

Water Quality Issues

Bulletin No. 4

September 2004

Chloramination of Water Supply in Western Australia

Implications for Maintenance of Fish Ponds and Aquariums



What is Chloramination?

The Water Corporation uses a different form of disinfection process on water supplied to the Goldfields and Agricultural Supply Scheme from Mundaring Reservoir (the Water Corporation can advise you of the source of your water supply). This process is known as chloramination. It involves the addition of two chemicals, chlorine and ammonia which react to form chloramines. These are effective disinfecting agents. Unlike chlorine, which is traditionally used for disinfection of water, chloramines persist in the water supply system for relatively long periods. This is a major advantage in preserving the high microbiological quality of extensive water supplies. However, it can lead to problems for owners of fish ponds and aquariums because chloramines (like chlorine) are toxic to fish.

This bulletin is intended to provide a guide to the treatment of the water for use in fish ponds and aquariums. It should be noted that the information provided is not intended to be comprehensive and there may well be other treatment methods available in addition to those outlined in this bulletin.

It is the responsibility of individual aquarium owners to determine the degree of treatment required for removal of disinfectant residual and to establish the most appropriate form of treatment. If in doubt, owners should seek advice from the suppliers of aquarium products and possibly obtain information from the Internet.

Which areas are chloraminated?

To find out if your water supply is chloraminated, call the Water Corporation's 24 hour Faults, Emergencies and Security line on

13 13 75

Chloramination

Why is chloramination toxic to fish?

Chloramines like chlorine are known to be toxic to fish at concentrations typically used for disinfection of drinking water (~2 parts per million) and even down to concentrations as low as 0.1 parts per million. Due to the persistence of chloramines they are likely to be present in most of the distribution system.

Free ammonia, which might be present in chloraminated water, is also toxic to fish. This means that a pH of aquarium waters above pH 8 could significantly increase the toxicity hazard, as the proportion of free ammonia is greater at higher pH values.

How can I treat my water if it has been chloraminated?

The following procedures are suggested for the control of chloramine and ammonia residuals where tap water is being used for aquariums:

Chloramines

In order to avoid potential toxicity problems, it is desirable to remove all traces of chloramines before fish are exposed to the water. If necessary, an estimate of degree of removal of chloramines can be obtained using a chlorine test kit. The method for removal of chloramines is similar to that used for the removal of free chlorine:

- Use of sodium thiosulphate – sodium thiosulphate is a reducing agent commonly used for the removal of free chlorine from water. It is also effective for the removal of chloramines. For this purpose it is necessary to add 7 parts of sodium thiosulphate per part of chloramine ie, add 7 milligrams of sodium thiosulphate to one litre of water containing 1 milligram chloramine. To ensure proper dissolution and mixing, it is preferable beforehand to dissolve the sodium thiosulphate in a small quantity of water.

A number of dechlorinating agents containing sodium thiosulphate are available from aquarium suppliers. However these agents may require two to three times the recommended dosage to remove the relatively high concentrations of chloramines. It may therefore be preferable to use pure sodium thiosulphate since most of the dechlorinating agents contain other additives for slime control, which may be harmful at higher dosages.

Ammonia

As indicated earlier, it is the free ammonia which is most toxic to fish. The simplest method of control is therefore adjustment of the pH to 7 or below. This method of control is not suitable for certain fish, particularly marine species, which require a high pH. At pH 7 or less, the concentration of free ammonia is insignificant.

Other methods of removal of ammonia involve the use of resins that absorb ammonia from water. These are available from aquarium suppliers.

Where can I get more information?

Further advice on the use of the above techniques can be obtained from your local aquarium supplier. For more information regarding your water supply phone the Water Corporation's 24 hour Faults, Emergencies and Security line on

1 3 1 3 7 5

This bulletin has been prepared to give a broad outline of information relating to the disinfection of tap water that may be used for ponds and aquariums. You should not rely on it without obtaining specific advice as to your own requirements

www.watercorporation.com.au

Water Corporation

629 Newcastle Street LEEDERVILLE WA 6007

September 2004

ISBN 1443-0134

