



## **Chlorine Odours**

Chlorine odours are in most situations caused by chlorine compounds.

The most common are the chloramines, or breakdown products of ammonia and chlorine.

There are three chloramines:

- (a) Monochloramine  $\text{NH}_2\text{Cl}$ ;
- (b) Dichloramine  $\text{NHCl}_2$ ; and
- (c) Trichloramine  $\text{NHCl}_3$ .

## **Inadequate Chlorination and Chloramines**

When chlorine is added to pool water it should react with all the organic and nitrogenous material in the water before free chlorine breakpoint is reached. Before breakpoint, chlorine will be found in the combined form mostly as chloramine.

Free chlorine does not smell at low levels. If the pool smells of chlorine, it will most likely be the chloramines.

## **Excess Chlorination and $\text{NHCl}_3$**

When people enter a pool, organic and nitrogenous material which reacts with free chlorine is introduced. One of the bi-products is trichloramine. The more people using a pool the more trichloramine will be produced.

Trichloramine has a pungent odour and is responsible for various complaints. If a free chlorine residual is maintained too high (i.e. over 3 milligrams per litre), the trichloramine level will become noticeable and swimmers will complain of sore eyes.

## **Red Eyes**

There is reason to believe sore eyes are linked to the presence of trichloramine. The problem is more likely to occur in the following conditions:

- (a) pH outside the range 7.5 to 8.0
- (b) low alkalinity;
- (c) poor filtration; and
- (d) excessive swimming leading to swelling of the cornea.



## **Skin Irritations**

Certain people or people whom are in the water for long periods of time, such as swimming instructors' may react to low or high pH water by developing skin rashes, blotches or general irritation.

Excess iron or copper in the water may increase the reaction.

Operators should keep the water within the comfortable range of pH 7.5 to 7.8, alkalinity 60 to 120 milligrams per litre and free chlorine 1.5 to 3.0 milligrams per litre.

The water should be 'balanced' and maintained as listed in the other ALIAS WATER FACT FILES, which are all listed in this web page, for your assistance.

If YOU are uncertain or require any further information, please do not hesitate to contact us

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