Sodium chlorate(I)

also known as **sodium hypochlorite**

Substance	Hazard	Comment
Note: Sodium chlorate(I) does not exist as a *solid*. **Note**: Sodium chlorate(I) is NaClO. Do not confuse this with sodium chlorate(V), $NaClO_3$, or sodium chlorate(VII), $NaClO_4$.		
Concentrated sodium chlorate(I) *Solution* *(if: 0.7 M or more; 5% or more (w/v) available chlorine)*	 **CORROSIVE**  **ENVIRON. HAZARD**	DANGER: causes severe burns and eye damage, similar to sodium hydroxide solution. It is toxic to aquatic life. It produces a toxic gas (chlorine) with acids. Pressure may build up in bottles during storage, due to slow decomposition. It removes the colour from many dyes.
Moderately dilute sodium chlorate(I) *Solution* *(if: less than 0.7 M but 0.4 M or more; less than 5% but 3% or more (w/v) available chlorine)*	 **CORROSIVE**  **ENVIRON. HAZARD**	DANGER: causes severe eye damage; irritating to skin. It is toxic to aquatic life. It produces a toxic gas (chlorine) with acids. This includes most domestic bleach. It removes the colour from many dyes.
Dilute sodium chlorate(I) *Solution* *(if: less than 0.4 M but 0.15 M or more; less than 3% but 1% or more (w/v) available chlorine)*	 **IRRITANT**	WARNING: irritating to eyes and skin. Microbiological spills can be dealt with using a 10% solution diluted 100 times (ie, 0.1%), but it is quickly made inactive by organic matter and so a 10 times dilution (ie, 1%) is often preferred.
Very dilute sodium chlorate(I) *Solution* *(if: less than 0.15 M; less than 1% (w/v) available chlorine)*	**Currently not classified as hazardous**	Microbiological spills can be dealt with using a 10% solution diluted 100 times (ie, 0.1%), but it is quickly made inactive by organic matter and so a 10 times dilution (ie, 1%) is often preferred.
Note: Available chlorine Sodium chlorate(I) is normally made by reacting chlorine gas with sodium hydroxide solution. Sodium chloride is produced as a by-product and this is left mixed in the solution. As such, only part of the chlorine in the mixture (the Cl in the NaClO but not the Cl in the NaCl) is available for oxidising or bleaching purposes. One gram of a 10% available chlorine bleach has the same bleaching power as 0.1 gram of pure chlorine.		

Typical control measures to reduce risk

- Use the lowest concentration possible.
- Use the smallest volume possible.
- Wear eye protection, including when making or disposing of solutions.
- Wear gloves if transferring/dispensing anything larger than a test-tube scale of the concentrated solution.
- Never mix domestic bleach with other household cleaners as these could be acidic.

Assessing the risks

- What are the details of the activity to be undertaken? What are the hazards?
- What is the chance of something going wrong?
  eg hazardous products of reaction (such as chlorine gas) are formed if sodium chlorate(I) is mixed with acid.
- How serious would it be if something did go wrong?
  Note: alkali in the eye causes more damage than acid of equivalent concentration.
- How can the risk(s) be controlled for this activity?
  eg can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

In all emergency situations, alert the responsible adult immediately. Be aware that actions may include the following:

- In the eye — Irrigate the eye with gently-running tap water for at least 20 minutes. Call 999/111. If a visit to hospital is necessary, continue washing the eye during the journey in an ambulance.
- Chlorine breathed in — Remove the casualty to another room to rest. Call 999/111.
- In the mouth/swallowed — Do no more than rinse and spit with drinking water. Do **not** induce vomiting. Call 999/111.
- Spilt on the skin or clothing — Remove contaminated clothing. Irrigate the affected area with gently-running tap water for at least 20 minutes. Call 999/111 as appropriate. Rinse clothing.
- Spilt on the floor, bench, etc — Wipe up small amounts with a damp cloth and rinse it well. For larger amounts, open the windows and, especially for quite-concentrated solutions, cover with mineral absorbent (eg cat litter) and scoop into a bucket. Rinse with plenty of water.

