

Tactical Guidance 013

Environmental Protection (EP)

Document Overview

This guidance details the hazards, control measures and tactical actions to be considered to minimise the impact of the incident and fire service actions on any identified environmental risk.

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Supporting Guidance References

Tactical Guidance	TG001: All Incident Actions TG009: Hazardous Materials	TG011: Decontamination
Operational Prompt	OP1115: Environmental Protection OP1001: Additional Resources and Specialist Advice	OP1008: Foam Sector Commander OP1057: Controlled Burn Tactic

INCIDENT SPECIFIC CHECKLIST

INITIAL ACTIONS	✓	USER NOTES
Use MDT and/ or local knowledge to aid navigation to an incident.		
Approach hazardous material incidents at slow speed from upwind and higher-level ground where possible		
Access available in-cab information, e.g. SSRI, weather monitoring via Fire Control (FireMet) Set up improvised wind monitoring devices to indicate current and changing conditions		
Consider least damaging routes to incidents – assess tracks and pathways suitability		
Ensure windows and ventilation systems are closed prior to arrival at the incident Stay clear of vapour, fumes, smoke & spills Consider generic initial cordon guidance and resource management: Solids – 25m, Liquids – 50m, Gases – 100m		
INCIDENT INFORMATION	✓	USER NOTES
Consider Recognise – Assess – React (RAR) principles Observe people and vegetation (flora and fauna) for signs of exposure or contamination and check for consistency against identification		
Identify any physical hazards, e.g. explosion, fire, flammable atmosphere, radiation, pressure build up, etc. Identify any health hazards, e.g. toxic, corrosive, biological, etc.		
Confirm and communicate the involvement, number and severity of any casualties (persons or animals) Send M/ ETHANE message – where appropriate		

Gather information from available sources to gain accurate situational awareness (360°/ Fire Control/ MDT – SSRI/ incident information/ responsible person/ Witnesses/ Audio, video equipment, e.g. CCTV		
Consider pollution prevention information contained within site specific risk plans (Where no SSRI exists, confirm location(s) of SSSI that may be affected)		
Use waterproof chemical/substance information boards to retrieve information from the scene		
Consider the availability of pollution control equipment and/or pollution containment facilities on site		
Identify the location of motorway pollution control devices and operate as necessary		
Gain, share and communicate situational awareness and relevant risk information with other responders Use Joint Understanding of Risk (JUR) to establish appropriate control measures		
RESOURCE INFORMATION	✓	USER NOTES
Consider Response Plan/ ETA		
Request sufficient and appropriate additional resources, i.e. initiate make-up		
Return any resources not required; update Fire Control on the availability status of operational resources		
Seek appropriate specialist advice (e.g. HMA/ HMEPA, EA, DIM resource, sewerage company, etc.)		
Identify safe access route(s), RVPs and marshalling areas – communicate to all, including Fire Control		
Consider availability of appropriate welfare arrangements		

HAZARD/ RISK INFORMATION	✓	USER NOTES
Refer to section 3 Hazard/ Risk table		
TACTICAL PRIORITIES	✓	USER NOTES
Carry out immediate life-saving action: Evacuate immediate area to prevent serious injury or endangerment to life		
Carry out an environmental risk assessment and monitor the impact of tactics on the identified risk		
Stabilise the incident by stopping pollution at source and contain pollution in the pathway		
Mitigate the effects of pollution in the receptor		
Manage contamination by application of zones, cordons and decontamination		
Obtain advice from the HMA/ HMEPA on the size of any downwind protection zone and to predict the likely hazard area using observation or modelling in liaison with specialist advisor(s)		
OPERATIONAL TACTICS	✓	USER NOTES
Commit crews to perform rescues based on the hazard assessment and joint understanding of risk Consider ambulant/ non-ambulant		
Deploy appropriate environmental protection/ pollution control strategy based on specialist advice (e.g. absorption, aeration, containment, controlled burn, dilution, diversion, extinguish, recycle/ recirculate, removal/ separation, treatment)		
Contain all run-off from the decontamination process until disposal arrangements are agreed Consider type of decontamination required, e.g. equipment and appliances, or people and PPE		

COMMUNICATIONS	✓	USER NOTES
Communicate the incident situation to other (external) responders via Fire Control using METHANE message protocol		
Inform appropriate agencies where environmental impacts are identified, e.g. EA, Natural England, UK Health Security Agency (UKHSA) sewerage undertakers, etc.		
Inform sewerage undertakers if discharge is to foul the water sewerage system		
Establish and maintain liaison and communication with off-site commanders and coordination centres, e.g. CHEMET, NCEC, etc.		
CONTROL	✓	USER NOTES
Consult specialist advisers from DIM or NCEC to assist with modelling potential hazard areas		
Predict any likely protection zone based on specialist advice observation or modelling		
Record within event decision log, decisions relating to the outcome of joint understanding, proprieties and multi-agency response plan		
Ensure appropriate cordons (inner and outer) are established and maintain control of access to the inner cordon		
Enforce hygiene measures and ensure personnel don't eat, drink, smoke or vape except in appropriate areas		
INCIDENT CLOSURE & HANDOVER	✓	USER NOTES
Decontaminate personnel, PPE and equipment following withdrawal from the risk area and prior to redeployment		

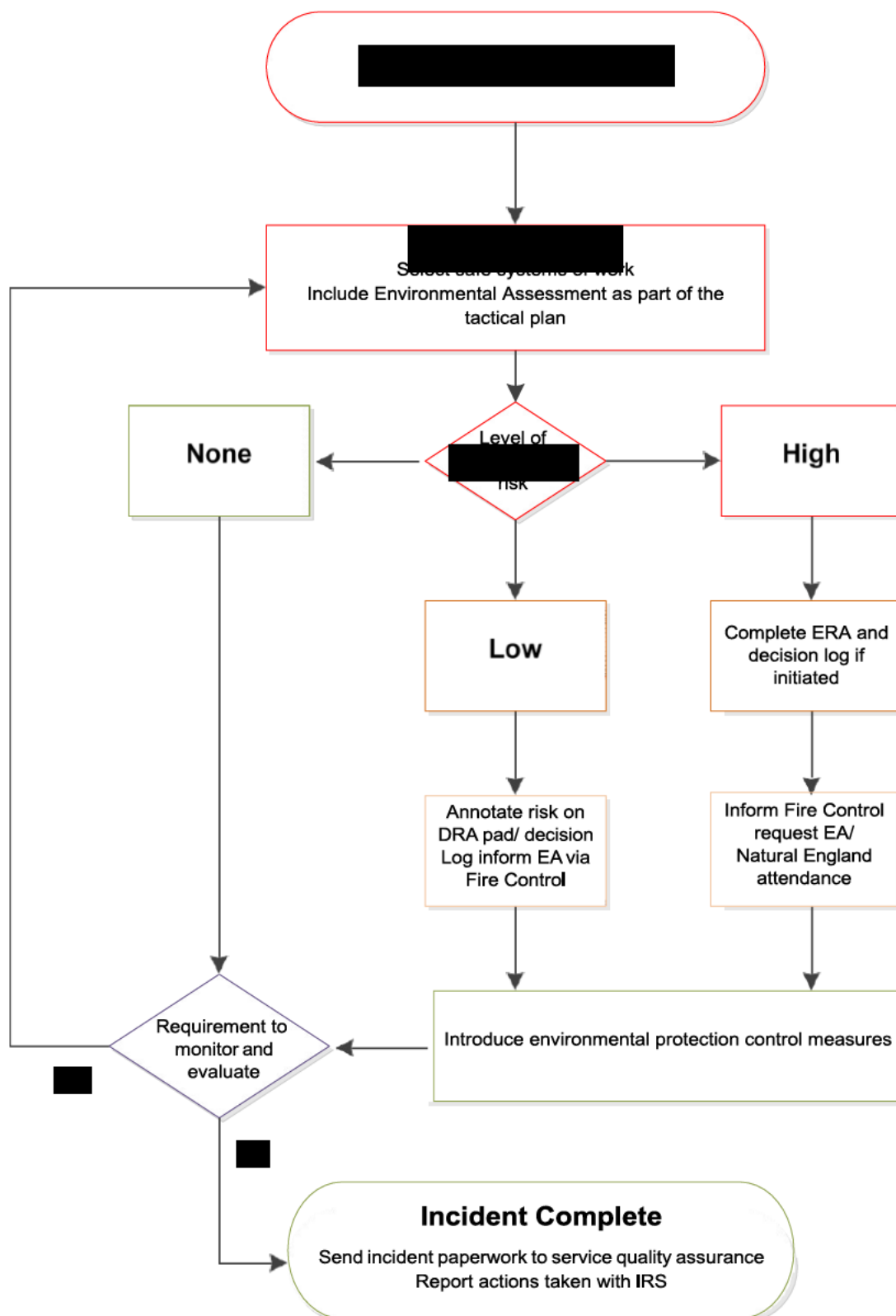
INVESTIGATIONS & INCIDENT REPORTING		
Record incident details / pollution equipment used and communicate to relevant environmental agency		
DEBRIEFING & WELFARE ARRANGEMENTS		
Ensure that all records relating to potential or confirmed contamination exposure are completed as soon as possible		
Carry out post-incident health surveillance, if exposed to solvents, fumes, dusts, biological agents and other substances hazardous to health		
HANDOVER & SITE SECURITY		
Hand over responsibility for any waste produced at the incident to a responsible person or party		
Make arrangements for hazardous waste to be safely collected and disposed of post-incident		
Identify if disposal of waste produced at an incident can be delegated to a responsible third party based on location, material and quantities involved: Polluter; local authority - playing fields, public open spaces, beaches and minor roads; landowner or owner/ occupier - private property; highways agency - major roads		

ADDITIONAL INFORMATION

Hierarchy of Containment

Hierarchy	Activity	Description
1	Containment at source	The most effective intervention point is where the source of pollution can be controlled to stop or reduce the volume released. Methods include the use of clay seal putty, leak-sealing devices, wedges, and drums. Contaminated fire water will ideally be contained at an incident scene either inside the building or as close to it as possible.
2	Containment close to source	The next point of intervention is as close to the source as possible. This may be when it is not possible to contain at source or where there has already been significant loss of pollutant. Methods include the use of grab packs, booms and pop-up pools.
3	Containment on the surface	The most common way for contaminants to enter the environment is via drainage systems. Methods to prevent this include the use of booms, clay drain mats, pipe blockers, pumps, and flexi-dams.
4	Containment in drainage system	Pollutants may be contained in drainage systems if they have already entered the system. This can be carried out using in-built pollution control devices in the drainage systems such as oil separators, penstocks and valves, which allow predictable volumes of run-off to be stored. Portable equipment such as pipe blockers can also be used.
5	Containment on or in watercourse	The deployment of booms downstream of an incident is of significant benefit where a pollutant floats. Damming can be used where pollutants are mixed or do not float but is normally restricted to small ditches and streams with low flows. Booms can also be deployed around drinking water intakes.

Environmental risk assessment flow chart



Source – Pathway - Receptor Model

Pollution control should be carried out using a Source-Pathway-Receptor model.

The first action is to identify any hazards to the environment (*the source*). When a hazard is identified, measures should be taken to prevent or reduce the risk of pollutants reaching (*via a pathway*) vulnerable parts of the environment (*the receptor*). For example, contaminated fire water (*the source*) could travel via surface drains (*the pathway*) into a local watercourse (the receptor).



INCIDENT INFORMATION

1. EN ROUTE



Approach incidents involving hazardous materials cautiously, at slow speed from upwind and higher-level ground where possible. When approaching the incident use visual and other incident indicators to inform situational awareness:

Approach cautiously and look for visual indicators these may include:

- ☐ Visible smoke/ signs of fire
- ☐ Gas/ vapour clouds or plumes
- ☐ Liquid spills, wet areas, patches, puddles, pools, streams or flowing liquids
- ☐ Oily droplets or films on surfaces or water
- ☐ Unexplained noise e.g. explosions, venting cylinders
- ☐ Presence of hazardous materials or equipment not relevant to the occupancy
- ☐ Distinct odours e.g. bleach, garlic, rotten cabbage, rotten eggs, (out of character with the surroundings)
- ☐ Cryogenic effect of escaping product, e.g. signs of frosting around defective pipes or LPG container
- ☐ Dead or distressed people
- ☐ Individuals showing unexplained signs of skin, eye or airway irritation, vomiting, twitching, disorientation, breathing difficulties, convulsions and death
- ☐ Biological indicators, e.g. dead birds, animals, fish, trees and withered plant life or vegetation
- ☐ Casualties and other people involved in the incident may physically mark the hazard area or they may be able to describe it based on their experience



Use weather information systems to identify impact of wind, rain and temperature on the incident:

- ☐ FireMet, CHEMET, etc.
- ☐ Anemometers (on specialist units)
- ☐ Improvised wind monitoring devices (e.g. make-shift flag, wind-sock, etc.)



Gather incident information from a suitable safe distance based on hazard assessment:

- ☐ Placarding and signage e.g. UN hazard warning labels, ADR placards, etc.
- ☐ The Dangerous Goods Emergency Action Code list (DGEAC)
- ☐ The Globally Harmonised System (GHS)

- ☐ United Kingdom Hazard Information System (UKHIS) – Emergency Action Code (EAC)
- ☐ Workplace exposure limit signs
- ☐ Safety Data Sheets (SDS)
- ☐ Transportation documents, e.g. instructions in writing

1.1. ON ARRIVAL



Consider Recognise – Assess – React principles

R – RECOGNISE the indicators of a hazardous substance incident;

A – ASSESS the incident to inform an appropriate response strategy;

R – REACT appropriately to reduce the risk of further harm



Observe individuals for signs of exposure or contamination and check for consistency against identification:

- ☐ Four routes of exposure can lead to symptoms developing:
 - Ingestion
 - Contact with skin or eyes
 - Inhalation
 - Injection or through cuts
- ☐ Consider use of Casualty Assessment tool (CRESS)
 - C - CONSCIOUSNESS – What is the level of consciousness?
 - R - RESPIRATION – What is the respiratory rate – is it increased or decreased?
 - E - EYES – Examination of pupils and their reaction;
 - S - SECRETIONS – Are there increased or decreased secretions;
 - S - SKIN – Examine for colour and other signs such as sweating.
- ☐ Symptoms from hazardous materials will be either acute or chronic:
 - **Acute:** Substances whose effects develop quickly (usually within minutes to days) and worsen with increasing levels of exposure
 - **Chronic:** Substances whose effects develop after significant periods of time and usually following repeated exposure, for example, substances that can cause cancer



Access any operational or site-specific risk information and confirm accuracy:

- ☐ Review information on pollution, prevention and control where a risk to the environment is identified at an incident

- ☐ Consult environmental damage risk plan(s) to assist understanding environmental protection action to be taken in the early stages of an incident
- ☐ Consider reviewing the following, in addition to general site-specific information:
 - Dangerous Substances and Explosive Atmospheres Regulations (DSEAR)
 - Manufacture and Storage of Explosives Regulations (MSER), enforcement notices, prohibition notices, etc.)
 - Notification and Marking of Sites (NAMOS) inspections and information
 - British Agrochemicals Safety Inspection Scheme (BASIS) inspections and pre-plans
 - The asbestos register
 - Significant Control of Substances Hazardous to Health (COSHH) assessments
 - Control of Major Accident Hazards (COMAH) plans and information
 - [REDACTED]

**Identify and contact the responsible person to understand incident factors and history:**

- ☐ Key questioning may ascertain:
 - Whether there is an immediate risk to life
 - The extent of the incident
 - Properties and quantities of hazardous materials involved
 - Actions already taken
 - Whether on-site emergency plans have been activated
 - Existence and operation of any engineered solutions
 - Existence of any safety devices and their operation

**Consider deliberate reconnaissance based on a joint understanding of risk:**

- ☐ Deploy for substance analysis or identification, primarily
- ☐ Personnel must be competent to wear self-contained breathing apparatus
- ☐ A JUR must be undertaken in line with JESIP principles, an assessment of risk recorded within an ARA and the decision to deploy a deliberate reconnaissance team captured within an event decision log
- ☐ Deployed resources should be agile, flexible and scalable and will be used to potentially:
 - Confirm or deny the presence of material
 - Identify the contaminant
 - Identify the footprint of the contamination
 - Inform command assessment decisions
 - Aid scene management
 - Identify avoidance routes into the target area

- Identify potential sources of evidence and intelligence



Identify the location of motorway pollution control devices and operate as necessary:

- ☐ PCDs (e.g. drain closure valves, storage lagoons or balance ponds) are installed in some surface water drainage systems
- ☐ The use of PCDs can help contain pollutants – if permission is given by the sewerage company, the owner/ occupier or highway authority
- ☐ The Environment Agency may have access to large volume pumps that can be used to support supplement or replace FRS pumps

RESOURCE INFORMATION

2. RESOURCES



Consider requesting appropriate specialist advice:

- ☐ Hazardous materials adviser (HMA/HMEPA)
- ☐ Environment Agency
- ☐ FRS Environmental Protection Unit (Service specific)
- ☐ Request DIM resources from the NRFC if required, using agreed protocols
- ☐ Consider requesting a drone to assist with informing accurate situational awareness
- ☐ UK Health Security Agency (UKHSA) for air monitoring function
- ☐ See OP: Additional Resources & Specialist Advice



Specialist hazardous materials advice may be required to:

- | | |
|---|--|
| ☐ Identify the release or spill | ☐ Identify the hazards posed by the release |
| ☐ Identify or predict physical or chemical reactions | ☐ Assist with the selection of the most appropriate personal protective equipment (PPE) |
| ☐ Mitigate further damage to the environment | ☐ Assist with decontamination of people and equipment |
| ☐ Ensure response plans and tactics are appropriate and safe | ☐ Advise on the treatment of people who have been exposed |
| ☐ Assess wider public safety concerns | |
| ☐ Assist with investigations and debriefings | |

2.1. RESOURCE MANAGEMENT



Consider the deployment of oncoming resources when positioning personnel and vehicles:

- ☐ Sectorisation:
 - ☐ Operational sectors
 - ☐ Support sectors: BA, water, etc.
- ☐ Establish RVP(s), marshalling areas, SHA or MASHA – where necessary
 - ☐ Ensure that an area safety check is carried out whenever attending an RVP or marshalling area
- ☐ Consider positioning of welfare arrangements and operational reliefs

- ☐ Confirm that all required agencies have been requested or notified, e.g. Police, Ambulance, EA, and are en route
- ☐ Medical support for any casualties – and safety of incident responders if required

HAZARD/ RISK INFORMATION

Consider and review significant hazards and appropriate control measures. The table below identifies hazards that are likely to be present at an incident and suggests appropriate control measures that could be implemented to reduce risk to fire service personnel, other responders and the public. These are not tactical actions that prompt incident commanders to resolve the incident.

Utilise this information where relevant and the risk information gathered at the incident to develop risk assessments appropriate to the dynamics of the situation.

Hazards/ Risks	Control Measures
☐ Hazardous material – Release or spill	☐ Safe and controlled approach (e.g. upwind/ upslope, cautious, etc.) ☐ Request specialist advice: HMEPA/ HMA, EA ☐ Use of initial visual indicators ☐ Detect and identify material involved and quantity (use signs, markings, detection equipment, etc.) ☐ Establish cordons and avoidance routes (establish, maintain and review) ☐ Establish downwind protection zone(s). ☐ Containment: Hierarchy of containment ☐ Absorption: Granules, sand, etc. ☐ Dilution: Request guidance from EA
☐ Fire water run-off	☐ Operational Risk Plan: SSRI etc. ☐ Controlled burning - See <u>OP: Controlled Burn</u> ☐ Containment: Hierarchy of containment ☐ Recycling/ recirculation of fire water ☐ Reduction in application rates, e.g. sprays ☐ Consider disposal
☐ Firefighting with foam	☐ Operational Risk Plan: SSRI etc. ☐ Containment: Hierarchy of containment ☐ Substitution: Alternative foam/ media, etc. ☐ Reduction in application rates ☐ Disposal: Use of foul sewer (dynamic stages) ☐ Inform EA and/ or sewerage undertaker
☐ Smoke Plumes – (air pollution)	☐ Operational Risk Plan: SSRI etc. ☐ Controlled burning: Accelerated burn - See <u>OP: Controlled Burn</u>

	☐ Extinguish: Incident requiring large amounts of water to be pumped e.g. HVP ☐ Removal/ separation: Material, foam application ☐ Air quality cell ☐ Air monitoring – use of CO monitors ☐ Warn and inform messaging for the public
☐ Polluting Materials ○ Spillages ○ Damage to storage vessels	☐ Operational Risk Plan: SSRI, etc. ☐ Request specialist advice: HMEPA/ HMA/ EA ☐ Containment: Hierarchy of containment ☐ Dilution: Request guidance from EA ☐ Absorption: soil, sand, cement etc. ☐ Transportation ☐ Aeration ☐ Treatment ☐ Disposal: Use of foul sewer (dynamic stages) ☐ Decontamination: Containment at scene
☐ Physical damage to the environment	☐ Operational Risk Plan: SSRI, etc. ☐ Identify and use defined paths and tracks ☐ Liaise with conservation bodies: ANC/ SSSI ☐ Seek advice from landowners ☐ Establish cordons/ avoidance routes/ exclusion zones
☐ Leaks from high pressure oil pipelines ○ Ignition	☐ Operational Risk Plan: SSRI, etc. ☐ Consider Blanketing pollutant with foam ☐ Containment: Hierarchy of containment ☐ Diversion: Sacrificial areas, low lying areas
☐ Bio Security ○ Cross-contamination	☐ Operational Risk Plan: SSRI etc. ☐ Request specialist advice: HMEPA/ HMA/ EA ○ During exotic animal disease outbreaks ☐ Containment: Hierarchy of containment ☐ Decontamination: Containment at scene (PPE, vehicles, equipment)

PLANNING: TACTICAL PRIORITIES & OPERATIONAL TACTICS

4. TACTICAL PRIORITIES

**Carry out immediate life-saving action:**

- ☐ Evacuate the immediate area to prevent serious injury or endangerment to life
- ☐ Direct the public/ casualties away from the scene, upwind and upslope of contamination/ point of release
- ☐ Follow Initial Operational Response if pollutant material is hazardous or [REDACTED] and a risk to life exists:
 - Recognise – Assess – React principles
 - Use of PPE and [REDACTED], limited reconnaissance and rescue activities in the hot and warm zones – maximum of 15 minutes to provide confirmation of saveable life or perform a snatch rescue

**Stabilise the incident by stopping pollution at source and contain pollution in the pathway:**

- ☐ Follow containment hierarchy for liquids and other materials:
 - Contain at the source
 - Contain close to the source
 - Contain on the surface
 - Contain on the drainage systems
 - Contain on or in the watercourse
- ☐ For containment of airborne particles/ smoke plumes, consider:
 - Extinguishing root cause
 - Removal or separation

**Mitigate the effects of pollution in the receptor:**

- ☐ With guidance from HMA/ HMEPA and EA, consider tactics to mitigate receptor pollution:
 - Containment – hierarchy of containment principles
 - Dilution – using large amounts of water
 - Absorption – using absorbent materials like pads, sheets and booms
 - Aeration – raise oxygen levels of water by pumping water into the air through jets
 - Treatment – specialist techniques employed by the EA to treat watercourse pollution
 - Disposal – liaise with sewerage company to dispose of fire water run-off in foul sewer

**Manage contamination by application of zones, cordons and decontamination:**

- ☐ Initial cordons should be temporarily established by the first emergency responders before any detailed scene assessment is carried out
- ☐ Where hazardous materials are involved and identified as toxic by inhalation, it may be necessary to extend cordons/ zones in the downwind direction to protect people from vapours, gases or dusts:
 - UK Health Security Agency (UKHSA) and public health agencies have the responsibility for public safety in the extended downwind area, beyond the incident risk area (as identified by inner/ outer cordons or hot, warm and cold zones)
- ☐ Establish firefighter decontamination arrangements prior to committing personnel to the hot or warm zone

4.1 OPERATIONAL TACTICS

**Commit crews to perform rescues based on the hazard assessment and joint understanding of risk with other responders:**

- ☐ Consider ambulant and non-ambulant condition of casualty(s):
 - Prioritise/ triage those most at risk, e.g. breathing, conscious but unable to walk should be regarded as a high priority to be rescued
- ☐ Remove casualties from areas of greatest contamination to an area of relative or ultimate safety
- ☐ Consider appropriate level of PPE, e.g. gas-tight suits:
 - If gas-tight suits compromise the ability to rescue non-ambulant saveable life casualties in a timely manner, review the calculated-risk of using acceptable PPE alternatives, e.g. structural firefighting PPE, BA and gauntlets

**Deploy appropriate environmental protection/ pollution control strategy based on specialist advice:**

4.1.1. OPERATIONAL RISK INFORMATION PLAN

- ☐ Review and implement pollution and prevention information contained within site-specific risk information and site-protection plans
- ☐ Carry out an environmental risk assessment:
 - Environmental DRA (included as part of a DRA)
 - Normally confined to small (1 to 2 pump) incidents
 - Carried out by Incident Commander or HMA (if in attendance)

- Record actions taken to prevent/ reduce environmental damage
- National Environmental Risk Assessment (NERA)
 - Used mainly at larger or prolonged incidents
 - Completed by personnel trained in its use (the responsibility for completing and maintaining the ERA should fall with a HMA/ HMEPA)
- Operate any fixed installations or pollution prevention measures designed to mitigate environmental impact – review effectiveness

4.1.2. SPECIALIST ADVICE

- Liaise with the appropriate environmental agencies regarding the incident. Namely:
 - HMA/ HMEPA
 - Environment Agency
 - Nature conservation bodies
 - Public Health Organisations (PHO)
 - National Chemical Emergency Centre (NCEC)
 - Sewerage undertakers
 - Pipeline operator/ contracted specialist
 - Local authority/ highway agencies
 - Other relevant parties including: police, landowners, chemical suppliers, marine agencies, etc.
- Appoint HMA/ HMEPA to oversee environmental protection activities
- Seek specialist advice for hazardous materials from:
 - Chemical suppliers whose products are held at the incident site
 - Contracted specialist advice
 - Chemsafe
 - National Chemical Emergency Centre

4.1.3. LIAISON WITH CONSERVATION BODIES

- Seek advice from landowners and other bodies on susceptible areas of the environment, e.g. Areas of Nature Conservation (ANC), Sites of Special Scientific Interest (SSSI), etc.
- Implement an appropriate protection plan with conservation bodies when an identified nature conservation site is at risk

4.1.4. ABSORPTION

- Consider the appropriate type of absorbent to be used for pollutant based on material properties, e.g. chemical, oleo-phobic or philic, hydro-phobic or philic

- ☐ Contain minor spills using absorbent materials carried on appliances or environmental protection units, e.g. pads, sheets, booms
- ☐ Use improvised absorbent methods where necessary, e.g. soil, sand or cement containment
- ☐ Consult with EA and responsible person for appropriate disposal, based on the 'polluter pays' principle

4.1.5. AERATION

- ☐ Liaise with EA and/ or HMA/ HMEPA when aeration techniques are to be used
- ☐ For organic pollutants, such as milk and sewage, pump affected water into the air through hose jets to raise oxygen levels

4.1.6. AIR QUALITY CELL

- ☐ If major chemical air pollution occurs at an incident, the EA and public health bodies will set up an air quality cell. The air quality cell will co-ordinate air monitoring and will provide air quality information:
 - Request an air quality cell function through Fire Control
 - Implement appropriate control measures on receipt of air quality information/ health advice from the air quality cell
 - Monitor and review the potential impact on public health with the assistance of the public health agency

4.1.7. CONTAINMENT

- ☐ Consider legal exemptions:
 - Discharge is made in an emergency to avoid danger to human health
 - All reasonably practicable steps were taken to minimise pollution
 - The relevant environment agency is informed of the incident as soon as possible
- ☐ Carry out environmental risk assessment to identify:
 - Site drainage
 - Local surface waters and/ or groundwater vulnerabilities, e.g. nitrate vulnerable zones
- ☐ Follow containment hierarchy for liquids and other materials:
 - Contain at the source
 - Contain close to the source
 - Contain on the surface

- Contain on the drainage systems
 - Contain on or in the watercourse
- ☐ Control pollution using the source – pathway – receptor model:
 - Stop pollution at the source – contain pollution in the pathway – mitigate consequences in the receptor
 - Confirm presence and location of any water abstraction points
- ☐ Make use of pollution control equipment and/ or pollution containment facilities on-site (where available), e.g. interceptors, drain closure valves, containment tanks, etc.
- ☐ Establish the location of the nearest sewage treatment works and whether it has the capacity to contain and/ or treat fire water run-off
- ☐ Divert fire water run-off to holding areas or sacrificial areas that will not affect firefighting operations – see 4.1.20: *Diversion*
- ☐ For released vehicle content and/ or fire water run-off on highways, locate and operate motorway pollution control devices (if available)

4.1.8. **CONTAINMENT: FOAM**

- ☐ Apply tactics from 4.1.5: *Containment*
- ☐ Prevent firefighting foam from entering surface and groundwater during an incident and when making-up

4.1.9. **CONTROLLED BURN**

- ☐ Consider a controlled burn strategy – see OP: Controlled Burn
- ☐ **NB.** Any decision to adopt a controlled burn strategy should be made following consultation with relevant agencies – see 4.1.2 – Specialist Advice

4.1.10. **DILUTION**

- ☐ Avoid flushing spillages down drains without approval from the EA or sewerage company – seek advice
- ☐ Dilute domestic quantities of spillage with large amounts of water
- ☐ Avoid flushing detergents or other chemicals used to assist with clean up or treatment down drains

4.1.11. **DISPOSAL**

- ☐ Identify if the responsibility for disposal of waste produced at an incident can be delegated to a third party based on location, material and quantities involved. Namely:
 - Polluter
 - Local authority - playing fields, public open spaces, beaches and some roads
 - Landowner or owner/ occupier - private property
 - Highways agency - major roads
- ☐ Inform the EA of any FRS decision to discharge and subsequently contaminate the water environment based on the exemption of saving life
- ☐ Consider using foul sewage systems for disposal:
 - Inform sewerage undertakers if discharge is to foul water sewerage systems
 - **NB.** Sewerage undertakers can choose to approve/ disapprove the discharge based on impact
 - Agreement from the EA must be obtained before any release takes place. Can be via telephone at the incident, however, must be formally applied for and confirmed in writing post-incident
 - Identify alternative methods of disposal, e.g. suitable on-site arrangements, use of tankers to transport contaminated water, etc.

4.1.12. DIVERSION

- ☐ Identify sacrificial areas where pollutants can be diverted, e.g. low-lying areas, such as roadways
- ☐ Inform/ request the attendance of the EA and any other relevant agency deemed appropriate for the incident – see 4.1.2: *Specialist Advice*

4.1.13. EXTINGUISH

- ☐ Make use of high volume pumps in order to prevent the release of polluting materials, e.g. smoke plumes:
 - Avoid over-drawing water supply as this can damage ecosystems
 - Inform the EA when a high volume pump is used or where large volumes of water are being pumped
 - Request EA pumps to supplement high volume pumps – at significantly protracted incidents
 - Consider post-incident decontamination of vehicle(s) and equipment

4.1.14. RECYCLING/ RECIRCULATING

- ☐ Assess the impact of the material involved in fire, before deciding to recycle fire water run-off; consider if material is physically hazardous or harmful to health
- ☐ Recirculating fire water run-off could be considered. Ensure:
 - Smooth bore branches are used as to avoid blockages
 - False bottom dams or pools (made from plastic trays), containment tanks or lagoons are used to reduce blockages from particulates contained within fire water run-off
 - A portion of the fire water is replaced each time with fresh water – to reduce the level of pollution and debris
- ☐ Recognise the potential contamination of equipment and PPE:
 - Ensure recirculated fire water is not harmful to either, personnel attending the incident or the local population
 - **NB.** Recycling fire water run-off can increase the concentration of pollution and increase the risk of spreading pathogens within recycled water spray

4.1.15. REDUCTION

- ☐ Consider reducing water strategy if there is no risk of escalating the incident, nor compromising safety. Reduction methods could include:
 - Reduced application rates
 - UHPL, fog spike/ nail, etc.
 - Use of water spray settings from jets
 - Initiating a controlled burn strategy – see 4.1.4: *Controlled Burn*

4.1.16. REMOVAL/ SEPERATION

- ☐ To mitigate the effects of smoke plumes, particularly fires associated with open-air storage sites, such as waste sites, consider:
 - The use of firefighting foam, e.g. CAFS to prevent fire spread and large smoke plumes
 - Separate burning materials from the fire using heavy plant, e.g. USAR telehandler or on-site equipment, and extinguish with water jets, banded pools, tanks of water, controlled burn, or burial – with approval of the EA

4.1.17. SUBSTITUTION

- ☐ Where foam has been applied and there is a significant risk to the environment, evaluate:
 - Alternative types of foam (if available)
 - Using a different extinguishing media
 - High-pressure water fogging systems (if available)

- Adopting a controlled burn strategy. See 4.1.4 – *Controlled Burn*

4.1.18. TRANSPORTATION

- ☐ Consider legal exemptions before transporting hazardous waste – in exceptional lifesaving circumstances
- ☐ Ensure the EA is informed of the incident and is involved in any decision made to transport hazardous waste
- ☐ Follow existing management and transportation processes, e.g. clean-cab, storage separation within vehicles, bagging, identification, etc.

4.1.19. TREATMENT

- ☐ Treatment of pollution in a watercourse are specialised techniques employed by the EA or specialist contractors:
 - Maintain close liaison with EA and/ or specialist advisers where FRS personnel or equipment are used to support any form of treatment activity



Contain all run-off from the any decontamination process until disposal arrangements are agreed:

4.1.20. DECONTAMINATION

- ☐ Consider the type of decontamination required, e.g. equipment and appliances, or people and PPE
- ☐ Equipment and appliances:
 - Decontaminate equipment/ appliances at the incident site to reduce the risk of spreading any contaminant
 - For low level contamination, flush equipment through with mains water
 - Discharge run-off to a foul sewer (if approved by the sewerage company)
 - For high level contamination, contain and remove run-off using a registered waste carrier
- ☐ People and PPE:
 - Decontaminate people and PPE based on the physical and health hazards of the involved pollutant
 - Identify appropriate decontamination area for people; protect public drinking water supplies from the effects of run-off
 - See – *TG: Hazardous Materials*
 - Consider informing the EA where any form of decontamination is carried out

COMMUNICATION & CONTROL

5. COMMUNICATION



Share situational awareness and establish a joint understanding of risk with other agencies:

- ☐ Inform and advise other multi-agency partners on the significance of any risks, including the extent of cordons, hazard/ exclusion zones and advice to the public, e.g. need to evacuate or close windows/ doors, etc.



Ensure that all appropriate environmental agencies are informed of the incident when required:

- ☐ Seek specialist advice at any incident that could pollute the environment, e.g. HMA/ HMEPA, NCEC, etc.
- ☐ See OP: Additional Resources/ Specialist Advice



Use the most effective methods for communicating with people who are either directly or indirectly involved in the incident:

- ☐ Warnings, information and advice should:
 - Be specific and clear
 - Be timely and accurate
 - Come from a credible source and be verifiable
 - Convey the nature and extend of the danger
- ☐ Deliver method of communication using:
 - Face-to-face
 - Visiting premises
 - Media and social media announcements
 - Public announcements in areas, such as transport networks



Inform sewerage undertakers if discharge is to foul the water sewerage system:

- ☐ Consider if the foul sewage system is the most appropriate disposal option
- ☐ Sewerage undertakers will make an assessment of the likely impact and choose to approve/ disapprove the discharge
- ☐ Agreement from the EA must be obtained before any release takes place:

- Agreement can be obtained via telephone at the incident
- Must be formally applied for and confirmed in writing, post incident

5.1. CONTROL



Predict any likely protection zone based on observation or modelling potential hazard areas. Consult with specialist advisors:

- ☐ Met Office Hazard Managers can provide accurate modelling through the use of FireMet, CHEMET, Emergency Response Guidebook or Aerial Locations of Hazardous Atmospheres (ALOHA) software
- ☐ Hazard Managers are available to incident command units, Fire Control and DIM units, as well as the National Co-ordination Centre
- ☐ Request specialist advice from a HMA/ HMEPA to interpret downwind protection zones
- ☐ Request air quality cell function:
 - The responsibility for air quality monitoring falls outside of FRS personnel
- ☐ Effective model application requires a number of factors to be identified and considered:

○ Physical and chemical properties ○ Quantity, concentration, release rate and surface area ○ Weather and ambient conditions ○ Fire or explosion risk	○ Topography and site layout, e.g. slopes, spacing of tanks, etc. ○ Method of containment ○ Whether the containment system will cope ○ That mixtures of hazardous materials are dangerous ○ Combinations of additional hazards
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Ensure that appropriate inner and outer cordons are established and communicated following an assessment of risk to all people present:

- ☐ Initial cordons should be temporarily established by the first emergency responders before any detailed scene assessment is carried out
- ☐ Where hazardous materials are involved and identified as toxic by inhalation, it may be necessary to extend cordons/ zones in the downwind direction to protect people from vapours, gases or dusts:
 - UK Health Security Agency (UKHSA) and public health agencies have the responsibility for public safety in the extended downwind area, beyond the incident risk area (as identified by inner/ outer cordons or hot, warm and cold zones)



Enforce hygiene measures and ensure personnel don't eat, drink, smoke or vape except in appropriate areas:

- Normal hygiene and welfare procedures should be enhanced where greater risk of personnel encountering dangerous substances is realised:
 - Supervisory personnel to monitor hygiene arrangements, to ensure sufficiency
 - Eliminate contamination and cross-contamination risk
 - Ensure copious supplies of drinking water
 - Supervisory personnel to monitor recovery of wearers who've been deployed in Chemical Protective Clothing (CPC) or Gas-Tight Suits (GTS)

INCIDENT HANDOVER & CLOSURE

6. DEBRIEFING AND POST INCIDENT WELFARE



Consider decontamination of personnel, PPE and equipment prior to redeployment:

- ☐ See TG: Hazardous Materials



Ensure that all records related to contamination and exposure or potential exposure are completed as soon as possible:

- ☐ Complete service specific Hazmat nominal role and specific personal exposure records – as required
- ☐ Seek clarification from HMA/ HMEPA



Complete health-surveillance protocols for reporting concerns about mental or physical well-being of personnel and/ or other individuals:

- ☐ Early identification of ill health and corrective action needed for exposure to:
 - Solvents
 - Fumes
 - Dusts
 - Biological agents
 - Other substances hazardous to health

6.1. HANDOVER AND SITE SECURITY



Implement service procedures for dealing with hazardous waste, post incident:

- ☐ Identify who is responsible for the waste material
- ☐ Inform responsible person(s) of handling, transportation and disposal requirements – in consultation with HMA/ HMEPA
- ☐ Consider the need to provide a disposal route (on rare occasions). This should be carried out through an agreement with a registered waste contractor, limited to:
 - FRS equipment or equipment for secondary decontamination



Identify if the responsibility for disposal of waste produced at an incident can be delegated to a third party based on location, material and quantities involved:

- ☐ Local authority – playing fields, public open spaces, beaches and some roads
- ☐ Landowner or owner/ occupier – private property
- ☐ Highways agency – major roads

Glossary of Abbreviations

ADR	European agreement of the transport of dangerous goods by road or rail	HIS	Hazardous Information System
ALOHA	Aerial Locations of Hazardous Atmospheres	HVP	High Volume Pump
ANC	Areas of Nature Conservation	JESIP	Joint Emergency Services Interoperability Principles
ARA	Analytical Risk Assessment	JUR	Joint Understanding of Risk
BASIS	British Agrochemicals Safety Inspection Scheme	LPG	Liquefied Petroleum Gas
CAFS	Compressed Air Foam System	MASHA	Multi-Agency Strategic Holding Area
██████	████████████████████	MSER	Manufacture and Storage of Explosives Regulations
CCTV	Closed-Circuit Television	MDT	Mobile Data Terminal
CHEMET	Chemical Meteorology service	NAMOS	Notification and Marking of Sites
COMAH	Control of Major Accidents and Hazards	NERA	National Environmental Risk Assessment
COSHH	Chemicals of Substances Hazardous to Health	NCEC	National Chemical Emergency Centre
CPC	Chemical Protection Clothing	NRFC	National Resilience Fire Control
DIM	Detection Identification and Monitoring team	PCD	Pollution Control Devices
DGEAC	Dangerous Goods Emergency Action Code	PHO	Public Health Organisations
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations	PPE	Personal Protective Equipment
DRA	Dynamic Risk Assessment	RAR	Recognise Assess React
EA	Environment Agency	██████	████████████████████
EAC	Emergency Action Code	RVP	Rendezvous Point
ETA	Estimated Time of Arrival	SDS	Safety Data Sheet
FireMet	Met Office FRS weather information	SHA	Strategic Holding Area
FRS	Fire & Rescue Service	SSRI	Site-Specific Risk Information
GHS	Globally Harmonised System	SSSI	Site of Special Scientific Interest
GTS	Gas-Tight Suit	UHPL	Ultra-High Pressure Lance
HazMat	Hazardous Materials	UKHSA	UK Health Security Agency
HMA	Hazardous Materials Adviser/ Hazardous Materials and Environmental Protection Adviser	UN	United Nations

		USAR	Urban Search and Rescue
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National Operational Guidance References

	National Operational Guidance – Environmental Protection National Operational Guidance: Scenario – Environmental Protection
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Partnership Relevant References

	
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Other Related Guidance

	Environmental Protection Handbook for the Fire & Rescue Service
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Version Control

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All	1.0	Approved to publish	16/07/2021	
All	1.1	Replace “Step123” with “Recognise, Assess, React Inclusion of CRESS	06/07/2023	
All	1.2	Replace “Public Health England” with UK Health Security Agency	16/08/2023	