



# Hydrogen Chloride/Hydrochloric Acid

## Incident Management

### Key Points

#### Fire

- non-combustible
- hydrogen chloride gas dissolves readily in water to yield hydrochloric acid
- in the event of a fire involving hydrogen chloride/hydrochloric acid, use fine water spray and chemical protective clothing with liquid-tight connections and breathing apparatus

#### Health

- corrosive by all routes of exposure
- inhalation causes irritation of the eyes and nose, with sore throat, cough, chest tightness, headache, fever, wheeze, tachycardia and confusion
- ingestion causes immediate pain with burning in the mouth, throat and stomach; abdominal pain, vomiting, haematemesis and dyspnoea may follow
- haemorrhagic or hypovolemic shock and airway obstruction from laryngeal and/or epiglottic oedema are features of severe cases
- aspiration of corrosive materials may cause stridor and respiratory complications
- dermal exposure causes pain, blistering, ulceration and penetrating necrosis
- ocular exposure causes pain, blepharospasm, lacrimation, conjunctivitis, palpebral oedema and photophobia; corneal burns may occur



#### Environment

- avoid release to the environment; Inform Environment Agency where appropriate

## Hazard Identification

### Standard (UK) dangerous goods emergency action codes

#### Hydrogen chloride, anhydrous

<b>UN</b>		1050	Hydrogen chloride, anhydrous	
<b>EAC</b>		2RE	Use fine water spray. Wear chemical protective clothing with liquid-tight connections for whole body in combination with breathing apparatus*. Spillages and decontamination run-off may be washed to drains with large quantities of water. Due care must, however, still be exercised to avoid unnecessary pollution to watercourses. There may be a public safety hazard outside the immediate area of the incident <sup>†</sup>	
<b>APP</b>		A(c)	Gas-tight chemical protective suit in combination with breathing apparatus <sup>‡</sup> Liquefied gas with boiling point below –20°C	
<b>Hazards</b>	<b>Class</b>	2.3	Toxic gas	
	<b>Sub-risks</b>	8	Corrosive substance	
<b>HIN</b>		268	Toxic gas, corrosive	

UN – United Nations number, EAC – emergency action code, APP – additional personal protection, HIN – hazard identification number

\* Chemical protective clothing with liquid-tight connections for whole body (type 3) conforming to the relevant standards such as BS 8428 or EN 14605, in combination with breathing apparatus BS EN 137



<sup>†</sup> People should stay indoors with windows and doors closed, ignition sources should be eliminated and ventilation stopped. Non-essential personnel should move at least 250 m away from the incident

<sup>‡</sup> Normal fire kit in combination with gas-tight chemical protective clothing conforming to BS EN 943 part 2; thermal-resistant gloves should be worn such as those conforming to BS EN 511:2006 or BS EN 407:2004

#### Reference

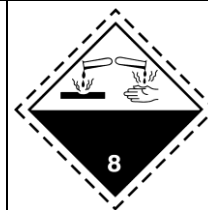
Dangerous Goods Emergency Action Code List. National Chemical Emergency Centre (NCEC), Part of Ricardo-AEA. The Stationery Office, 2015.

**Hydrogen chloride, refrigerated liquid**



<b>UN</b>		2186	Hydrogen chloride, refrigerated liquid	
<b>EAC</b>		2RE <sup>(1)</sup>	Use fine water spray. Wear chemical protective clothing with liquid-tight connections for whole body in combination with breathing apparatus*. Spillages and decontamination run-off may be washed to drains with large quantities of water. Due care must, however, still be exercised to avoid unnecessary pollution to watercourses. There may be a public safety hazard outside the immediate area of the incident <sup>†</sup>	
<b>APP</b>		A(c)	Gas-tight chemical protective suit in combination with breathing apparatus <sup>‡</sup> Liquefied gas with boiling point below –20°C	
<b>Hazards</b>	<b>Class</b>	2.3	Toxic gas	
	<b>Sub-risks</b>	8	Corrosive substance	
<b>HIN</b>		–	–	
<p>UN – United Nations number, EAC – emergency action code, APP – additional personal protection, HIN – hazard identification number</p> <p>* Chemical protective clothing with liquid-tight connections for whole body (type 3) conforming to the relevant standards such as BS 8428 or EN 14605, in combination with breathing apparatus BS EN 137</p> <p>† People should stay indoors with windows and doors closed, ignition sources should be eliminated and ventilation stopped. Non-essential personnel should move at least 250 m away from the incident</p> <p>‡ Normal fire kit in combination with gas-tight chemical protective clothing conforming to BS EN 943 part 2; thermal-resistant gloves should be worn such as those conforming to BS EN 511:2006 or BS EN 407:2004</p> <p><sup>(1)</sup> Not applicable to the carriage of dangerous goods under Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) and in the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)</p> <p><b>Reference</b></p> <p>Dangerous Goods Emergency Action Code List. National Chemical Emergency Centre (NCEC), Part of Ricardo-AEA. The Stationery Office, 2015.</p>				

**Hydrochloric acid**

<b>UN</b>		1789	Hydrochloric acid
<b>EAC</b>		2R	Use fine water spray. Wear chemical protective clothing with liquid-tight connections for whole body in combination with breathing apparatus*. Spillages and decontamination run-off may be washed to drains with large quantities of water. Due care must, however, still be exercised to avoid unnecessary pollution to watercourses
<b>APP</b>		–	–
<b>Hazards</b>	<b>Class</b>	8	Corrosive substance
	<b>Sub-risks</b>	–	–
<b>HIN</b>		80	Corrosive or slightly corrosive substance
<p>UN – United Nations number, EAC – emergency action code, APP – additional personal protection, HIN – hazard identification number</p> <p>* Chemical protective clothing with liquid-tight connections for whole body (type 3) conforming to the relevant standards such as BS 8428 or EN 14605, in combination with breathing apparatus BS EN 137</p> <p><b>Reference</b>                  Dangerous Goods Emergency Action Code List. National Chemical Emergency Centre (NCEC), Part of Ricardo-AEA. The Stationery Office, 2015.</p>			






**Classification, labelling and packaging (CLP)\*****Hydrochloric acid ...%**

<b>Hazard class and category</b>	Skin Corr. 1B	Skin corrosion, category 1B	
	STOT SE 3	Specific target organ toxicity following single exposure	
<b>Hazard statement</b>	H314	Causes severe skin burns and eye damage	
	H335	May cause respiratory irritation	
<b>Signal words</b>	DANGER		
* Implemented in the EU on 20 January 2009			
<b>Reference</b>			
European Commission. Harmonised classification – Annexe VI to Regulation (EC) No. 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures. <a href="http://echa.europa.eu/information-on-chemicals/cl-inventory-database">http://echa.europa.eu/information-on-chemicals/cl-inventory-database</a> (accessed 11/2015).			

**Specific concentration limits**

<b>Concentration</b>	<b>Hazard class and category</b>	<b>Hazard statement</b>	
10% ≤ C < 25%	Eye Irrit. 2	H319	Causes serious eye irritation
10% ≤ C < 25%	Skin Irrit. 2	H315	Causes skin irritation
C ≥ 25%	Skin Corr. 1B	H314	Causes severe skin burns and eye damage
C ≥ 10%	STOT SE 3	H335	May cause respiratory irritation
<b>Reference</b>			
European Commission. Harmonised classification – Annexe VI to Regulation (EC) No. 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures. <a href="http://echa.europa.eu/information-on-chemicals/cl-inventory-database">http://echa.europa.eu/information-on-chemicals/cl-inventory-database</a> (accessed 11/2015).			

**Hydrogen chloride**

<b>Hazard class and category</b>	Press. Gas	Gasses under pressure	
	Skin Corr. 1A	Skin corrosion, category 1A	
	Acute Tox. 3	Acute toxicity (inhalation), category 3	
<b>Hazard statement</b>	H314	Causes severe skin burns and eye damage	
	H331	Toxic if inhaled	
<b>Signal words</b>	DANGER		
<p>* Implemented in the EU on 20 January 2009</p> <p><b>Reference</b>                      European Commission. Harmonised classification – Annexe VI to Regulation (EC) No. 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures. <a href="http://echa.europa.eu/information-on-chemicals/cl-inventory-database">http://echa.europa.eu/information-on-chemicals/cl-inventory-database</a> (accessed 11/2015).</p>			

## Physicochemical Properties

<b>CAS number</b>	7647-01-0
<b>Molecular weight</b>	36
<b>Formula</b>	HCl
<b>Common synonyms</b>	Anhydrous hydrogen chloride Hydrochloric acid, anhydrous
<b>State at room temperature</b>	Colourless gas
<b>Volatility</b>	Vapour pressure = 35,000 mmHg at 25°C
<b>Vapour density</b>	1.3 (air = 1)
<b>Flammability</b>	Non-combustible
<b>Lower explosive limit</b>	Data not available
<b>Upper explosive limit</b>	Data not available
<b>Water solubility</b>	Very soluble in water
<b>Reactivity</b>	The solution in water is a strong acid. Reacts violently with bases and is corrosive
<b>Reaction or degradation products</b>	Reacts violently with oxidants to produce chlorine gas. Attacks many metals in the presence of water forming flammable/explosive gas (hydrogen)
<b>Odour</b>	Pungent irritating odour
<b>Structure</b>	H-Cl
<p><b>References</b></p> <p>Hazardous Substances Data Bank. Hydrogen chloride. HSDB No. 545 (last revision date 19/10/2015). US National Library of Medicine: Bethesda MD. <a href="http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB">http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB</a> (accessed 12/2015).</p> <p>Hydrogen chloride (HAZARTEXT™ Hazard Management). In Klasco RK (Ed): TOMES® System, Truven Healthcare Analytics Inc, Greenwood Village CO, US. RightAnswer.com Inc, Midland MI, US. <a href="http://www.rightanswerknowledge.com">http://www.rightanswerknowledge.com</a> (accessed 12/2015).</p> <p>International Programme on Chemical Safety. International chemical safety card entry for Hydrogen Chloride. ICSC 0163, 1993. World Health Organization: Geneva.</p>	

## Reported Effect Levels from Authoritative Sources

### Exposure by inhalation

ppm	mg/m <sup>3</sup>	Signs and symptoms	Reference
35	52	May induce sneezing, laryngitis, chest pain, hoarseness and a feeling of suffocation	a
1,000–2,000	1,490–2,980	Dangerous following short exposure	b

These values give an indication of levels of exposure that can cause adverse effects. They are not health protective standards or guideline values

**References**

a International Programme on Chemical Safety. Chlorine and Hydrogen Chloride. Environmental Health Criteria 21, 1982. World Health Organization: Geneva.

b National Academy of Sciences. Acute Exposure Guideline Levels for Selected Airborne Chemicals, Volume 4, 2004. Washington DC.

### Exposure by skin

%	Signs and symptoms	Reference
10	Irritating to the skin	a

This value gives an indication of levels of exposure that can cause adverse effects. It is not a health protective standard or guideline value

**Reference**

a OECD. Screening Information Dataset (SIDS). Hydrogen Chloride, Initial Assessment Report, 2002.

### Exposure by eyes

%	Signs and symptoms	Reference
>3.3	Irritating to the eyes	a

This value gives an indication of levels of exposure that can cause adverse effects. It is not a health protective standard or guideline value

**Reference**

a OECD. Screening Information Dataset (SIDS). Hydrogen Chloride, Initial Assessment Report, 2002.



## Published Emergency Response Guidelines

### Emergency response planning guideline (ERPG) values

	Listed value (ppm)	Calculated value (mg/m <sup>3</sup> )
ERPG-1*	3 <sup>(1)</sup>	4
ERPG-2 <sup>†</sup>	20	30
ERPG-3 <sup>‡</sup>	150	224

\* Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odour

† Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action

‡ Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects

<sup>(1)</sup> Odour should be detectable near ERPG-1

**Reference**  
American Industrial Hygiene Association (AIHA). 2015 Emergency Response Planning Guideline Values. <https://www.aiha.org/get-involved/AIHAGuidelineFoundation/EmergencyResponsePlanningGuidelines/Documents/2015%20ERPG%20Levels.pdf> (accessed 11/2015).

### Acute exposure guideline levels (AEGLs)

	Concentration (ppm)				
	10 min	30 min	60 min	4 hours	8 hours
AEGL-1*	1.8	1.8	1.8	1.8	1.8
AEGL-2 <sup>†</sup>	100	43	22	11	11
AEGL-3 <sup>‡</sup>	620	210	100	26	26

\* Level of the chemical in air at or above which the general population could experience notable discomfort

† Level of the chemical in air at or above which there may be irreversible or other serious long-lasting effects or impaired ability to escape

‡ Level of the chemical in air at or above which the general population could experience life-threatening health effects or death

**Reference**  
US Environmental Protection Agency. Acute Exposure Guideline Levels. <http://www.epa.gov/oppt/aegl/pubs/chemlist.htm> (accessed 11/2015).

## Exposure Standards, Guidelines or Regulations

### Occupational standards (see note)

	LTEL (8-hour reference period)		STEL (15-min reference period)	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
<b>WEL</b>	1	2	5	8

**Note** Values for gas and aerosol mists

WEL – workplace exposure limit, LTEL – long-term exposure limit, STEL – short-term exposure limit

**Reference**

Health and Safety Executive (HSE). EH40/2005 Workplace Exposure Limits, 2<sup>nd</sup> Edition, 2011.

### Public health guidelines

<b>Drinking water standard</b>	250 mg chloride ions per litre
<b>Air quality guideline</b>	No guideline values specified
<b>Soil guideline values and health criteria values</b>	No guideline values specified

**References**

The Private Water Supplies Regulations 2009 and the Private Water Supplies Regulations (Wales) 2010.

The Water Supply (Water Quality) Regulations 2000 (England) and the Water Supply (Water Quality) Regulations 2001 (Wales).

## Health Effects

### Major route of exposure

- corrosive by inhalation, ingestion, eye and skin exposure

### Immediate signs or symptoms of acute exposure

Route	Signs and symptoms
<b>Inhalation</b>	<p>Irritation of the eyes and nose with sore throat, cough, chest tightness, headache, fever, wheeze, tachycardia and confusion. Chemical pneumonitis, tachypnoea, dyspnoea and stridor due to laryngeal oedema may follow</p> <p>Pulmonary oedema with increasing breathlessness, wheeze, hypoxia and cyanosis may take up to 36 hours to develop. Optic neuropathy has been reported following acute inhalation</p> <p>In serious cases, corrosive damage to the mucous membranes of both the upper and lower respiratory tract occurs. Severe inhalation injuries may result in persistent hoarseness, pulmonary fibrosis and chronic obstructive airway disease. Prolonged exposure may result in systemic effects</p>
<b>Ingestion</b>	<p>Ingestion can cause immediate pain with burning in the mouth, throat and stomach. This may be followed by abdominal pain, vomiting, haematemesis and dyspnoea. Pain and oedema may make swallowing difficult, causing drooling. Haemorrhagic or hypovolaemic shock and airway obstruction from laryngeal and/or epiglottic oedema are features of severe cases. Stridor and respiratory complications (including pneumonitis, pulmonary oedema, acute respiratory distress syndrome and pulmonary necrosis) can develop following aspiration of corrosive materials</p> <p>Acids tend to damage the stomach, with ulceration, gangrene, haemorrhage and perforation. However, in severe cases extensive areas of the gastrointestinal tract may be involved. Gastric or oesophageal perforation may occur in the early stages of severe cases; severe injury can cause pyloric stenosis and a small, scarred, immobile stomach</p> <p><b>Systemic effects</b> include circulatory collapse, metabolic acidosis, hypoxia, respiratory failure, acute renal failure, haemolysis and disseminated intravascular coagulation (DIC)</p>
<b>Dermal</b>	<p>Symptoms are more likely to occur following direct contact with solid or liquid corrosive materials, although features can also occur through contact with corrosive gases and fumes</p> <p>Acids may cause pain, blistering, ulceration and penetrating necrosis. Coagulation burns may develop, which can be self-limiting and superficial, with the destruction of the surface epithelium and sub-mucosa forming a leathery crust which limits the spread of the product. Acids tend to produce more immediate burns. Large or prolonged exposure may result in systemic effects</p>

<b>Ocular</b>	Causes pain, blepharospasm, lacrimation, conjunctivitis, palpebral oedema and photophobia. Corneal burns may also occur
<b>References</b> TOXBASE. Hydrogen chloride, 11/2006. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016). TOXBASE. Hydrochloric acid, 11/2013. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016). TOXBASE. Corrosives – inhalation, 02/2012. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016). TOXBASE. Corrosives – ingestion, 08/2013. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016). TOXBASE. Skin decontamination – corrosives, 06/2010. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016). TOXBASE. Chemicals splashed or sprayed into the eyes, 02/2014. <a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016).	

## Decontamination at the Scene

The approach used for decontamination at the scene will depend upon the incident, location of the casualties and the chemicals involved. Therefore, a risk assessment should be conducted to decide on the most appropriate method of decontamination.

Hydrogen chloride (gas) and hydrochloric acid (liquid) are corrosive. Therefore, following disrobe, improvised wet decontamination should be considered (see below for details).

Emergency services and public health professionals can obtain further advice from Public Health England (Centre for Radiation, Chemical and Environmental Hazards) using the 24-hour chemical hotline number: 0344 892 0555.

### Important notes

- primary responders should wear appropriate personal protective equipment (PPE)
- responders should not enter a contaminated area without PPE and self-contained breathing apparatus
- if the patient has not been decontaminated following surface contamination, secondary carers must wear appropriate NHS PPE for chemical exposure to avoid contaminating themselves

### Disrobe

The disrobe process is highly effective at reducing exposure to HAZMAT/CBRN material when performed within 15 minutes of exposure.

**Therefore, disrobe must be considered the primary action following evacuation from a contaminated area.**

Where possible, disrobe at the scene should be conducted by the casualty themselves and should be systematic to avoid transferring any contamination from clothing to the skin. Consideration should be given to ensuring the welfare and dignity of casualties as far as possible.

### Improvised decontamination

Improvised decontamination is an immediate method of decontamination prior to the use of specialised resources. This should be performed on all contaminated casualties, unless medical advice is received to the contrary. Improvised dry decontamination should be considered for an incident involving chemicals **unless the agent appears to be corrosive or caustic.**

### Improvised dry decontamination

- any available dry absorbent material can be used, such as kitchen towel, paper tissues (eg blue roll) and clean cloth
- exposed skin surfaces should be blotted and rubbed, starting with the face, head and neck and moving down and away from the body
- rubbing and blotting should not be too aggressive, or it could drive contamination further into the skin
- all waste material arising from decontamination should be left in situ, and ideally bagged, for disposal at a later stage

### Improvised wet decontamination

- water should only be used for decontamination where casualty signs and symptoms are consistent with exposure to caustic or corrosive substances such as acids or alkalis
- wet decontamination may be performed using any available source of water such as taps, showers, fixed installation hose-reels and sprinklers
- when using water, it is important to try and limit the duration of decontamination to between 45 and 90 seconds and, ideally, to use a washing aid such as cloth or sponge
- improvised decontamination should not involve overly aggressive methods to remove contamination as this could drive the contamination further into the skin
- where appropriate, seek professional advice on how to dispose of contaminated water and prevent run-off going into the water system

### Additional notes

- following improvised decontamination, remain cautious and observe for signs and symptoms in the decontaminated person and in unprotected staff
- if water is used to decontaminate casualties this may be contaminated, and therefore hazardous, and a potential source of further contamination spread
- all materials (paper tissues etc) used in this process may also be contaminated and, where possible, should not be used on new casualties
- the risk from hypothermia should be considered when disrobe and any form of wet decontamination is carried out
- people who are contaminated should not eat, drink or smoke before or during the decontamination process and should avoid touching their face
- consideration should be given to ensuring the welfare and dignity of casualties as far as possible. Immediately after decontamination the opportunity should be provided to dry and dress in clean robes/clothes
- people who are processed through improvised decontamination should subsequently be moved to a safe location, triaged and subject to health and scientific advice. Based on the outcome of the assessment, they may require further decontamination

## Interim wet decontamination

Interim decontamination is the use of standard fire and rescue service (FRS) equipment to provide a planned and structured decontamination process prior to the availability of purpose-designed decontamination equipment.

## Decontamination at the scene references

National Ambulance Resilience Unit. Joint Emergency Services Interoperability Programme (JESIP). Initial operational response to a CBRN incident. Version 1.0, September 2013.

NHS England. Emergency Preparedness, Resilience and Response (EPRR). Chemical incidents: planning for the management of self-presenting patients in healthcare settings. April 2015.

## Clinical Decontamination and First Aid

Clinical decontamination is the process where trained healthcare professionals using purpose-designed decontamination equipment treat contaminated people individually.

Detailed information on clinical management can be found on TOXBASE – [www.toxbase.org](http://www.toxbase.org).

### Important note

- if the patient has not been decontaminated following surface contamination, secondary carers must wear appropriate NHS PPE for chemical exposure to avoid contaminating themselves

### Clinical decontamination following surface contamination

- carry out decontamination after resuscitation
- this should be performed in a well-ventilated area, preferably with its own ventilation system
- do **not** apply neutralising chemicals as heat produced during neutralisation reactions may cause thermal burns, and increase injury
- contaminated clothing should be removed, double-bagged, sealed and stored safely
- decontaminate open wounds first and avoid contamination of unexposed skin
- any particulate matter adherent to skin should be removed and the patient washed with copious amounts of water under low pressure for at least 10–15 minutes, or until the pH of the skin is normal (pH of the skin is 4.5–6, although it may be closer to 7 in children, or after irrigation). **The earlier irrigation begins, the greater the benefit**
- pay particular attention to mucous membranes, moist areas such as skin folds, fingernails and ears

### Dermal exposure

- decontaminate (as above) the patient following surface contamination
- following decontamination, recheck the pH of affected areas after a period of 15–20 minutes and repeat irrigation if abnormal. Burns with strong solutions may require irrigation for several hours or more
- once the pH is normal and stabilised, treat as for a thermal injury
- burns totalling more than 15% of body surface area in adults (more than 10% in children) will require standard fluid resuscitation as for thermal burns
- moderate/severe chemical burns should be reviewed by a burns specialist; excision or skin grafting may be required
- other supportive measures as indicated by the patient's clinical condition



## Ocular exposure

- remove contact lenses if present
- anaesthetise the eye with a topical local anaesthetic (eg oxybuprocaine, amethocaine or similar); **however, do not delay irrigation if local anaesthetic is not immediately available**
- immediately irrigate the affected eye thoroughly with 1,000 mL 0.9% saline (eg by an infusion bag with a giving set). A Morgan Lens may be used if anaesthetic has been given. Irrigate for 10–15 minutes irrespective of initial conjunctival pH. Aim for a final conjunctival pH of 7.5–8.0. The conjunctivae may be tested with indicator paper. Retest 20 minutes after irrigation and use further irrigation if necessary
- repeated instillation of local anaesthetics may reduce discomfort and help more thorough decontamination; however, prolonged use of concentrated local anaesthetics is damaging to the cornea
- **patients with corneal damage, those who have been exposed to strong acids or alkalis and those whose symptoms do not resolve rapidly should be referred urgently to an ophthalmologist**
- other supportive measures as indicated by the patient's clinical condition

## Inhalation

- maintain a clear airway and ensure adequate ventilation
- give oxygen if required
- perform a 12 lead ECG
- other supportive measures as indicated by the patient's clinical condition

## Ingestion

- **maintain airway and establish haemodynamic stability**
- **in severely affected patients critical care input is essential. Urgent assessment of the airway is required. A supraglottic-epiglottic burn with erythema and oedema is usually a sign that further oedema will occur that may lead to airway obstruction**
- do **not** attempt gastric lavage
- do **not** give neutralising chemicals as heat produced during neutralisation reactions may increase injury
- monitor blood pressure, pulse and oxygen saturation
- perform a 12 lead ECG
- other supportive measures as indicated by the patient's condition

## Clinical decontamination and first aid references

TOXBASE	<a href="http://www.toxbase.org">http://www.toxbase.org</a> (accessed 01/2016)
TOXBASE	Hydrogen chloride, 11/2006
TOXBASE	Hydrochloric acid, 11/2013
TOXBASE	Corrosives – inhalation, 02/2012
TOXBASE	Corrosives – ingestion, 08/2013
TOXBASE	Skin decontamination – corrosives, 06/2010
TOXBASE	Chemicals splashed or sprayed into the eyes, 02/2014

This document from the PHE Centre for Radiation, Chemical and Environmental Hazards reflects understanding and evaluation of the current scientific evidence as presented and referenced here.

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