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Fire and Rescue Service Operational Guidance

GRAs
generic risk assessments

GRA 5.3
Incidents involving chemicals

Generic Risk Assessment 5.3

Incidents involving chemicals

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SECTION 1

Generic risk assessment 5.3 Chemical incidents

Scope

This generic risk assessment examines the hazards, risks and control measures relating to Fire and Rescue Service personnel, the personnel of other agencies and members of the public when dealing with incidents involving hazardous chemicals. These may be solids, liquids or gases.

This assessment also examines the hazards, risks and controls that relate to carrying out decontamination at an incident involving a hazardous substance. Although specific in nature, decontamination can be split into two distinct activities depending on the type of incident being attended. These are:

(a) incidents of a traditional hazardous material nature, (i.e. those which are predominantly involving the decontamination of fire crews and equipment)

and

(b) incidents involving terrorist activity chemical, biological, radiological, nuclear and explosives and the resultant mass decontamination of casualties.

NOTE:
Mass decontamination risk assessments have been prepared as part of the national resilience programme. These risk assessments should be consulted when considering decontamination issues relating to chemical, biological, radiological, nuclear and explosives type incidents.

This generic risk assessment does not cover mass decontamination.

Depending on the nature and scale of the operational incident a variety of significant hazards may be present. Fire and Rescue Services may therefore need to consider the contents of other specific generic risk assessments in this series.

You should therefore consider this generic risk assessment in conjunction with all other relevant assessment, which may include generic risk assessments:

- 4.1 Road
- 4.2 Railway
- 4.3 Air
- 4.4 Marine
- 5.4 Biological
- 5.5 Radiation
- 5.7 Explosives

Fire and Rescue Services must conduct their own assessments and produce their own Safe Systems of Work (which include Standard Operating Procedures, training programmes, provision of equipment, levels of response etc.) within the context of integrated risk management plans, local conditions, knowledge and existing organisational arrangements.

Significant hazards and risks

Each chemical incident will pose its own special considerations, often demanding specific operational procedures. These incidents are frequently time consuming, with significant resource implications for the Fire and Rescue Service.

There is a significant risk to responding personnel who may inadvertently enter a chemical gas cloud.

The hazards and risks that Fire and Rescue Service staff face when attending incidents involving hazardous chemical materials can be classified in the following categories:

Hazardous substance (Primary hazard)

There are associated risks due to the nature and characteristics of chemicals on fire or involved in a spillage. These include:

- explosives/explosions
- gases
- oxidising agents
- toxic or very toxic
- corrosives
- flammable or highly flammable
- irritants
- allergenic
- asphyxiant

- radioactive
- carcinogenic
- mutagenic
- water reactive
- cryogenic
- endothermic and exothermic reactions.

Generic hazards

PERSONAL PROTECTIVE EQUIPMENT

The use of gas tight suits, particularly where there are arduous working conditions, or a lack of a system of reliefs, coupled with inappropriate personal protective equipment for the task may result in heat stress and fatigue.

There may also be penetration of chemicals into personal protective equipment if it is unsuitable for the hazard involved. Careful consideration of the most appropriate protection for the potential hazards posed by the hazardous substance and the specific task in hand is required.

The wearing of gas tight suits can result in noise reduction. Hearing may therefore be restricted and can lead to fire personnel not hearing, or mis-hearing important information.

IMMEDIATE LIFE SAVING RESCUE

In situations whereby the public are subjected to life threatening circumstances the wearing of full gas tight suits may be considered excessive due to the time constraints and a relaxation of this requirement may be appropriate to ensure expediency in saving life. However, all hazards and risks must be considered, particularly exposure to hazardous substances and the resultant contamination.

CONTAMINATION

There is a significant risk of contamination, primarily on first arrival, before suitable cordons have been introduced and during decontamination if appropriate controls are not introduced.

WEATHER CONDITIONS

The weather may contribute to the spread of contaminants (e.g. rain may spread substance into waterways; wind spread airborne contaminants).

POLLUTION

In addition to the immediate health risks to personnel and members of the public, chemical incidents may cause serious short and long term environmental damage. For example, firefighting water run-off from incidents involving toxic liquids can travel some distance from the incident and have a serious effect on both plant and animal systems. Additionally, water from fire fighting can also enter the water table and affect drinking water supplies. Local bore holes and artesian wells may have to be closed. Similarly, smoke/gas clouds may affect local (or even remote) communities.

Fire personnel undertaking environmental control measures at a distance from the immediate risk area may be exposed to hazards associated with the contaminant.

INFECTION OF OPEN WOUNDS

Personnel may become exposed to contaminants if unprotected wounds are left uncovered.

Hazards and risks associated with decontamination

There are distinct differences in operational procedure, dependant on whether a small scale incident is being attended involving only Fire and Rescue Service personnel with relatively few resources, or a large scale incident involving mass casualties and requiring the large scale mobilisation of personnel and resources.

Therefore the inherent hazards and risks, dependant on the type of incident, will differ for large scale mass decontamination type incidents. The generic risk assessments relating to chemical, biological, radiological, nuclear and explosives resources should be consulted.

Issues associated with decontamination which may result in contamination of fire personnel or members of the public, may be identified as follows:

- inappropriate siting of the decontamination zone
- changes in circumstances which may affect the siting of the zone (i.e. significant change of wind direction, deterioration of the incident, failure of water supplies or breakdown of equipment etc)
- inappropriate decontamination method employed
- lack of appropriate expert advice on decontamination methods
- cross contamination issues (Fire and Rescue Service personnel, general public, equipment etc)
- containment of contaminant (pre, during and post incident).

If a contaminant is present after decontamination there is a risk that the operative or clean operative will become contaminated.

Damage to the gas tight suits may result in contaminants entering the suit and thereby increase the difficulty of decontamination.

Dealing with casualties at hazardous material incidents can result in physical or psychological injuries. The casualty may become violent or aggressive either because the decontamination process is not ‘inviting’ or comfortable, or because of the effects of a hazardous substance.

The rescuer may suffer immediate or delayed psychological impact if a badly injured casualty has to be decontaminated by necessity. However, decontamination of such casualties is normally undertaken by the health service personnel.

There is a risk to personnel whenever an emergency decontamination is undertaken. This may involve a rescued casualty, or the personnel themselves when involved in a hazardous substance release.

In the case of a member of the public being involved, the urgency of the situation or the severity of the injuries may result in an incomplete decontamination taking place, with resultant risk to other emergency responders or carers.

The use of breathing apparatus and the wearing of a gas-tight suit has a significant effect on the wearers ability to hear. There is a risk therefore, of a breakdown in communication between wearers, and between wearer and breathing apparatus entry control officer.

Overspray from personnel being decontaminated during initial or emergency decontamination, particularly during windy conditions, may contaminate personnel outside the 'Dirty' area.

Key control measures

Pre-planning

Pre-planning is key to enhancing the safety of fire-fighters and others likely to be affected by Fire and Rescue Service operations. Each Service's integrated risk management plan will set standards and identify the resources required to ensure safe systems of work are maintained.

Each Fire and Rescue Service should assess the hazards and risks in their area relating to this generic risk assessment. The assessment should include other Fire and Rescue Service's areas where cross-border arrangements make this appropriate.

Site-specific plans should be considered for locations where the hazards and risks are significant and should take into account and specify any variation from the normal operational capability of personnel, appliances and equipment. In particular, recognition should be given to the physical and psychological pressures that an operational incident may apply to Fire and Rescue Service personnel.

Site specific plans should include:

- levels of response
- relevant standard operating procedures; and
- tactical considerations. Including rendezvous points, appliance marshalling areas and access points
- identification and where necessary, the formal notification to person(s) responsible for the site of any Fire and Rescue Service operational limitations
- disposal/containment of run-off water.

Additionally, liaison with haulage companies/freight operators and train companies etc. should be undertaken to keep the Fire and Rescue Service informed of any significant quantities of hazardous materials that are being temporarily stored at depots or transported within their area.

Pre-planning is underpinned by information gathering, much of which will be gained through inspections or visits by Fire and Rescue Service personnel – for example, those covered by section 7(2)d and 9(3)d of the *Fire and Rescue Services Act 2004.* Information which ought to be collected should include names and quantities of substances and may include details of how they are likely to react in a fire situation or in contact with firefighting media. **For example chloroform is listed as non-flammable but when it is involved in a fire it is converted to phosgene (mustard gas) or carbide when in contact with water releases acetylene.**

This information will be available through the fire risk assessment in addition to the Control of Substances Hazardous to Health Regulations assessments. It is emphasised that this information should not be the only source of specialist knowledge and additional information will still require investigation.

Information should also be gathered and used to review safe systems of work, etc. from sources both within and outside the Fire and Rescue Service, including:

- fire safety audits
- incident de-briefs
- health and safety events
- notification and marking of sites
- local authorities; and
- local resilience forums
- haulage companies/freight operators and train companies.

Fire and Rescue Services should ensure systems are in place to record and regularly review risk information and make certain that new risks are identified and recorded as soon as practicable.

Involving others in pre-planning is an effective way to build good working relations with partner agencies and other interested parties, such as site owners.

Fire and Rescue Services should consider the benefits of using consistent systems and formats to record information from all sources. Consideration should also be given to how timely access will be provided to information to support operational decision-making.

Information needs and the capacity of Fire and Rescue Service staff to assimilate information will vary in proportion to the nature and size of the incident and what stage the operational response has reached. Arrangements need to be flexible and may be based on more than one system.

Liaison

Fire and Rescue Services should consider the liaison necessary to contribute towards the effective control of all chemical incidents that are likely to occur within their area. Agencies that are likely to provide positive benefit in this regard will include:

- The Environment Agency
- local authorities
- The Meteorological Office
- police
- The Ambulance Service
- appropriate scientific technical support
- Health Protection Agency
- Highways Agency
- National Chemical Emergency Centre
- fire service scientific advisers.

Involving others in pre-planning is also an effective way to build good working relations with partner agencies and other interested parties, such as site owners. Close liaison with external agencies who may be mobilised onto incidents (e.g. police, Environment Agency, Highways Agency etc.) should be encouraged.

Training

When formulating a training strategy Fire and Rescue Services should consider the following points:

- Fire and Rescue Services must ensure their personnel are adequately trained to deal with the hazards and risks involved in chemical incidents
- the level and nature of training undertaken should be shaped by informed assessment of operational and individual needs in accordance with the Fire and Rescue Service guidance on the integrated personal development system, national occupational standards and any internal training plan
- training and development should follow the principles set out in national guidance documents
- training and development programmes should generally be structured so that they move from simple to more complex tasks and from lower to higher levels of risk
- training and development will typically cover standard operational procedures as well as ensuring knowledge and understanding of equipment and the associated skills that will be required to use it

- Training and development programmes should consider the need for appropriate levels of assessment and provide for continuous professional development to ensure maintenance of skills and to update personnel whenever there are changes to procedure, equipment etc.

Training outcomes should be evaluated to ensure that the training provided is effective, current and it meets defined operational needs as determined by the Fire and Rescue Service integrated risk management plan.

Command and control

The Incident Commander should follow the principles of the current national incident command system. Prior to committing personnel into any hazard area, the Incident Commander must take into account all information available at the time to make operational decisions in what are recognised as sometimes dangerous, fast moving and emotionally charged environments. This information may include:

- nature of incident/hazmat involved
- resources
- whether all persons are accounted for
- advice from site staff
- fire risk inspection information
- decontamination requirements
- risk to the public.

Monitoring arrangements for hazardous materials and specialist advice will need to be considered in establishing a safe zone (cordon).

A thorough safety brief prior to deployment of personnel within the hazard zone must be carried out.

Effective liaison with on-site personnel or specialists available to the Fire and Rescue Service should be utilised throughout the incident.

The number of personnel (Fire and Rescue Service and others) in the inner cordon should be restricted.

Consideration should be given, in liaison with other relevant agencies, to the creation of a safety/outer cordon dependant on the chemical, weather conditions and available resources (e.g. Firemet, CHEMET etc).

Cordons should be maintained in order to minimise the risk to the public, personnel and other emergency services.

A decontamination team working under the supervision of a 'Decontamination Director' should be appointed as outlined in the *Fire and Rescue Service Manual – Fire Service Operations, Incident Command,* and be responsible for maintaining the decontamination area and the safety of personnel.

The Incident Commander must ensure the appropriate level of control and supervision of cordons and personnel is in place to minimise the risk.

Safety Officer(s)

The early appointment of one or more Safety Officer(s) will help ensure that risks are either eliminated or reduced to an acceptable level.

A safety decision-making model should be used to brief Safety Officers regarding the nature of the incident, the allocated task and prevailing hazards and risks. The Incident Commander should confirm that the Safety Officer understands:

- their role and area of responsibility
- allocated tasks
- lines of communication.

Those undertaking the Safety Officer role should:

- be competent to perform the role
- ensure personnel are wearing appropriate personal protective equipment
- monitor the physical condition of personnel and/or general or specific safety conditions at the incident, in accordance with their brief
- take any urgent corrective action required to ensure safety of personnel
- update the Incident Commander or senior safety officer regarding any change in circumstances
- not be engaged in any other aspect of operations, unless this is required to deal with a risk critical situation.

The role of a Safety Officer can be undertaken by any managerial level, but the complexity of the task, size of the incident and scope of responsibility should be considered by the Incident Commander when determining the supervisory level required.

Safety Officers should wear nationally recognised identification to indicate they are undertaking the Safety Officer role.

Fire and Rescue Services should ensure that training and other measures (such as aides-mémoires) are in place and available to support those staff likely to undertake this role.

Personal protective equipment

Fire and Rescue Services must ensure that any personal protective equipment provided is fit for purpose and meets all required safety standards.

When choosing suitable protective garments, the standard of clothing worn beneath the specialist personal protective equipment should also be taken into account. Consideration should also be given to the selection of suitable sizes and gender specific requirements.

Personal protective equipment should also take account of the need for rescuers to be visible against the operational background including night working and for the Incident Commander and other managerial and functional roles (defined in the national incident command system) to be distinguishable.

All personnel must use appropriate levels of Service provided personal protective equipment and respiratory protective equipment as determined by the safe system of work.

Whilst attending incidents involving chemicals, personnel will inevitably be required to wear appropriate personal protective equipment. It is therefore, necessary for personnel to receive appropriate familiarisation training on donning/doffing gas tight suits, powered respirator protective suits etc. including being assisted/assisting others, and carrying out simple tasks whilst in gas tight suits/powered respirator protective suits to appreciate the restrictions that this personal protective equipment can bring.

Suitable procedures should be incorporated to overcome any deficiencies in communications caused by the wearing of gas tight suits.

Immediate life saving rescue

Fire and Rescue Services should have suitable procedures in place to effect an immediate life saving rescue where appropriate/necessary and include subsequent emergency decontamination measures.

General safety of personnel

As part of the control measures to ensure the continued safety of personnel at the incident the Incident Commander should consider, amongst others, the following:

- The risk of contamination on initial arrival. Following the saving of lives, the siting of cordons and the extent of pollution should be the initial task at any incident involving chemicals
- The effect of weather conditions on the incident and the decontamination procedure should be considered
- The properties of the substance involved
- Welfare arrangements (e.g. reliefs, food and drink)
- All personnel should be familiar with the evacuation procedures and signals
- Personnel working in extreme heat, (Note: Gas tight suits are not to be used in extreme heat), should be protected by improvised shields (i.e. water sprays) and reliefs arranged at frequent intervals. The use of appropriate firefighting equipment such as ground monitors, should be considered

- Breathing apparatus and gas tight suits should be worn when necessary to protect personnel against chemical or toxic vapours or gases. The chemical resistance of the suit should be considered and taken into account before committing operational personnel into risk areas. The permeation rate of the suit when exposed to some chemicals, is an important factor. **For example bromine will permeate most Fire and Rescue Service's gas tight suits in approximately fifteen minutes.** The Incident Commander should also remember that the gas tight suit has no thermal insulation design
- Decontamination arrangements will vary according to the nature and degree of chemical contaminants. In the case of incidents at specific risk sites, decontamination procedures should be pre-planned
- It is important that every effort is made to reduce the level of contaminant on personal protective equipment to a safe level whereby safe undressing will allow the removal of the personal protective equipment with no cross contamination to the wearer
- Personnel should be prohibited from eating, smoking and drinking at chemical incidents unless decontamination and washing facilities are provided and clearly defined areas set aside for this purpose
- Personnel working at a distance from the immediate risk area (e.g. undertaking environmental control measures) should be made aware of any possible hazards associated with the pollution.

Specialist equipment

Fire and Rescue Services will need to consider the provision of suitable, specialist equipment and the training associated with it, within the context of the risk profile within the Services' area. In some cases, arrangements for the use of such equipment may be made with a third party, for example the local authority or it's agents or the Environment Agency. The type of equipment will vary according to local conditions.

Decontamination

The effectiveness of the decontamination of crews and equipment is dependant upon:

- a safe undressing procedure
- the nature of the contaminant (i.e. gas, powder, liquid, thick/glutinous substance)
- the effects of the decontamination process on the product. for example, the exothermic reaction when applying water to water reactive materials, or the effect of cold water on substances (e.g. nitrobenzene which will result in the chemical adhering to the suit and will then release once the suit is further cleaned
- time taken to decontaminate
- the thoroughness in cleaning the operatives.

The identification of a restricted area around the inner cordon and limitation of the number of staff entering the hot zone, must be implemented. The possibility of cross contamination between contaminated personnel exiting the decontamination process and clean operatives should be considered.

The decontamination area must be carefully considered before implementation. Environmental conditions must be assessed to ensure the safety of personnel operating in the clean area and that any run-off is directed or contained as necessary. Most decontamination procedures now provide facilities to contain water run-off. However, it is important that any run-off resultant from the incident that carries toxic material does not enter drains and watercourses, wherever possible. The Incident Commander will need to consider the following factors during the decision making process: -

- the wind direction
- local topographic features (e.g. ground conditions, gradient of land etc)
- the position of drains and whether surface or foul.
- the position of watercourses
- the nature of the hazardous substance
- the concentration of the substance.

The above considerations should be made in liaison with the Environment Agency and other appropriate organisations, at the earliest opportunity.

A safe undressing procedure should be developed and operated at chemical incidents. This should include procedures for the emergency decontamination of any personnel on the incident ground.

Appropriate procedures should be in place to deal with the failure of a breathing apparatus set whilst in use.

A system should be implemented for casualties who may become distressed or require emergency decontamination.

Allowance should be made and procedures designed, to minimise the effect of mishearing information whilst wearing breathing apparatus/gas tight suits and being decontaminated.

The possibility of overspray from the decontamination area should be considered.

Health surveillance

Medical advice is to be sought by any personnel who, in the unlikely event, suffer ill effects. Advice at the incident may suggest treatment of exposed crews and liaison with the Services' medical advisor is essential. A full investigation of the circumstances resulting in the exposure should be undertaken and all potentially affected personnel should be given a full medical brief before going off-duty.

Arrangements should be in place for effective health surveillance of all staff who are suspected of being exposed to any chemicals during an incident. This may be by means of an on-site specialist whilst the incident is still in progress.

Systems should be in place to provide for the monitoring and recording of chemical exposure.

Staff should also be provided with follow-up monitoring by the occupational health team as necessary. This will enable more sensitive whole body monitoring or analysis of biological samples, such as urine etc. to be undertaken.

A safety event investigation should be undertaken to determine why personnel were contaminated and which safe system failed, resulting in the contamination.

Post incident

The following measures should be considered to help eliminate or remove risks after an incident, as appropriate to the nature and scale of the incident.

- Any safety events; personal injuries, exposure to hazardous substances or near-misses should be recorded, investigated and reported in line with legislative requirements such as *Reporting of Injuries Diseases and Dangerous Occurrence Regulations 1995,* etc.
- Arrangements should be in place to either remove all contamination from personal protective equipment or to ensure it's safe and appropriate disposal and to check that personal protective equipment maintains the agreed levels of integrity and protection for the wearer throughout its lifecycle
- Awareness of the hazard should be maintained throughout operations, even during the making up of equipment, as the product may still be present and will therefore still be a hazard. Full use of the expertise of the Hazardous Materials and Environmental Protection Officer or equivalently trained person, should be made at all stages of the incident
- Any residual risks still present on conclusion of the incident, should be made known to the site owner/occupier
- Conduct a debrief to identify and record any "lessons learned" from the incident. Debriefs will range in complexity and formality, proportionate to the scale of the incident and in line with individual Fire and Rescue Service's procedures
- Consider any changes required to safe systems of work, appliances or equipment in the light of any lessons learned from debriefs, from safety events, or health monitoring
- Consider the need to review existing information held on a premises or location, or the need to add a new premises or location into future preplanning e.g. by adding to visit or inspection programme

- Staff should be supported and monitored to identify whether they are experiencing any adverse affects and to check whether they would benefit from accessing counselling and support services
- Outcomes from health monitoring arrangements should be fed back into safety management systems. Health surveillance may need to be considered long term (in some cases post employment) to assess the chronic effects of exposure
- Consideration should be given to arranging for staff to make a contemporaneous written record of their actions. This information may be used to assist in any internal or external investigations or enquiries that follow any incident e.g. coroners court, public enquiry, etc.

Technical references	
1	Control of Substances Hazardous to Health Regulations 2002 (as amended) Approved Code of Practice and guidance
2	The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009
3	Meteorological Support for Incidents Involving Toxic Chemical (CHEMET) Chemsafe Scheme
4	Manual of Firemanship; Incidents Involving Aircraft Shipping and Railways Home Office HMSO Fifth impression
5	Methods of Decontamination after Chemical Incidents: summary report Home Office Joint Committee on Fire Research; Central Fire Brigades Advisory Council; Scottish Central Fire Brigades Advisory Council Home Office, Crown Copyright 1995
6	The Notification of Installations Handling Hazardous Substances Regulations 1982 (NIHHS)
7	The Notification of Installations Handling Hazardous Substances (Amendment) Regulations 2002
8	Control of Major Accident Hazard Regulations 1999 (COMAH)
9	The Dangerous Substances Notification and Marketing of Sites Regulations 1990 (NAMOS)
10	The Merchant Shipping (Dangerous Goods and Maritime Pollutants) Regulations 1997
11	The Air Navigation (Dangerous Goods) Regulations 2002
12	The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4)
13	Fire Service Emergency Response Options – Final Report 6/97.
14	The Control of Major Accident Hazards (Amendment) Regulations 2005
15	Registration, Evaluation and Authorisation of Chemicals (REACH) Regulations 2007
16	Dangerous Substances and Explosive Atmospheres Regulations 2002
17	EH40/2005 Workplace exposure limits

SECTION 2

Summary of Generic Risk Assessment 5.3

Incidents involving chemicals

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
1	Approaching, arriving and dismounting at incident	Insufficient information to develop safe systems of work	Contamination of Fire and Rescue Service personnel leading to acute or chronic illnesses, possible death	Fire and Rescue Service personnel Members of the public Other agencies	Training/instruction Sources of information will include: 7.2(d) inspections Liaison with other agencies Use of meteorological system (e.g. 'FireMet) Pre-planned rendezvous point and marshalling areas Operational procedure Supervision Command and control Personal protective equipment.
2	Rescues that require gaining access to the hazard area with restricted access or because of other physical hazards, to remove casualty	Restricted access and negotiating physical hazards, damaging personal protective equipment	Exposure of wearer to contaminant Heat/fatigue at extended incidents	Fire and Rescue Service personnel Members of the public	Training/instruction Supervision Operational procedures Personal protective equipment.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
3	Immediate life saving rescues	Accessibility of casualty, lack of information	Slips/trips/falls Sprains and strains Manual handling injury Trauma/psychological stress Contamination by, or exposure to hazardous material Disease/ill health/death Cuts and contusions	Fire and Rescue Service personnel Members of the public	Operational procedures Command and control Personal protective equipment Supervision Health surveillance.
4	Attempting to undertake assessment of casualty in risk area	Poor communication between casualty and rescuer resulting in inappropriate action	Inappropriate or insufficient action taking place due to incorrect diagnosis	Fire and Rescue Service personnel Members of the public Other agencies	Training/instruction Supervision Operational procedures Personal protective equipment Critical incident debriefing Confidential counselling service.
5	Donning and working in personal protective equipment Including breathing apparatus, chemical protective suit and gas tight suits	Heat/fatigue Claustrophobia Damaged personal protective equipment Poor communications	Possible collapse Panic attack Contamination of rescuer resulting in acute or chronic illnesses and possible death Inappropriate action being taken resulting in accidents and injuries	Fire and Rescue Service personnel	Training/instruction Supervision Operational procedures Personal protective equipment.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
6	Establishment of cordons	Contamination whilst setting up inner and outer cordons	Contamination by hazardous material	Fire and Rescue Service personnel Other agencies	Training/instruction Supervision Operational procedures Personal protective equipment.
7	Working at rendezvous points etc. – Marshalling and manoeuvring of appliances	Impact between vehicles and individuals due to poor visibility or limited space etc.	Impact/skeletal injury ranging from minor to major injury	Fire and Rescue Service personnel Members of the public Other agencies	Training/instruction Operational procedures Personal protective equipment.
8	Safety Officers (maintenance of inner and outer cordons)	Interacting with personnel and the public	Inadvertently becoming contaminated or exposed to hazardous material Slips/trips/falls Violence/aggression/ physical attack	Fire and Rescue Service personnel Other agencies	Training/instruction Supervision Operational procedure Personal protective equipment.
9	Environmental operations	Uncontained contaminated *'run off'*	Slips/trips/falls Sprains and strains Manual handling injury Contamination by hazardous material Exposure to hazardous material Cuts and contusions Absorption/ingestion/ inhalation of particles	Fire and Rescue Services personnel Members of the public	Training/instruction Supervision Personal protective equipment Operational procedures.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
10	Rapid withdrawal of personnel (Emergency decontamination)	Deterioration of the incident Change in wind direction affecting gas clouds	Spills/trips/falls Sprains and strains Manual handling injury Contamination by hazardous material Absorption/ingestion/ inhalation of particle Exposure to hazardous material Falls from height Impact/skeletal injury Reduced visibility Puncture wound by sharp protruding object Cuts and contusions Noise attenuation Injury from projectiles Disease/ill health/death	Fire and Rescue Service personnel Members of the public Other agencies	Training/instruction Supervision Personal protective equipment Operational procedures.
11	Incident Command (Officers not directly involved with fire fighting and search and rescue operations)	General hazards	Trauma/psychological stress Slips/trips/falls Stress/fatigue	Fire and Rescue Service personnel Senior Officers	Personal protective equipment Critical incident debriefing Confidential counselling service.

Decontamination procedure

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
12	<u>GENERAL</u> Failure of water supplies	Insufficient decontamination	Contamination – by hazardous substance Inhalation, overcome by fumes Absorption/ingestion/ inhalation of particle Slips, trips, fall Manual handling Sprains and strains	Fire and Rescue Service personnel Members of the public	Training/instruction Operational procedures Supervision Instruction Equipment to be utilised to reduce the risk (e.g. water tenders or mobile water bowser Personal protective equipment Incident command.
13	Failure of equipment	Insufficient decontamination	Contamination by hazardous substance Absorption/ingestion/ inhalation of particle Inhalation, overcome by fumes Manual handling Sprain and strains	Fire and Rescue Service personnel Members of the public	Reserve equipment or equipment provided through mutual aid Personal protective equipment Maintenance Incident command.
14	Containment of decontamination water Incorrect techniques applied	Contamination of environment	Absorption/ingestion/ inhalation of particle Inhalation, overcome by fumes	Members of the public	Training Operational procedures Supervision Personal protective equipment Incident command.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
15	**DIRTY AREA** Decontamination of wearers	Insufficient decontamination	Inhalation/overcome by fumes Absorption/ingestion/ inhalation of particle	Fire and Rescue Service personnel	Incident command Training/instruction Operational procedures Supervision Personal protective equipment.
16	Triage/first aid	Generic hazards: • exposure to distressing injuries • congested treatment areas • casualty handling • irritated or psychologically distressed casualty • exposure to contaminant on casualty	Trauma/psychological stress Slips/trips/falls Impact skeletal injury Sprains and strains Manual handling Violence/aggression/ physical attack Stress/fatigue Contamination by hazardous substance	Fire and Rescue Service personnel Members of the public	Training/instruction Operational procedures Incident command Critical incident debriefing.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
17	Dressing and working in gas tight suits	Rip/split suit Failure of breathing apparatus Emergency decontamination	Slips/trips/falls Sprains and strains Manual handling Reduced visibility Heat stress Puncture wound by sharp/protruding object Contamination by hazardous substance Noise attenuation Inhalation/overcome by fumes Absorption/ingestion Cuts and contusions Violence/aggression/ physical attack	Fire and Rescue Service personnel	Training/Instruction Operational procedures Supervision Personal protective equipment Maintenance Incident command.
18	**CLEAN AREA** Working in clean area	Change in wind direction	Contamination – by hazardous substance Inhalation/overcome by fumes Absorption/ingestion/ inhalation of particle Slips, trips, falls Manual handling Sprains and strains	Fire and Rescue Service personnel Members of the public	Incident command Training/instruction Operational procedure Supervision Personal protective equipment.

Ref. No.	Task	Hazard	Risk	Persons at risk	Control measures
19	Instigation of cordons	Overspray into clean area	Contamination by a hazardous substance Absorption/ingestion/ inhalation of particle Inhalation, overcome by fumes Slips/trips/falls	Fire and Rescue Service personnel	Incident command Training/Instruction Operational procedures Supervision Personal protective equipment.
20	Handling equipment/ gas tight suit after decontamination	Contamination by incorrectly decontaminated equipment	Contamination by a hazardous substance Absorption/ingestion/ inhalation of particle Inhalation, overcome by fumes	Fire and Rescue Service personnel	Incident command Training/instruction Operational procedures Supervision Personal protective equipment.
21	Becoming contaminated whilst undertaking any of the above tasks	Contamination	Contamination by hazardous substance	Fire and Rescue Service personnel	Post incident health surveillance.

Explanatory key:

Column	Description
1	Reference number for the risk
2	Task – the specific activity being carried out
3	Hazard – Hazard present giving rise to the risk
4	Risk – the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious
5	Persons at risk – this should detail either employee, and / or member of public
6	Control measures – That could be used by the Service to reduce the risk

Notes