

WATER (for freshwater invertebrates)

C. Drewes, 2002

<http://www.eeob.iastate.edu/faculty/DrewesC/htdocs>

** DECHLORINATED TAP WATER ** (excellent)

Chlorinated water is highly toxic to freshwater and marine organisms, including protozoans, invertebrates, and fish. But de-chlorinated water is not toxic to these organisms. To de-chlorinate water, allow a large volume (several liters, or more) of tap water to stand for at least 1-2 weeks in an open container which has a large surface area. This will allow time for chlorine and chloramine to dissipate from the water and make it safe for use with freshwater invertebrates. Continuous aeration of water will speed up the dissipation of chlorine and chloramine, so that the water can be used after only a few days. Filtering tap water through activated charcoal will also speed up dechlorination.

A good way to check the safety of any "new water" to which aquatic organisms will be exposed is to place one organism (such as a *Lumbriculus* worm, pond snail, or daphnid) into the new water and check for its survival the next day. If the organism is dead the next day, then the water is likely unsafe. If it is alive, then the water should be safe. In many areas of the country, dechlorinated tap water works fine for culturing freshwater invertebrates. However, water quality and composition in some cities may be non-supportive of invertebrate culture, even after de-chlorination.

Some types of commercial bottled water, such as spring water, work especially well for invertebrate culture. Other types of bottled water may be toxic to invertebrates!

** SPRING WATER ** (excellent)

Commercially available spring water is drinkable water that comes from any underground source but not from a public, municipal water supply. Spring water is "natural water" that has not been processed in any way before bottling and, therefore, has the same properties and quality as the underground source. It is bottled directly from its natural source - usually a non-industrial area near few pollutants. Normally, spring water contains less than 500 ppm (parts per million) of total dissolved solids. Examples of spring water brands (all of which I have found to be "freshwater invertebrate-friendly") include: *Poland Springs*, *Evian*, *Aquafina*, *Blue Mountain*, *Aberfoyle Springs*, and many other brands, as well.

OTHER TYPES OF BOTTLED WATER:

[For more information, see: http://www.bottledwater.org/public/BWFactsHome_main.htm]

1) DISTILLED WATER This commercially available water contains no dissolved solids and is free of sodium. It has been evaporated into steam and then re-condensed. Distilled water is commonly and effectively used to replace water lost in aquaria due to evaporation. Use of distilled water in this way reduces mineral build-up (lime deposition) in aquaria. Some freshwater invertebrates can tolerate direct and prolonged exposure to pure distilled water, while others are harmed by it, due to the osmotic stress it causes. [** NOTE: Special concern should be given to the potential toxicity of so-called "building distilled water" which, in some buildings, is produced and stored in very large quantities in metal tanks and may be delivered into rooms via metal pipes. Such water may contain high levels of heavy metals (from pipes) and also may be treated with algicides, or antibiotics. Under these conditions, it may be highly toxic to aquatic invertebrates.]

2) MINERAL WATER In many respects, mineral water has the same properties as spring water but it has a higher mineral content - - more than 500 parts per million (ppm) of dissolved solids.

3) DRINKING WATER This water that is produced by distillation, de-ionization or reverse osmosis. The water can come from a spring, or a public community water supply. Other suitable terms for bottled water produced by one of the above processes include "distilled water," "deionised water," and "reverse osmosis water." These waters have no added minerals.

4) Bottled water labeled "SPARKLING WATER", "CLUB SODA", "SELTZER WATER", or "TONIC WATER" are all carbonated and will be highly toxic to aquatic invertebrates.

Salt Water from Sea Salts for *Artemia* (brine shrimp)

Use **72 grams** (~ ¼ cup) of *Instant Ocean* brand sea salt in **2 liters** of distilled water. NOTE: *Artemia* is tolerant to a wide range of salinity conditions for its hatching and short-term maintenance. Other marine invertebrates, however, may require very precise salinity, pH, or other water quality specifications.