction cards written in patient(s) primary language or use photo illustrations.
- Use universal precautions; face shield for splash protection, gown, gloves and booties.

### SHOWER INSTRUCTIONS:

- Instruct patient(s) to stand in decon designated area. Establish and maintain a perimeter.
- Provide for privacy with curtain if achievable.
- Instruct patient(s) how to remove clothing, protecting face/airway from further exposure.
- Instruct patient(s) to place personal items into small zip-lock bag.
- Instruct patient(s) to remove outer layers of clothing (i.e. jackets, layers).
- Instruct patient(s) to place clothing into large clothing bag.
- Instruct patient(s) to enter shower area.
- Identify soap dispenser and instruct to use.

- Turn on tepid water flow. Start at face, wash with head back.
- Cleanse hair back from face
- Wash and rinse from top down.
- Use soap and soft brush; scrub lightly but thoroughly, every part of body.
- After cleansing, rinse well.

**INTERMEDIATE TASKS:**

- After rinsing, Decon Gatekeeper shall assess patient(s).  
(Note: Decon Gatekeeper and/or Decon Safety Officer have the ultimate authority to deny or allow access of patient(s) into the building).
- Undertake self-decontamination if concerns of secondary contamination exposure.
- Report for medical monitoring prior to release or reactivation.
- Make self and staff available for post incident debrief.
- Fill in all paperwork as determined by local protocol.

**FORMS:**

- Incident log.
- Incident message form.
- Decontamination corridor flow chart.
- Decontamination hand signal document.
- Hospital emergency incident exhibit log.



## Appendix 7: Decontamination Stripper/Bagger

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Hot Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Assisting with removal of patient's clothing.
  - Assisting with placing patients valuables and clothing into bags and labelling them for identification and tracking purposes.
  - Assisting non-ambulant patients into the decontamination corridor.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Acquire decon stripper/bagger tool kit.
- Check inventory of tool kit (labels, bags, marker pen).
- Initiate and maintain communication with Decon Commander.
- Report for medical baseline.
- Don appropriate PPE.
- Establish visual/verbal contact with Decon Response Team.
- Review hand signals with Decon Response Team.
- Maintain visual/verbal contact with Decon Response Team at all times.
- Observe Decon Response Team members for safe practices and stress, immediately report any change in status to the Decon Commander.
- Check Decon Response Team members PPE.
- Assume task as point "stripper/bagger" outside Decontamination Corridor (Hot Zone).
- Check the setting of boundary zones (Hot, Warm, Cold), security bollards, and tape. Ensure that decon kits are available and accessible to your area.
- Check the placement of washable chairs in the stripper/bagger area of the Decontamination Corridor.
- Make visual/verbal contact with patient(s).
- Provide sealable plastic bags to patient for personal effects and for personal clothing.
- Assist patient in their removal of personal items and clothing. Assist in the bagging of items and label.
- Appropriately handle, store, and transfer patient items, effects, clothing, equipment, and contaminants within the Contamination Reduction Corridor.

- Ensure that all clothing, personal property, and equipment is properly bagged, labelled, stored, and secured.
- Ensure the maintenance of chain of custody.
- Complete details in Hospital Emergency Incident Exhibit Log.
- Provide decon kit to patient(s)
- Instruct patient in decon procedure verbally as well as through universal signage.
- Continue visual/verbal contact with patients to assist in maintaining a secure patient flow through the Contamination Reduction Corridor.
- Assess resources inventory and needs. Report need to Decon Commander.
- Maintain contact with Decon Initial Contact Unit Leader.
- May assist washer/rinser if census allows.
- At deactivation or fatigue rotation, decon stripper/bagger reports through Contamination Reduction Corridor and self-decons.
- Perform self-decontamination.
- Report for medical monitoring prior to release or reactivation.

**FORMS:**

- Decontamination corridor flow chart.
- Hand signals chart.
- Hospital emergency incident exhibit log.

## Appendix 8: Decontamination Washer/Rinser

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Warm Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Assisting with positioning and washing patients.
  - Assisting with rinsing of patients.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Acquire decon washer/rinser tool kit.
- Check inventory of tool kit (sponge, brush, marker pen).
- Initiate and maintain communications with Decon commander.
- Report for medical baseline.
- Don appropriate PPE.
- Establish visual/verbal contact with Decon Response Team members.
- Review hand signals with Decon Response Team members.
- Maintain visual/verbal contact with Decon Response Team members at all times.
- Observe Decon Response Team members for safe practices and stress. Immediately report any change in status to the Decon Commander.
- Check Decon Response Team members PPE.
- Assume task as point “washer/stripper” inside Decontamination Corridor.
- Check the setting of boundary zones (Hot, Warm, Cold), security bollards and tape. Ensure that decon kits are available and accessible to your area.
- Check the placement of decontamination shower and equipment within the area of the decontamination corridor.
- Make visual/verbal contact with patient(s).
- Instruct patient in decon procedure verbally as well as through universal signage.
- Continue visual/verbal contact with patients to assist in maintaining a secure patient flow through the Decontamination Corridor.
- Assess resources inventory and needs i.e. more sponges, brushes, soap etc., and report needs to Decon set-up/support unit leader.

- Maintain contact with Decon Initial Contact Leader, stripper/bagger, and dresser/dryer/gatekeeper.
- Assist stripper/bagger as census or circumstances dictates.
- At deactivation or fatigue rotation, the decon washer/rinser reports through the decontamination corridor and self-decons.
- Perform self-decontamination.
- Report for medical monitoring prior to release or reactivation.
- Make self available for post incident debrief

**FORMS:**

- Decontamination corridor flow chart.
- Hand signals chart.

## Appendix 9: Decontamination Dryer/Dresser/Gatekeeper

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

---

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

Decon dryer/dresser/gatekeeper personnel includes:

- Assisting with drying off patients.
  - Assisting with dressing patients in appropriate gowns.
  - Instructing patients with directions and controls flow of patients after decon.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Initiate and maintain communication with Decon Commander.
- Establish visual/verbal contact with Decon Response Team.
- Review hand signals with Decon Response Team.
- Maintain visual/verbal contact with Decon Response Team at all times.
- Observe Decon Response Team members for safe practices and stress, immediately report any change in status to the Decon Commander.
- Assume task as point “dryer/dresser/gatekeeper” outside Decontamination Corridor (Cold Zone).
- Check the setting of boundary zones (Hot, Warm, Cold), security pylons, and tape. Ensure that decon kits are available and accessible to your area.
- Check the placement of I.D. kits, Linen Supply (Towels, gowns, blankets) booties and equipment within the area of the Decontamination Corridor exit.
- Make visual/verbal contact with patient(s).
- Assist patients in donning clothing.
- Instruct patient in admission procedure verbally and through universal signage.
- Initiate patient tracking documents and transfer any triage information to clean tracking document.
- Initiate the insurance that long term patient’s observations are documented.
- Coordinate with the Decon Commander to ensure that decontaminated patients needing medical attention are appropriately segregated.

- Assess resources inventory and needs i.e. further linen, and report need to Decon set-up/support unit leader.
- Maintain contact with Triage nurse leader and Decon washer/rinser.
- Report for medical monitoring prior to release or reactivation.

**FORMS:**

- Decontamination corridor flow chart.
- Hand signals chart.

## Appendix 10: Decontamination Triage Nurse Leader

**YOU REPORT TO:** Triage Medical Leader

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Sorting decontaminated patients according to priority, ability to ambulate, level of symptoms, and ensuring their disposition on exiting the decontamination corridor.
  - Directing initial stabilisation and movement of casualties to primary care.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e., tabard, arm band).
- Acquire Triage Nurse Leader UHF radio (if appropriate).
- Initiate and maintain communications with Triage Medical Leader and dryer/dresser/gatekeeper.
- Visually and verbally triage patients on exiting decontamination corridor.
- Segregate patients into immediate, delayed, minor and deceased using triage Sieve/Sort method.
- Triage into segregated groups at the established Post Decon Area.
- Report patient census and status to Triage Medical Leader.
- Provide visual/verbal instructions to patient(s).
- Direct/assist nursing staff in performing baseline observations on patient.
- Supervise immediate nursing treatment of post decon patients e.g. eye wash, oxygen/nebuliser therapy & arrest bleeding. Assist as patient census allows.
- Direct orderlies in movement of patients to primary treatment sites.
- Direct pool of wheelchair and patient trolleys entering triage area (This task may be delegated).
- Direct wheelchair and patient trolley traffic leaving triage area (This task may be delegated).
- Monitor self and other nursing staff in cold zone for signs and symptoms of secondary contamination.
- Report suspected secondary contaminations to Decon safety officer.
- Suspected individual nurse delegates role to a next senior nurse and enters Decontamination corridor to commence self-decontamination.
- Perform risk evaluation with decon safety officer of possible contamination of triage post site and need to relocate.

**INTERMEDIATE TASKS:**

- Report for medical monitoring prior to release or reactivation.
- Make self and nursing staff available for post incident debrief.

**FORMS:**

- Incident log.
- Incident message form.
- Triage tag.



## Appendix 11: Decontamination Medical Leader

**YOU REPORT TO:** Decontamination Commander

**Position Assigned To:** *(Write name here)*

---

**LOCATION:** Decon Cold Zone Area

**Radio No.**

**Mob. No.**

---

**Pager No.**

---

### RESPONSIBLE FOR:

- Sorting decontaminated patients according to priority and ensuring their disposition on exiting the decontamination corridor.
  - Directing initial stabilisation and movement of casualties to primary care.
- 

### IMMEDIATE TASKS:

- Request and receive incident briefing.
- Put on appropriate identification (i.e. tabard, arm band).
- Acquire mobile phone/UHF radio - from Forward Command Post.
- Initiate and maintain communications with Decon Commander and Triage Nurse Leader.
- Report for medical baseline.
- Don appropriate unique identifier.
- Visually and verbally triage patients.
- Segregate patients into immediate, delayed, minor, expectant and deceased using triage Sieve and Sort method.
- Report patient census and status to Decon Commander.
- Provide visual/verbal instructions to patient(s).
- Monitor self and other staff in cold zone for signs & symptoms of secondary contamination.
- Report suspected secondary contaminations to Decon Safety Officer.
- Suspected individual staff must delegate role to next senior staff member and enter Decontamination corridor to commence self-decontamination.
- Perform risk evaluation with Decon Safety Officer of possible contamination of post triage site and need to relocate.

### INTERMEDIATE TASKS:

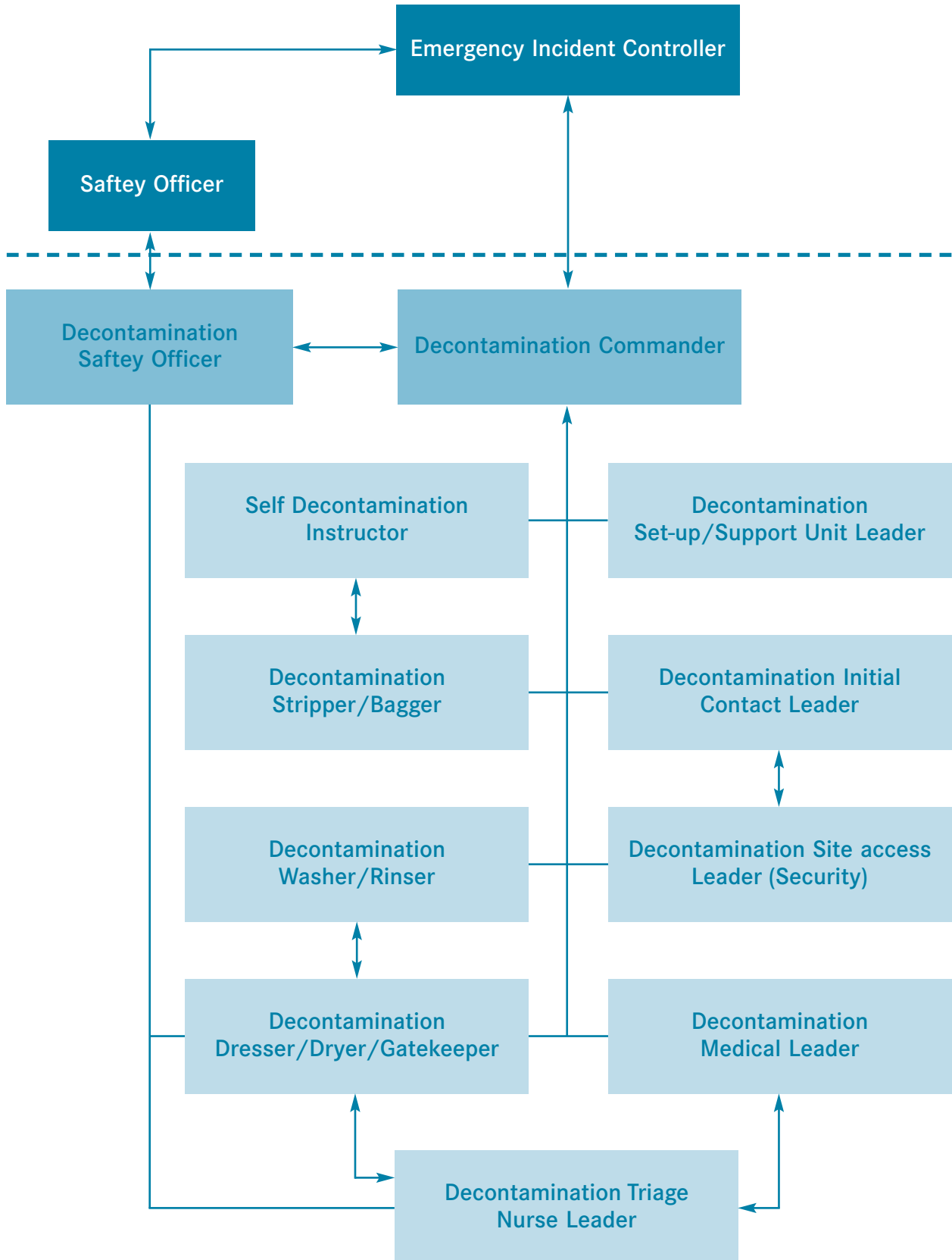
- Report for medical monitoring prior to release or reactivation.
- Make self and staff available for post incident debrief.

### FORMS:

- Incident log.
- Incident message form.
- Triage tag.

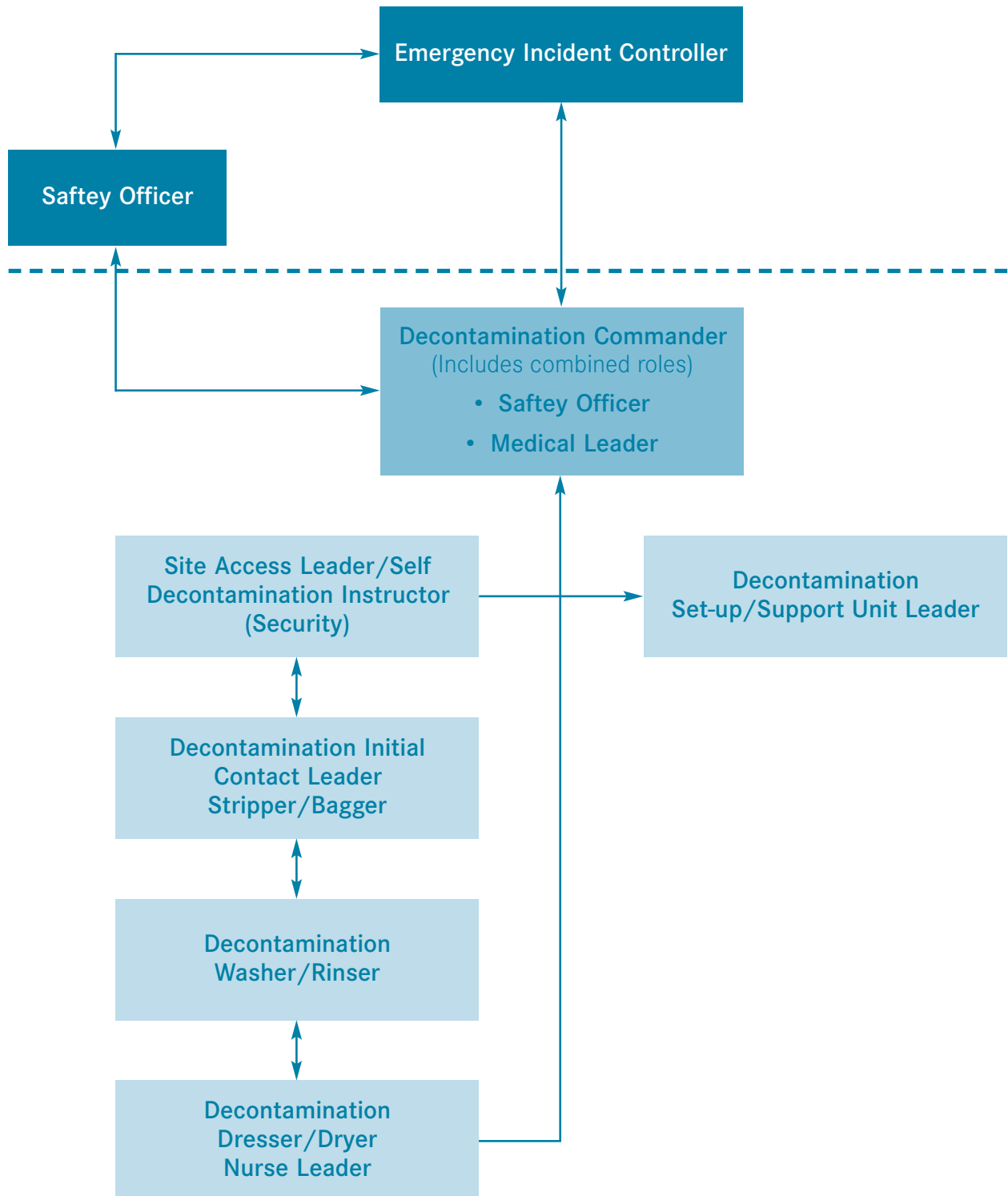
## Decontamination organisational arrangements

Dedicated roles (12 staff or more)



## Decontamination organisational arrangements

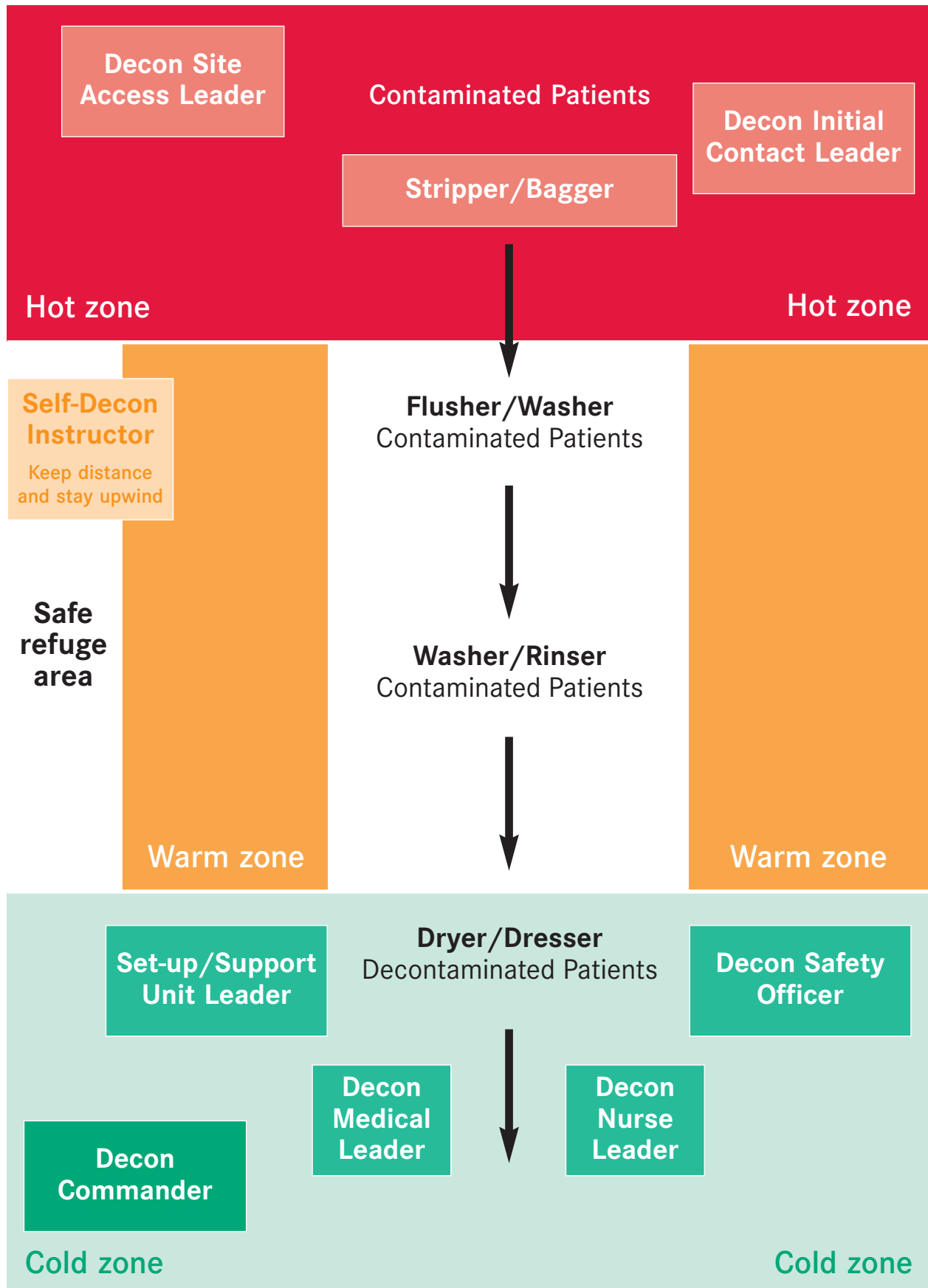
Combined roles (minimum 6 staff)



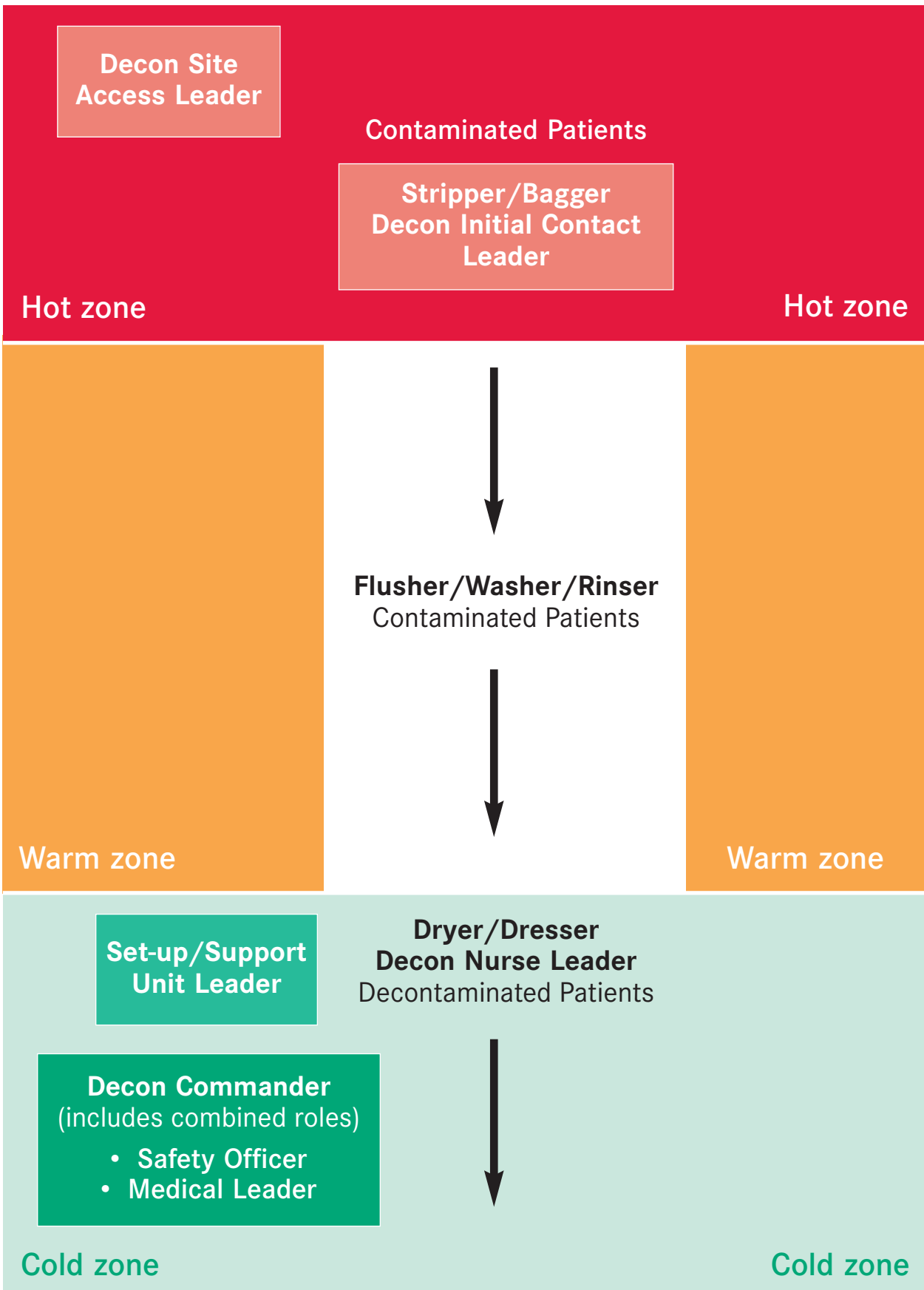


## Appendix 12: Decontamination corridor flow

Dedicated roles (12 staff or more)



Combined roles (6 staff or more)



## Appendix 13: Decontamination suit time log

### Decontamination hand signals



NO or  
NON-FUNCTIONAL



YES or  
FUNCTIONAL



I NEED  
ASSISTANCE

Incident type						
Date		Time keeper				
Time allocation	Suit I.D. Colour code	Time suit donned 'zipped'	Time suit doffed	Total suit confinement time	Exit disposition	Time keeper signature
_____ mins						
Name						
	Grey					
	Black					
	Yellow					
	White					
	Blue					
	Red					
	Green					
	Black & Yellow					
	Blue & White					
	Red & Green					

Air Temperature (maximum) °Celsius	Work time allowance guidance Between rest periods, when wearing protective clothing (impermeable or semi-permeable)		
	Sunshine (radiant heat exposure)		
	Full sun No shade from sun	Part sun Shade 50% of time	Full shade Shade 100% of time
21°C	30 min. of work	30 min. of work	30 min. of work
24 °C	30 min. of work	30 min. of work	30 min. of work
26.5 °C	30 min. of work	30 min. of work	30 min. of work
29 °C	15 min. of work	20 min. of work	30 min. of work
32 °C	15 min. of work	15 min. of work	20 min. of work
35 °C	Extreme danger	Danger	15 min. of work





## Appendix 14: PPE staff rehabilitation and observation log

Incident type:

Date:

Legend: 1 Orientation: O = Orientated, A = Altered Sensorium

2 Skin: S = Sweaty, F = Flushed, D = Dry

3 Condition: W = Well, R = Recovering, T = Treatment required

Name & role	Time Donning/Doffing/Review	Orientation 1	B/P	HR	RR	Temp °C	Skin 2	Condition 3	Weight kg	Disposition (outcome)	Taken by (print)	Signature
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											
	Donning:											
	Doffing:											
	Review:											



## Appendix 15: Decontamination hand signals



**I need  
assistance**



**Yes or  
Functional**



**No or  
Non-functional**



# Appendix 16: Incident log

Date:	Event:		Name:			Role:		Time	
	No.	Issue	Time	Action	Time	Notifier	Contact No		Outcome

Record all issues, specify to whom reported and actioned by



## Appendix 17: Incident message form

Fill in all information

To (receiver):

---

From (sender):

---

Date:

Time:

hrs

---

Priority (circle)

Urgent

Semi-urgent

Information only

\*Keep message brief and to the point

Message:

---



---



---



---



---



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---



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---



---

Received by:

Time

:

hrs

Comments:

Forwarded to:

Time

:

hrs

Received by:

Time

:

hrs

Comments:

Forwarded to:

Time

:

hrs

How sent (circle):

Runner

Phone

Fax

Intercom





## Appendix 18: Standard operating procedures for hospitals for suspected radiation incidents

### Basic Principles

The medical stabilisation of casualties has first priority and takes precedence over any radiological consideration.

“The only survivors of a radiation accident who have been so badly contaminated as to be a threat to those involved in treating them were some of those involved in the accident at Chernobyl. No other accident victims, including those at Goiania, Brazil, where gross contamination of the victims occurred, have presented ANY threat to responders, due to the precautions and procedures they followed in managing those victims.”

In the event of a mass casualty explosion of unknown or suspicious origin, it is advisable to screen casualties for possible radiological contamination.

Decontamination should be as thorough as practical. Reduction of radiation levels to background is not always possible.

Provide psychological support for casualties throughout their care.

### Purpose

The purpose of this document is to outline the precautions and procedures to be adopted in the management of casualties involved in radiation accidents so as to ensure that radiation doses to hospital staff treating the casualties are kept to a minimum. It has the following sections:

- Introduction
- Set-up of room for receiving contaminated casualties
- Personal protective equipment
- Triage and treatment algorithm
- Contamination monitoring procedure
- Decontamination procedures
- Waste management
- Obtaining specialist advice
- Radiation injury

### Introduction

#### Medical Treatment

The medical stabilisation of casualties has first priority and takes precedence over any radiological consideration.

#### Radiation Safety Program

The Radiation Safety Program (RSP) of the Department of Human Services is the control agency for radiation incidents within Victoria. RSP officers are on 24-hour call on a rotational roster. The two on call vehicles are comprehensively equipped. RSP is able to provide valuable initial advice over the phone.

**The RSP may be contacted (24/7) by contacting the DHS Emergency contact number on 1300 790 733. Advise the operator that there has been a radiological incident and they will page the appropriate officer.**

#### Radiation Monitors for the Emergency Department (ED)

The two radiation monitors, which are set up at the entrance to the ambulance delivery point and the public entrance at the ED of the hospital, are designed to alarm upon a casualty being brought into the ED with a significant amount of radioactivity incorporated.

The monitors will probably not detect casualties with lower levels of radioactive contamination and will not alarm in this situation. In this situation, the only way that ED staff will know that casualties have been involved in a radiation incident is if they have been so advised by either emergency response agencies or those responsible for the incident. However, ***the only survivors of a radiation accident who have been so badly contaminated as to be a threat to those involved in treating them were some of those involved in the accident at Chernobyl. No other accident victims, including those at Goiania, Brazil, where gross contamination of the victims occurred, have presented any threat to responders, due to the precautions and procedures they followed in managing those victims*** (*Medical Management of Individuals Involved in Radiation Accidents*, P.9, Technical Report Series No. 131, August 2000, ARPANSA).

The detector or probe of these monitors is attached to the body of the monitor via an extendable cord. The probe may be used to measure levels of contamination on persons involved in radiation incidents. As such, it is an adjunct to the contamination monitor used by the health physicist or radiation safety officer of the hospital (see specialist advice below).

In the event of a mass casualty explosion of unknown or suspicious origin, it is advisable to screen casualties for possible radiological contamination.

### Contaminated Casualties

Where radioactive materials are known to be involved in the incident, it is important to monitor casualties for contamination (after stabilising life-threatening medical conditions) to ensure that radiation doses to both casualties and medical staff are kept as low as reasonably achievable.

### Set up of room for receiving contaminated patients

- Set up a controlled area large enough to hold the anticipated number of victims.
- Establish control lines and prevent the spread of contamination.
- Temporary barriers should be erected to exclude others entering the designated corridor and treatment area.
- Arrange for the hospital entrances other than the emergency department entrance(s) to be secured.
- Floor of corridor to treatment area, and treatment area itself, should be covered with heavy-duty paper or plastic to minimise spread of radioactive material. The covering materials should be secured to the floor with tape.
- Large bins lined with disposable plastic bags are to be provided for the disposal of contaminated waste such as clothing, linens, dressings, etc. Bags to be sealed and tagged for subsequent monitoring by hospital health physicist or radiation safety officer (RSO).
- Non-essential equipment should be covered or removed from the controlled area.
- There is no need to control air ventilation of areas receiving contaminated casualties as there is minimal aerosolisation of radioactive material.

**Notes:** Special floor covering is not necessary for treatment of casualties contaminated with radioactive material. The sole purpose of placing floor covering down is to make cleanup of contamination easier afterwards. Medical treatment must not be delayed because there is no floor covering in place.

**An assembly point external to the hospital for the purpose of monitoring of casualties for radiological contamination (radiation monitoring point) should also be set up.**

## Personal protective equipment (PPE)

- Normal clothing used in operating suites will provide sufficient protection for medical personnel treating patients contaminated with radioactive material:
  - A gown with a waterproof apron.
  - Cap.
  - Waterproof shoe covers.
  - Two pairs of surgical gloves.
  - Surgical Mask.
  - Eye Protection.
- The use of lead aprons is unnecessary as they do not provide sufficient shielding.
- Personal radiation dosimeters are provided for use in the ED. These are to be worn by key medical treatment personnel in closest proximity to casualties. If personal dosimeters alarm (set to alarm at 100  $\mu\text{Sv}/\text{hour}$ ), rotate staff to keep doses to a minimum and seek urgent advice from the Radiation Safety Program (RSP) and the hospital health physicist or RSO.

**Note:** The average natural background radiation dose in Melbourne that everyone receives is 2000  $\mu\text{Sv}$  per year.

## Removal of PPE

- Remove protective garments and gloves across control line using standard surgery procedures. Bag and tag

## Triage of casualties involved in a radiation incident

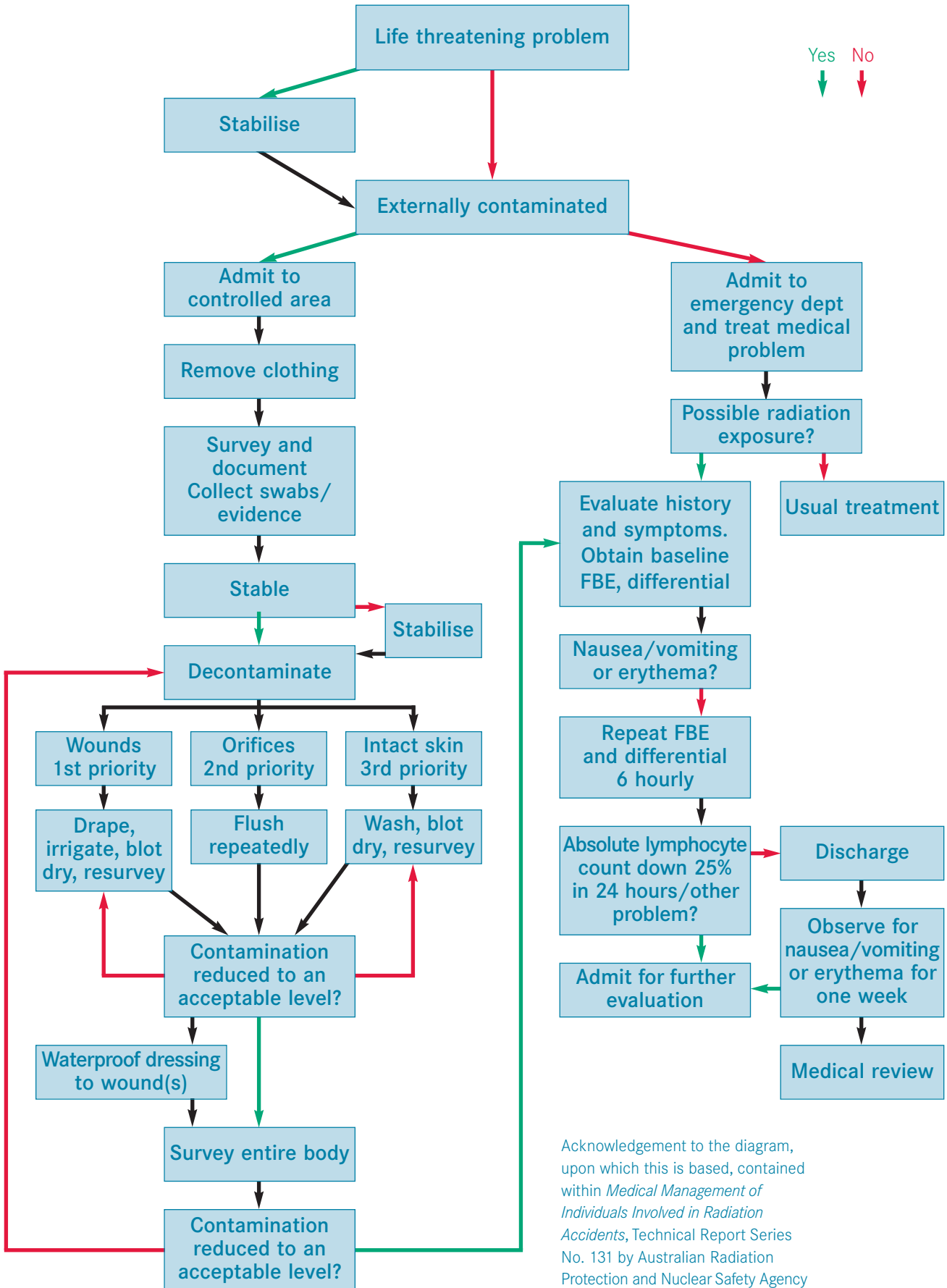
Please see the attached algorithm

- Provide triage at the ED entrance and direct:
  - casualties with life threatening conditions to the prepared treatment area; and
  - other casualties to the radiation monitoring point.
- Stabilise life-threatening medical conditions of casualties.
- Ambulatory casualties who have recently entered the hospital, and have been at the site of the incident, advised to assemble at the radiation monitoring point for radiation monitoring by the hospital health physicist or RSO (see Attachment 1 *Contamination Monitoring Procedure* below).
- Contaminated individuals to be decontaminated as appropriate.
- Definitive medical treatment.

## Casualty follow up and counselling

- Order **IMMEDIATE** full blood examination (FBE) and differential and follow with absolute lymphocyte counts every 6 hours for 48 hours when history indicates possibility of total-body irradiation. See section on acute radiation syndrome in Attachment 2 *Radiation Injury* below for further information.
- Casualties who have been involved in radiation incidents should be followed up for a week, with particular reference to the development of nausea and vomiting, areas of otherwise unexplained erythema, conjunctival redness, epilation, and changes in full blood and lymphocyte count..
- Casualties who have been or think they have been exposed to radiation may need psychological support to help alleviate any anxiety.

### Radiation Accident With Trauma Or Illness



Acknowledgement to the diagram, upon which this is based, contained within *Medical Management of Individuals Involved in Radiation Accidents*, Technical Report Series No. 131 by Australian Radiation Protection and Nuclear Safety Agency

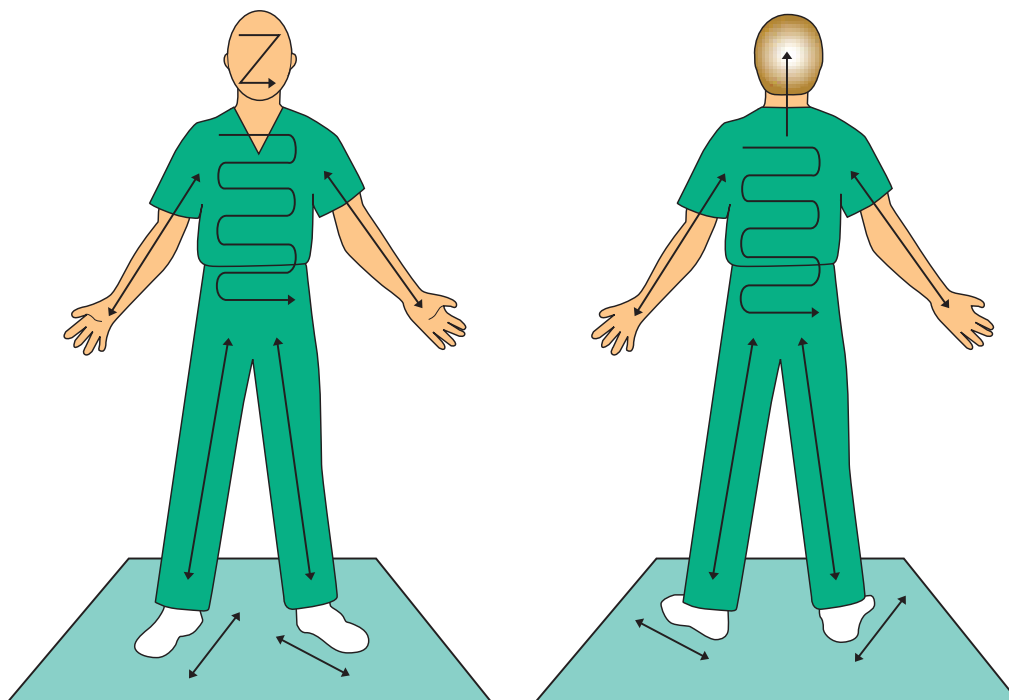
## Contamination monitoring procedure

Cypher contamination monitors have been distributed to major hospitals throughout the state.

### Skin and Clothing

- Cover the probe with a surgical glove, for example.
- Ensure that the instrument is used in fast response mode, where this is possible.
- Set the instrument selector switch to the most sensitive range of the instrument.
- Holding the probe approximately 1 to 2 cm from the person's skin and systematically survey the entire body from head to toe on all sides.
- Move the probe slowly (a few cm per second).
- Do not let the probe touch anything.
- Try to maintain a constant distance.
- Pay particular attention to body orifices, skin folds, hands, face and feet.
- An increase in count rate or dose rate above background indicates the presence of radiation.
- Document areas of contamination on a body map together with monitor details, monitor readings for the various body areas that are contaminated, and details of the casualty.
- When necessary, adjust the range of the instrument by moving the range selector switch.

Note that some instruments cannot detect alpha radiation and some low-energy beta radiation. Because alpha radiation is non-penetrating, it cannot be detected through even a thin film of water, blood, dirt, clothing, or through probe cover.



### Body Orifices and Wounds

- Nasal and oral swabs should be collected using moist, clean cotton tipped applicators.
- Any sputum, vomitus, or tissues from nose blows should be collected.
- Any initial wound dressings should be collected.
- Swabs, dressings, etc. should be placed in separate plastic bags and labelled with patient details, site, and time for later analysis. The Radiation Safety Program will arrange for the collection of these specimens.

## Area radiation monitor procedure

The area radiation monitors are positioned at the ambulance and ambulatory entry points to the emergency departments of selected hospitals. They are set to alarm at a threshold of 20 microsieverts per hour ( $\mu\text{Sv/h}$ ).

They are designed to detect significant amounts of radiation, such as that from a significant radiological source contained in a casualty as a shrapnel fragment, and will NOT detect low-level radiation from diffuse superficial contamination from a radiological dispersion device (“dirty bomb”). The threshold is sensitive enough to detect some nuclear medicine patients, however.

### If alarm of area radiation monitor sounds:

- Turn alarm off by pressing “HIGH ALARM” button.
- If unsure as to who set the alarm off, detach probe at right side of the monitor and use this to determine who set the alarm off.
- Question to determine if person has had a nuclear medicine scan, radio-pharmacotherapy or radiotherapy implant recently.
- If not and there are suspicious circumstances:
  - Isolate the person until radiological triage completed.
  - Key ED staff involved in patient treatment should wear RADOS personal dosimeters.
  - Holding the area monitor probe 30cm from the casualty, conduct a radiation survey to establish the maximum dose rate.
  - If the maximum dose rate 30 cm from casualty is **less than** 1 millisievert/hour (mSv/H) as indicated on area monitor display there is no need for rotation of staff, as the annual occupational dose limit (20 mSv) would not be exceeded for at least 20 hours.
  - If the maximum dose rate 30 cm from casualty is **greater than** 1 mSv/h as indicated on area monitor display - staff to rotate when cumulative dose indicated by RADOS dosimeter is 20 mSv.
  - Provide treatment and care to patient whilst observing these exposure guidelines for the treating staff.
  - Contact: (1) hospital Radiation Safety Officer via hospital switchboard, and (2) Radiation Safety Program via DHS Emergency Contact Number 1300 790 733.
  - Using the Cypher contamination monitor establish the extent and bodily location of contamination.

## Decontamination procedures

**The medical stabilisation of casualties has first priority and takes precedence over any radiological consideration.**

Decontamination should only be as thorough as practical. Reduction of radiation levels to background is not always possible.

### Ambulatory patients

Careful removal of clothing will reduce contamination by about 90%. Small areas of superficial contamination can be decontaminated using a sink or basin. If extensive body areas are contaminated, the patient can be showered under the direction or with the assistance of the hospital health physicist or radiation safety officer. Caution the patient to avoid splashing water into the eyes, nose, mouth, or ears. Repeated showers might be necessary, and fresh towels provided for drying after each shower.

### Stretcher patients

Careful removal of clothing will reduce contamination by about 90%.

- **Decontaminate open wounds first:**

- Drape wound with waterproof material.
- Gently irrigate with saline or water.
- Remove contaminated drapes, dressings, etc.
- Monitor.
- Repeat until there is no further reduction in radiation level.
- If radiation level cannot be reduced to near background levels, debride wound, if clinically appropriate, and bag and label debris.

- **Decontaminate body orifices:**

- Oral cavity - encourage brushing the teeth with toothpaste and frequent rinsing of the mouth.
- Pharyngeal region - gargling with a 3% hydrogen peroxide solution might be helpful.
- Radioactive material swallowed - gastric lavage may be considered.
- Eyes - rinse by directing a stream of water from the inner canthus to the outer canthus of the eye while avoiding contamination of the nasolacrimal duct.
- Ears - external rinsing; an ear syringe can be used to rinse the auditory canal, provided the tympanic membrane is intact. Detonation of an explosive device to disperse radioactive material carries the risk of barotrauma to the ears.

- **External decontamination (intact skin):**

- Wash under a stream of water, **gently** scrubbing at the same time with a soft disposable brush or surgical sponge. Special attention should be given to nails, skin folds and hair.
- Use gentle, neutral pH soap if required.
- Scrub for 3 - 4 minutes, rinse for 2 - 3 minutes and then dry.
- Monitor.
- Repeat if necessary.
- Decontamination stops when no further significant reduction in radiation level can be achieved.

**Note:** Avoid excessive scrubbing. Even minimal abrasions may result in a greater than ten-fold increase in incorporation of radioactive material.

- **After decontamination:**

- Move casualties from "contaminated" stretcher to clean stretcher across control line for transport of casualty to definitive treatment area.

## Waste management

### Bagged Waste

- At the conclusion of the decontamination of the patient soiled linen, dressing materials, etc. should be surveyed by the hospital radiation safety officer for residual contamination.
- Contaminated linen and waste should be double-bagged and labelled “radioactive”.
- Bagged contaminated waste should then be stored in a secure, isolated area, free from human interference, until decay has occurred naturally, rendering the waste no longer radioactive. The time for this to occur is dependent on the specific radioisotope. In the case of waste with a long half-life, the Radiation Safety Program will make arrangements for the proper disposal of the waste

### Contaminated Buildings and Equipment

- Cleaning staff should wear the same PPE as the decontamination team.
- Disposable floor coverings and other coverings should be rolled up and placed in plastic bags.
- The entire area should then be thoroughly surveyed for residual contamination.
- In most cases, normal cleaning methods will remove the material\*.
- Vacuum cleaners that can handle wet material and have high efficiency filters are useful\*.
- Some surfaces may require repeated scrubbing and vacuuming before they are free of contamination\*.

\* From: *Medical Management Of Radiological Casualties Handbook*, Military Medical Operations Office, Armed Forces Radiobiology Research Institute, Bethesda, Maryland, December 1999.

### Disposal of Waste

- All waste materials should be disposed in accordance with prescribed procedures.
- Hospital radiation safety officers can obtain further advice from the DHS Radiation Safety Program.

### Obtaining specialist advice

- Contact the Radiation Safety Program, Public Health (DHS) on emergency contact number 1300 790 733.
- Contact the hospital on-call health physicist or radiation safety officer (RSO) to attend at the ED.
- Clinical Advice on the care of victims with acute radiation injury or illness, can be obtained from the on-call radiation oncologist at Peter McCallum Cancer Centre (contact Peter McCallum switchboard on 9656 1111).



## Attachment: Radiation injury

Exposure to high levels of penetrating radiation can involve the whole body (uniformly or non-uniformly), a significant portion of the body, or a small, localised part. The exposure can be acute, protracted, or fractionated (in divided doses) over time.

### Local Injury

**Most radiation injuries are “local” injuries**, frequently involving the hands. These local injuries seldom exhibit the classical signs and symptoms of acute radiation syndrome.

Consider local radiation injury in the differential diagnosis if the patient presents with a skin lesion without a history of chemical or thermal burn, insect bite, or history of skin disease or allergy. If the patient gives a history of possible radiation exposure (such as from a radiography source, X-ray device, or accelerator) or a history of finding and handling an unknown metallic object, note the presence of any of the following: erythema, blistering, dry or wet desquamation, epilation, ulceration. Local injuries to the skin evolve very slowly over time and symptoms may not manifest for days to weeks after exposure.

Conventional wound management is usually ineffective in these cases. **Consultation with experts regarding definitive diagnosis, assessment of tissue dose, treatment, and prognosis is recommended. This advice can be obtained from the Division of Radiation Oncology, Peter MacCallum Cancer Centre (contact Peter McCallum switchboard on 9656 1111).**

### Acute Radiation Syndrome

Acute radiation syndrome (ARS) is an acute illness caused by irradiation of the whole body (or a significant portion of it). It follows a somewhat predictable course and is characterised by signs and symptoms that are manifestations of cellular deficiencies and the reactions of various cells, tissues, and organ systems to ionising radiation.

Immediate, overt manifestations of the acute radiation syndrome require a large (i.e., at least a few grays (Gy), usually whole-body) dose of penetrating radiation delivered over a short period of time. Penetrating radiation comes from a radioactive source or machine that emits gamma rays, X-rays, or neutrons. The signs and symptoms of this syndrome are non-specific and may be indistinguishable from those of other injuries or illness.

The ARS is characterised by four distinct phases: a prodromal period, a latent period, a period of illness, and one of recovery or death. During the prodromal period patients might experience loss of appetite, nausea, vomiting, fatigue, and diarrhoea; after extremely high doses, additional symptoms such as fever, prostration, respiratory distress, and hyperexcitability can occur. However, all of these symptoms usually disappear in a day or two, and a symptom-free, latent period follows, varying in length depending upon the size of the radiation dose. A period of overt illness follows, and can be characterised by infection, electrolyte imbalance, diarrhoea, bleeding, cardiovascular collapse, and sometimes short periods of unconsciousness. Death or a period of recovery follows the period of overt illness.

In general, the higher the dose the greater the severity of early effects and the greater the possibility of late effects.

Depending on dose, the following syndromes can be manifest:

- **Haematopoietic syndrome** - characterised by deficiencies of leucocytes, especially lymphocytes, and platelets, with immunodeficiency, increased infectious complications, bleeding, anaemia, and impaired wound healing.
- **Gastrointestinal syndrome** - characterised by loss of cells lining intestinal crypts and loss of mucosal barrier, with alterations in intestinal motility, causing vomiting and diarrhoea, fluid and electrolyte loss. There is loss of normal intestinal bacteria, and damage to the intestinal microcirculation resulting in sepsis; in addition to the haematopoietic syndrome.
- **Cerebrovascular/Cardiovascular syndrome** - primarily associated with effects on the vasculature and resultant fluid shifts. Signs and symptoms include vomiting and diarrhoea within minutes of exposure, confusion, disorientation, cerebral oedema, hypotension, and hyperpyrexia. Fatal in a short time.
- **Skin syndrome** - can occur with other syndromes; characterised by loss of epidermis (and possibly dermis) with “radiation burns.”

### Initial Emergency Management:

- If trauma is present, treat.
- If external contaminants are present, decontaminate.

### Diagnosis:

History of exposure - consider acute radiation syndrome in the differential diagnosis if any of the following are present:

- History of a known or possible radiation exposure (for example, entering an irradiation chamber when the source is unshielded).
- History of proximity to an unknown (usually metallic) object with a history of nausea and vomiting, especially if n/v are unexplained by other causes.
- Tendency to bleed (epistaxis, gingival bleeding, petechiae) and/or respiratory infection with neutropenia, lymphopenia, and thrombocytopenia, with history of nausea and vomiting two to three weeks previously.
- Epilation, with a history of nausea and vomiting two to three weeks previously.

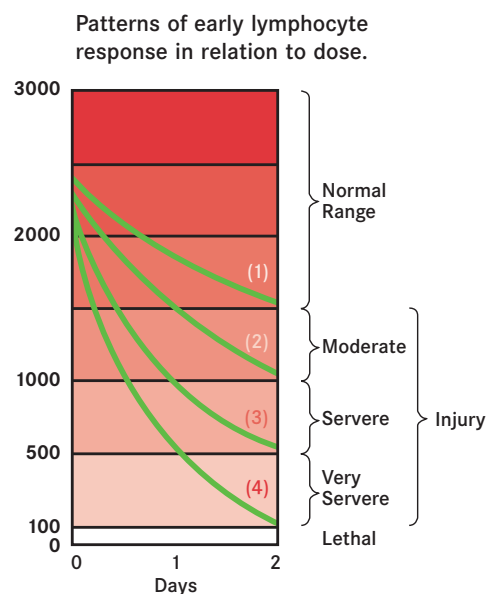
**Symptoms** - note type of symptom, time of onset, severity, and frequency.

**Clinical lab** - **IMMEDIATE** FBE with differential. Repeat in 4-6 hours, then every 6 to 8 hours for 24 to 48 hours. Look for a drop in the absolute lymphocyte count if the exposure was recent (see diagram). If the initial WBC and platelet counts are abnormally low, consider the possibility of exposure a few days to weeks earlier.

**Figure. 9** Curves 1-4 correspond roughly to the following whole-body doses:

curve 1 - 3.1 Gy;  
 curve 2 - 4.4 Gy;  
 curve 3 - 5.6 Gy;  
 curve 4 - 7.1 Gy.

From Goans, Ronald E., Holloway, Elizabeth C., Berger, Mary Ellen, and Ricks, Robert C. “Early Dose Assessment Following Severe Radiation Accidents,” *Health Physics* 72(4): 1997.



### Acute Radiation Syndrome: Dose Less than 2 Gray

Nausea and vomiting due to radiation are seldom experienced unless the exposure has been at least 0.75 to 1 Gray of penetrating gamma or X-rays and it has occurred within a matter of a few hours or less. The prospective patient who has been asymptomatic within the past 24 hours will most certainly have had less than 0.75 Gray of whole-body exposure. Hospitalisation generally will be unnecessary if the dose has been less than 2 Gray.

#### Management of ARS (dose <2 Gray):

- Close observation and frequent FBE with differential.
- Outpatient management may be appropriate.
- Provide instructions regarding home care.

### Acute Radiation Syndrome: Dose Greater than 2 Gray

Signs and symptoms become increasingly severe with dose.

#### Haematopoietic Syndrome:

- The prodromal phase - nausea, vomiting and anorexia within a few hours at the higher dose levels, or after 6 to 12 hours at the lower dose levels. Lasts 24 to 48 hours, after which time the patient is asymptomatic and may feel well. The absolute lymphocyte count will fall; a stress response of WBC may be present.
- The latent phase - lasts a few days to as long as 2 to 3 weeks at the lower dose levels. The patient is asymptomatic but FBEs will show characteristic changes in the blood elements, with lymphocyte depression and gradual decrease in neutrophil and platelet counts.
- A bone marrow depression phase requires sophisticated treatment. Infection and haemorrhage could occur when white cell and platelet counts become critically low.
- The recovery phase - stem cells in the bone marrow are never completely eradicated at 2 to 10 Gray; some may replicate and eventually produce sufficient blood elements. Supportive therapy is required.

#### Gastrointestinal Syndrome:

- Over 10 Gray - this syndrome is distinguishable from the haematopoietic syndrome by the prompt onset of nausea, vomiting and profuse diarrhoea, followed by a short latent period. GI symptoms recur and lead to marked dehydration, and vascular effects. The GI mucosa becomes increasingly atrophic, and massive amounts of plasma are lost to the intestine. Massive denuding of the GI tract and accompanying septicaemia and dehydration can occur. If the patient survives long enough, depression of the haematopoietic system occurs and complicates the clinical course.

#### Cerebrovascular/Cardiovascular Syndrome:

- Over 30 Gray, an extremely high dose, to the whole-body. Always fatal, there is very early nausea, vomiting, anorexia and prostration, and irreversible hypotension; blood pressure will be markedly unstable. Within hours after exposure, the victim will be listless, drowsy, tremulous, convulsive, and ataxic. Death most likely will occur within a matter of days.

### Management of Acute Radiation Syndrome (Dose >2 Gray)

#### Initial management:

- Vomiting - use selective blocking of serotonin 5-HT<sub>3</sub> receptors or use 5-HT<sub>3</sub> receptor antagonists.
- Consider initiating viral prophylaxis.
- Consider tissue, blood typing.
- Treat trauma.
- Consider prompt consultation with haematologist and radiation experts, re: dosimetry and prognosis, use of colony stimulating factors, stem cell transfusion, and other treatment options.

- Draw blood for chromosome analysis; use heparinised tube.
- Note areas of erythema and record on body chart. If possible, take photographs.

**Begin, as indicated:**

- SUPPORTIVE CARE in a CLEAN environment (reverse isolation).
- Prevention and treatment of infections.
- Stimulation of haematopoiesis (use of growth factors, i.e., GCSF, GMCSF, interleukin 11).
- Stem cell transfusions: cord blood, peripheral blood, or bone marrow. Platelet transfusions if bleeding occurs or if platelet count too low.
- Psychological support.
- Observe carefully for erythema (document locations), hair loss, skin injury, mucositis, parotitis, weight loss, and/or fever.
- Consultation with experts in radiation accident management is encouraged.

## Appendix 19: National Counter-Terrorism Committee

# National Counter-Terrorism Committee

### Protocols for Evidentiary Recovery by Health Professionals

#### Foreword

**It is acknowledged from the outset that the immediate health of injured persons is *always* the priority of health professionals. It is also acknowledged that the extreme conditions of a multi-casualty terrorism incident may impact the ability of health professionals to adhere rigidly to these protocols, however consideration and attention to the evidentiary recovery process will give investigators opportunities that may be otherwise lost forever.**

The following document sets out protocols for evidentiary recovery aimed at health professionals in circumstances where they are dealing with mass-casualties from a terrorism related incident.

Additionally, it is foreseeable that a terrorism incident may involve a chemical, biological or radiological (CBR) agent which would further complicate evidence recovery.

Deputy Commissioner Bill Kelly of Victoria Police submitted a proposal to the National Counter-Terrorism Committee (NCTC) regarding evidentiary recovery. This proposal was progressed by the attendance at the Australian Health Disaster Management Policy Committee (AHD-MPC) of Victoria Police Assistant Commissioner (Crime), Simon OVERLAND. A draft set of protocols was then developed.

The NCTC has progressed the development of the protocols to their current format via a working group chaired by Victoria Police and including representatives from Australian Policing Jurisdictions, Forensic Services, Health Department and Emergency Management Australia.

These protocols have been developed through consultation with relevant health experts and are fully supported by the National Counter-Terrorism Committee. The protocols will be forwarded to the AHD-MPC for their endorsement and implementation.

Implementation of these protocols will play a large part in successfully coordinating the cooperative framework to counter terrorism and its consequences.

## **Introduction**

Physical evidence is the silent witness at any crime scene scenario. The Recovery of that physical evidence is crucial in assisting investigators to establish a multitude of avenues of enquiry. This is even more pertinent in a terrorism incident where witnesses may be incapacitated and unable to give a verbal account. Perpetrator(s) may be amongst the deceased or injured.

Early isolation of that physical evidence, with a continuity chain linking it to its place in the scene, is the best result for investigators. This can be summarized into the catch-phrase – **“BAG, TAG, SEAL and SECURE”** that exhibit.

In mass-casualty, multiple-death scenarios that may accompany a terrorism act, it is likely that health professionals (ambulance, doctors, nurses, hospital orderlies) may be the first people to make contact with the victims. This will also occur in a vast range of locations including the scene, makeshift treatment areas, decontamination tents, emergency departments, and other locations at and around hospitals.

These first contacts provide an opportunity to secure valuable physical evidence that may be lost through clothing removal, medical procedures, movement or transport of patients and decontamination of victims. It may be in the absence of police or forensic personnel, who would ideally be able to recognize and secure the evidence.

The protocols seek to raise the awareness of health professionals to the issue of evidentiary recovery from terrorism victims. By tapping into health professional's present sense of avoiding cross-contamination, we seek to enhance the amount and quality of evidence that is recovered.

The protocols are designed to be simple and easy to follow, and they will supplement the already existing protocols that health professionals have for dealing with issues such as chemical, biological or radiation incidents. They will make a huge difference to the forensic personnel trying to investigate the incident.

### **General Instructions**

These guidelines are aimed at health professionals treating victims of mass-casualty terrorism incidents or disasters. It is acknowledged that victims from these types of events may range from patients who self-present as “unwell” or shocked to severely injured or deceased. Judging which patients should be subject to these protocols can be determined by the general consideration that those who don’t require hospitalization can leave in their own clothes, those who require hospitalization should have clothing exhibits seized.

It is acknowledged that the ideal scenario would be deployment of a fully equipped police or forensic officer direct to the hospital or triage area to conduct the evidence sampling and gathering. This is unlikely in a multi-casualty terrorism incident where high-intensity circumstances exist. Resources will be stretched and the early confusion may not allow for appropriate deployments.

It is also acknowledged that identifying and training of appropriate hospital staff to provide an on-site evidence coordination role would fill the gap between police/forensic deployment and on-site health professionals/triage staff collecting, bagging and tagging evidence. Individual hospitals would need to assess this as an option.

These protocols attempt to achieve a standardized process with easy-to-follow steps that supplement existing procedures used by health professionals and can be implemented with little or no formal training regarding forensic expertise.

Any item will provide its best forensic evidence potential if it is isolated in a suitable bag by a person wearing fresh gloves. The details of the person who collected the item, the time, date, location of collection and a description of the item collected will provide the link needed by investigators to put that item into the puzzle.

Continuity of the bagged evidence so that it gets from the original collector to the investigators or forensic scientists without being contaminated is a vital piece of the process.

Consideration by all health professionals and triage staff to “BAG, TAG, SEAL AND SECURE” of all evidence will be invaluable in helping investigators put the puzzle together and identify perpetrators.

Whilst the immediate health of injured persons is always the priority of health professionals, consideration and attention to the evidentiary recovery process will give investigators opportunities that may be otherwise lost forever.

## General Protocols for Evidentiary Recovery by Health Professional:

### BAG

1. *Protective Equipment* - **Use gloves, eye protection and masks as per normal standard precautions.** PPE (Personal Protective Equipment) may be appropriate in cases of presumed chemical, radiation or biological contamination. When attending new patients change gloves – this prevents cross-contamination of evidence/residues between patients.
2. *Removal of Clothing* - **When removing clothes, if they need to be cut, aim to avoid cutting through any obvious holes caused by gunshot, shrapnel or chemicals.** Cutting along material seams may be an option. Ideally, once it is removed from the patient, it should go straight into a suitable bag. Some patients may not agree to have items seized for evidentiary purposes because of many varied reasons. In these cases respect the request, note the circumstances and advise investigators as soon as possible.
3. *Separate Items* – **Ideally, one piece of clothing per separate paper bag.** This avoids cross contamination. Bags should be suitable paper or plastic. Plastic bags cause clothing to go mouldy and evidence deteriorates, but may be the only suitable option for wet clothing. Sometimes it may be several months before items are processed by the forensics laboratory. It is acknowledged that in multi-casualty terrorism incidents it may be impractical to have one item per bag.
4. *Other Items to Note* - **Other items in contact with the person either at the scene, during transport or medical treatment may provide evidence.** eg debris may fall off people onto hospital sheets or blankets. Handbags or other articles may have foreign material over them. These are also best collected in paper bags, sealed and labeled appropriately. **Foreign matter on the body can also be collected** - best to collect onto a sheet of paper or envelope, which is then bagged and labeled. Bullets or shrapnel should be removed with long handled forceps and placed into a pathology pot before being bagged.

### TAG

5. *Complete labels* - **Each bag must be appropriately labelled with the person's name or hospital number, date and time item collected, name of person who collected the item and a description of the item.** This should be done at the time the item is placed into the suitable bag. Attaching a hospital "Unique Patient Identifier" tag to the exhibit bag would also be a good addition to linking the exhibit to a person.



### **SEAL**

6. *Keep items together - Seal each bag, preferably with tape.* All items collected from one patient **MUST** be kept together by either putting individual bags into a larger bag, or keeping the bags together in a group. Sealing the bags is vital in stopping loss, cross-contamination and tampering.

### **SECURE**

7. *Secure Area – Ideally, all items that are bagged, tagged and sealed should be taken to a designated secure area as soon as possible after collection.* It is acknowledged that hospitals may not have a secure area or staff to cater for security of large numbers of exhibits, but efforts should be made for this contingency.
8. **Deceased Persons.** Deceased persons at the scene should be left undisturbed for the forensic team to process them in situ. If a person dies once medical treatment has been commenced, whether it is at the scene, in transit or at a hospital the person should be left undisturbed. Clothes and sheets should stay with the body and not be removed; additionally the body should not be washed.

## EVIDENCE BAGGING OPTIONS

	PAPER BAG	PLASTIC BAG	PVC/ARSON BAG
<b>DRY EXHIBIT</b>	✓		
<b>SOILED EXHIBIT</b>	✓ <b>DRY</b>	✓ <b>WET</b> Label as wet	
<b>WET EXHIBIT</b>		✓ Label as wet	
<b>GUN SHOT INCIDENT EXHIBIT</b>	✓ <b>DRY</b>	✓ <b>WET</b> Label as wet	
<b>ARSON/EXPLOSIVE INCIDENT EXHIBIT</b>			✓ <b>WET OR DRY</b> Label if wet
<b>CHEMICAL/BIOLOGICAL AGENT EXHIBIT</b>		✓ <u>Only</u> if PVC bag unavailable	✓ <u>Triple</u> bag and label if wet

## **Implementing the protocols**

To assist in the implementation of these protocols several issues are worth considering:

### **1. Education**

- Health professionals have limited knowledge about evidentiary recovery. Increased knowledge and understanding will lead to increased adherence to the protocols and preservation of evidence.
- All personnel who would be involved in a major incident need to be educated about evidence collection. This includes ambulance officers, firemen, radiographers, hospital orderlies and clerical staff, as well as doctors and nurses.
- All groups of health professionals participate in ongoing professional training. These protocols and a section dealing with basic evidence preservation should be incorporated into this training at the organizations base levels. Additionally, the protocols should be included into local Standard Operating Procedures or similar, and be the subject of local information dissemination practices for staff.

### **2. Allocating staff member(s) specifically to collect and label evidence**

- Collecting clothes into separate bags and accurately labelling the bags is a time consuming process.
- In the initial stages of treating the injured, this will be a very low priority for medical staff, especially when decontamination procedures are necessary.
- Delay in sealing and labelling bags may lead to labelling errors or cross contamination.
- As part of the emergency management role allocation, hospitals should consider allocating a staff member(s) specifically to bag, tag, seal and secure clothing and other items of evidence. This person would not be involved in assessing or treating the injured. This should minimize the errors in evidentiary recovery. The staff member would most likely not be a doctor or a nurse.
- Additional training could be provided to these specific staff member(s) by police/forensic personnel.

### **3. Adequate supplies of paper and plastic bags**

- Most hospitals currently use paper/plastic bags in their normal collection of patient's clothing. Paper and plastic bags of a reasonable size are only kept in limited numbers and only in certain areas of the hospital. Large quantities of paper, plastic and PVC Arson bags must be readily available in all areas where injured people will be decontaminated, assessed and treated.
- Paper, plastic and PVC Arson bags need to be available for people at the scene including ambulance and fire service personnel, particularly when decontamination occurs at the scene.
- A supplier could be established to supply a standardized product to relevant services.

#### 4. Pre-prepared hospital records and labels

- Having a significant number of hospital records with labels made up in preparation for a mass incident is a sensible idea. In the initial stages of an incident, accurate personal details of the injured people are limited. Delays in processing the personal details may hinder labelling of evidence or lead to mislabeling. Allocating each injured person an identifying number and having sufficient labels pre-printed with this number would be more efficient. Later when personal details are known, these can be added.
- A check list included in the hospital record to readily keep track of what has been collected, the number of bags, by whom and who was it handed to would be beneficial. This document must be retained and made available for police or forensic services to retrieve the seized items. An Example Log is attached at the rear of the document.
- Processing and labelling bags etc, at the scene is a problem. Consideration should be given to have a similar system of ID labels available. Ambulance and fire services personnel would need to have ready access to this.

#### 5. Police/Forensics Involvement

- Having a police officer, member of the forensics team or a forensic medical officer located on site (at the scene or hospital) to supervise and assist health professionals with evidentiary recovery, would be beneficial. This would depend on the exact circumstances of the incident. Where collection procedures might differ from the normal procedures e.g., arson requiring special arson bags or more specialized samples need to be collected, specialist forensic assistance would be required.
- The number of bags of evidence may be considerable depending on the size of the incident. Ideally these should be handed over to the police as soon as practically possible. Appropriate storage space in hospitals during the emergency would be limited and if bags are left in corridors, etc, this increases the chance of them being thrown away, lost, damaged or contaminated.
- Ideally hospitals should designate or establish an area that can be used for secure storage of bagged exhibits that can facilitate large numbers of items and be secured until items are passed onto police or forensic representatives.
- Contact should be made with the nearest police station as soon as possible after the event to facilitate collection of any exhibits. Exhibits will be collected as soon as possible, but this may be delayed due to the extent of the incident and the subsequent availability of resources. The Emergency Department shift-manager or equivalent should manage the hand-over of exhibits to police and supply the completed log.

#### 6. Documentation of injuries

- Documentation of injuries can provide useful information as part of the police case. Detailed and accurate documentation of all injuries in the initial stages of an emergency situation by doctors is not feasible. Their priority is to treat the injured. However appearance of injuries will change with both time and medical intervention.

- Early deployment of forensic medical officers or police photographers would be of assistance. Priority would have to be given to particular injured persons as directed by the police, if large numbers were involved. Photographs can provide rapid documentation of injuries. Issues regarding privacy laws would need to be considered.

## **7. Contact details**

- Hospitals should maintain contact numbers for the local police station or detectives' office for enquiries regarding specialist forensic advice. Local police will facilitate any enquiries to the correct source of information.

## **8. Preparation and liaison between police and health professionals**

- Implementation of the protocols requires cooperation of hospital staff and emergency services personnel.
- Meetings between the different groups would be advisable to address the specific problem of evidentiary recovery.
- Adequate preparation well before any anticipated event is crucial for all groups involved. Trying to put protocols in place at the time of a terrorist incident will not work. Regular updates and education is important, but immediate implementation of these protocols will at least give most health professionals a basic understanding of what is required.
- Consideration should be given to undertaking training exercises involving mock terrorist incidents specifically addressing evidentiary recovery and involving all groups of health professionals.
- Each state and territory will vary in certain practices regarding how mass incidents are handled. Specific local issues should also be considered together with these protocols.

**NCTC Work Group  
10<sup>th</sup> October, 2004**



## Appendix 20: Hospital emergency incident exhibit log

Date of incident: \_\_\_\_\_ (One item per line)

Unique Identifier Number of patient	Item collected as exhibit	Location of property	Name of person who collected item









