



# Card 3: Chemicals

Date:

## Emergency Response

Has a Major Incident been declared? Yes  No  Standby   
 HPA 'Chemical on-call' 24-hour contact number: 0844 892 0555

Ensure the following have been alerted					
HPA		NHS		OTHER	
Local HPU (out-of-hours relevant public health on-call) – request internal cascade to:	<input type="checkbox"/>	Hospital Emergency Department	<input type="checkbox"/>	Police	<input type="checkbox"/>
ERD	<input type="checkbox"/>	Director of Public Health	<input type="checkbox"/>	Fire & Rescue	<input type="checkbox"/>
CRCE	<input type="checkbox"/>	Emergency Planner	<input type="checkbox"/>	Ambulance Service	<input type="checkbox"/>
Regional HEPA	<input type="checkbox"/>			Environment Agency	<input type="checkbox"/>
Communications	<input type="checkbox"/>			Met Office	<input type="checkbox"/>

Incident	Details
Location (including postcode)	<input type="text"/>
Date and time	<input type="text"/>
Population affected: places	<input type="text"/>
Population affected: groups	<input type="text"/>
Wind direction and speed	<input type="text"/>
CHEMET requested	<input type="text"/>
Topography	<input type="text"/>

Have Police, Fire & Rescue or Ambulance Service detected a chemical release?				
Yes <input type="checkbox"/> No <input type="checkbox"/>				
If Yes, then which service?				
Detection equipment (e.g. HAZMAT ID)				
Chemical	CAS number (if known)	Form (liquid/solid/gas)	Chemical concentration	Location/postcode/grid reference (multiple site incidents)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Emergency plans** Follow advice from applicable specific plans if available, e.g. COMAH. Advice may include 'No need to take precautions/protection'. If airborne hazard is suspected, the Police/Fire Services should use FireMet/CHEMET to identify downwind hazard sector. If an extended or dispersed hazard is suspected the default public health message is 'Go In, Stay In, Tune In'

## Health Protection

<b>What are the physical properties of the chemical(s) that you should be looking for?</b>	
Odour/colour	Distinctive, recognisable?
Dispersion properties	Heavier (spreads at ground level) or lighter than air (more likely to disperse)
<b>Potential sources</b>	Due to nearby industry, transport accidents or could this be a deliberate release?
<b>Exposure reduction</b>	Ensure your own safety. Emergency services will adopt personal protective equipment (PPE) based on an ongoing risk assessment, usually advised by the Fire & Rescue Service. Decontamination may be required
<b>Resultant symptoms</b>	Has exposure caused clear symptoms? Use to identify potential chemicals (see overleaf)

## Clinical Effects

Chemical group	Exposure route		
	Inhalation	Dermal	Ingestion
<b>Lung damaging agents and corrosives:</b> Chlorine, Phosgene	Upper and lower respiratory tract irritation, stridor, dyspnoea, wheezing, pulmonary oedema	None if exposure to gas. Exposure to liquid at low temperature can cause burns	Oral pain, ulcerations, drooling, dysphagia, vomiting, abdominal pain, perforation
<b>Nerve agents:</b> Tabun, Sarin, Soman, VX	Constricted pupils, painful and dim vision, excess secretions of saliva and sweat, breathing difficulty, increased respiratory rate, muscle twitching, convulsions, coma, chest tightness, rhinorrhoea	Localised sweating, may lead to systemic effects	Vomiting, abdominal pain, nausea, diarrhoea, involuntary defecation otherwise as per inhalation
<b>Blister agents:</b> Sulphur Mustard (Mustard Gas), Lewisite, Phosgene Oxime	Hoarseness, voice loss at 2–6 hours. Cough developing over 1–3 days – necrotic slough may be coughed up. Dyspnoea, fever, painful swollen throat. Chemical pneumonitis and bronchiolitis. Late onset pneumonia: main cause of mortality. Bone marrow depression leading to fall in white blood cell count.  <b>Eyes – mild effects:</b> watering, gritty red painful eyes, periorbital oedema; <b>moderate to severe effects:</b> painful blepharospasm leading to temporary blindness, corneal ulceration	Reddening and slight oedema of the skin at 4–6 hours, reddening may fade to leave areas of hyperpigmentation. Blisters filled with clear to yellow fluid appear at 13–24 hours	Nausea, vomiting, pain, bloody diarrhoea, dehydration in severe cases. Systemic effects may then occur following acute exposure: generalised malaise, anorexia
<b>Cyanides:</b> Hydrogen Cyanide, Cyanogen Chloride	<b>Severe exposure:</b> Immediate rapid deep breathing. Convulsions 20 seconds later. Collapse, respiratory arrest and fixed dilated pupils within minutes. Cyanosis unusual. Skin sometimes cherry red. <b>Moderate exposure:</b> Dizziness, headache, nausea and vomiting, agitation, excitation, dyspnoea, tight chest, convulsions and coma if exposure prolonged <b>Mild exposure:</b> Dizziness, headache, nausea, dyspnoea, tight chest, anxiety, metallic taste in mouth	Skin irritation, burns in case of cyanogen chloride. Hydrogen cyanide gas has no effect on skin	N/A

## Agent-specific Interventions – see [www.toxbase.org](http://www.toxbase.org)

NB: pod activation via ambulance service or blood transfusion service

Agent	Intervention
<b>Chlorine/ Phosgene</b>	Airway and ventilation if signs of respiratory failure. Give Salbutamol +/- inhaled steroids for wheeze or bronchospasm
<b>Nerve agents</b>	Administer Combopen if available. Atropine and ventilatory support are the mainstay of treatment. Oximes (e.g. Pralidoxime) and Diazepam should also be given
<b>Lewisite/ Mustard Gas</b>	There is no specific therapy for sulphur mustard poisoning. Treatment is symptomatic and supportive. If exposure is via oral route, activated charcoal may be of use. (Gastric lavage or emetics are not indicated.) British Anti-Lewisite, Dimercaprol, is a specific antidote for Lewisite poisoning: can be given i.m. and used as an ointment
<b>Cyanide</b>	Give Dicobalt edetate in the case of life-threatening cyanide poisoning <b>only</b>

## Further Information

Topic	Website	Search terms
Chemicals – uses, properties and effects, and information on decontamination	<a href="http://www.hpa.org.uk/chemicals">www.hpa.org.uk/chemicals</a>	Chemical compendium
CBRN incidents	<a href="http://www.hpa.org.uk">www.hpa.org.uk</a>	Emergency response, CBRN
TOXBASE (the clinical toxicology database of the UK NPIS) NB: requires pre-registration for advice	<a href="http://www.toxbase.org">www.toxbase.org</a>	–
Accessing stocks or pods for immediate response in a major incident	<a href="http://www.dh.gov.uk">www.dh.gov.uk</a>	UK reserve