A CAUTIONARY NOTE CONCERNING CHLORAMINE TREATED TAP WATER

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In order to eliminate a putative cancer-causing compound, trihalomethane, from tap water, a new treatment method which is potentially dangerious to amphibians, is being adopted by water districts across the country. This method entails the addition of both anhydrous ammonia and chlorine to municiple water supplies which in combination forms chloramine, an extremely stable compound. The toxicity of chloramine depends on the concentration and the pH of the water. In some areas as much as 5 ppm have been added and this has resulted in massive losses of fish and small reptiles.

Removal of this compound is particularly difficult since not only chloramine but also both of its breakdown products, chlorine and ammonia are toxic to amphibians. However, a number of methods are suggested here for either removing this compound or rendering it harmless.

1. High purity carbon (TCE) or Barnstead organic removal cartridge filters can remove free chlorine and most of the chloramine. However, these cartridges will not bind ammonia efficiently, will only treat a total of 600 to 800 gallons of raw tap water in our area, and cost approximately $50.00 to replace.

2. Aquarium products such as Dechlor and Novaqua will bind the chlorine and release free ammonia. The free ammonia can then be removed by chemical filtration with zeolite (Ammocarb, Aquarium Pharmaceuticals is one brand) or by biological filtration (see Fox, Axolotl Newsletter 11: 24-26, 1982).

3. The third method is especially suited to animals such as ours which are usually kept in salt solutions. As above the chlorine can be bound by a chlorine neutralizing compound. The ammonia can then be rendered harmless by lowering the pH to 6.5. At this pH all of the ammonia will be in the form of ammonium ion and even at 10ppm, there is no toxicity. In our lab we have been maintaining our axolotls and Xenopus in Steinberg's and Holtreter's Solutions at pH 6.5 for a year and have encountered no problems.

It should also be noted that neither reverse osmosis nor deionization without carbon postfilters, will remove all of the chloramine. In addition, since chloramine is such a stable compound, letting water stand in open containers will not provide an effective method of removal.