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# Factsheet – Chlorine

***Note:*** *Information contained in this factsheet has been generated using information from Public Health England under the open government licence*[1].

**General Information**

- Chlorine is a reactive chemical that is approximately three times heavier than air and smells similar to bleach. Chlorine is a gas at room temperature
- Chlorine is frequently used in the disinfection of water.
- The most likely cause of chlorine in the environment is following accidental release from an industrial site or transport vehicle, it does not persist in the environment
- Exposure is most likely to occur by inhalation or by contact with the eyes.
- Exposure may result in a burning sensation of the eyes and throat, coughing or breathing difficulties. There may be irritation and burns to the skin.
- Exposure to high levels of chlorine gas may damage the lungs and airways that can be fatal.

**Health risks with exposure**

Minor exposures may result in a burning sensation of the eyes and throat. More substantial exposure may cause coughing or breathing difficulties. Exposure to high concentrations of chlorine gas can damage the lungs and airways; this may cause a build-up of fluid in the lungs that can be fatal. Following severe injuries from inhaling chlorine, there may be a lasting effect on the lungs and airways. However, most people who develop symptoms of poisoning following exposure to chlorine will not suffer any long-term effects.

- Exposure to liquid or gaseous chlorine may cause irritation and burns to the skin and eyes.
- Due to its gaseous nature inhalation and ocular exposure are most likely to occur
- Causes irritation to the eyes, respiratory system and skin
- Inhalation may cause sore throat, cough, chest tightness, headache, fever, wheeze, tachycardia and confusion; chemical pneumonitis, tachypnoea, dyspnoea and stridor due to laryngeal oedema may follow
- Dermal exposure may cause erythema, pain, irritation and cutaneous burns
- Contact with liquefied gas can cause frostbite
- Gaseous chlorine will irritate the skin and may cause burns in high concentrations

**Decontamination processes**

A risk assessment should be conducted to decide the most appropriate method of decontamination, as the process will depend on the nature of the incident, location of casualties and the presence of any other chemicals. As chlorine is a volatile gas at room temperature, decontamination may not be required. However, gaseous chlorine will irritate the skin at high concentrations and liquid chlorine may cause cutaneous burns. This should be considered in the risk assessment when deciding on the need for disrobe and decontamination.

[1] http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

## Mass Casualty Scenario – national

### Session 1 : 09:30

**A member of MoH staff has just heard on the radio that there has been a serious road crash involving a chemical tanker, with trailer, and a bus full of people. The incident occurred just outside the city, at the junction of two busy highways close by the airport. The tanker is reported to have been carrying chlorine.**

The accident happened during the rush hour and the roads were busy with workers heading into the capital city to work and children going to school.

The tanker has overturned and its tanks have ruptured releasing gaseous contents into the surrounding area, including towards the airport. The bus has ended up in the ditch on its side. Some passengers have been thrown from the vehicle, others are still trapped inside. Some bystanders have been affected by chlorine gas as they rush to help.

The accident is being widely reported on the radio and TV, and the main hospital in the city has been informed. First reports from police at the scene are that there are more than 50 injured and many more affected and contaminated by the chlorine gas that has leaked from the tanker.

Ambulances are at the scene but are relying on the fire service to extricate the casualties from the hazardous area. The first casualties are expected to arrive at the hospital by 09:30. The road to the national airport has been temporarily closed.

## Mass Casualty Scenario – national

### Session 2 : 11:00

**The MoH has received an update from the main hospital that is receiving the casualties. The latest report from the scene is that there is a total of 6 fatalities and 55 injured, of which 21 have minor injuries and 34 have more serious or major injuries. Many of those with injuries are also complaining of running eyes, coughing and difficulty breathing. A formal decontamination process of the casualties was not undertaken at the scene.**

The hospital is currently treating the casualties that have arrived from the incident scene. At this time there are 13 with minor injuries and 22 with major injuries that have arrived at hospital by a variety of transport, including ambulance. The most severe injuries relate to limb and chest trauma.

The hospital reports that due to the number of casualties, in addition to the usual demands on the emergency department, the department is working at full capacity and casualties are waiting in the corridors.

Some healthcare workers, including nurses and ambulance staff, are reporting symptoms of breathing difficulties, coughing, wheezing and skin irritation.

A local private healthcare clinic in the nearby town has reported that it is treating some patients from the incident. They are unsure about the effects of chlorine, and at the moment are keeping everyone indoors.

The airport is also reporting people arriving there who are feeling unwell, and some of the ground staff working outside are saying they are having difficulty breathing and have sore eyes. Airport management are not sure what actions they should take and are considering whether to close the airport.

## Mass Casualty Scenario – national

### Session 3 : 13:00

**The hospital has reported to MoH that all the casualties from the scene have now arrived at their emergency department. Final casualty numbers are 7 fatalities and 56 injured, 19 have minor injuries and 37 have more serious or major injuries.**

The hospital is saying that they have security concerns due to the arrival of friends and relatives of those injured, some of whom are angry about the incident. The emergency department is now seriously overcrowded and this is hindering the work of staff. Some hospital staff who reported symptoms of chlorine exposure have gone home at the end of their shift.

The media are wanting interviews with MoH officials. Footage of the incident has been posted online with some reports suggesting that the crash was caused deliberately by the driver of the tanker.

Airport staff have decided to close the airport as staff could smell chlorine inside the terminal buildings. This has disrupted flights and left people stranded inside the airport buildings as well as outside.

Local communities living near the accident site have taken to social media to express their worries that they are affected by the chlorine, and are unhappy they are not being kept informed about the effects of the dangerous chemicals.