

General Guidelines on Living Materials from Carolina Biological Supply Company

Carolina takes great pride in being the leading supplier of living materials for science education, and we want you and your students to have a positive experience with all plants, animals, and cultures received from us. Below are simple things you can do to ensure success.

Be prepared.

Use our CareSheets and videos to learn about the organism and its needs before it arrives. Have habitats built. Establish and then operate aquaria for at least 2 weeks before adding fish and other aquatic animals.

Put a plan in place for receiving your shipment.

You or another responsible person should be available on the projected day of arrival to receive and begin caring for the live materials. We ship most live materials Monday–Friday to arrive on any weekday you specify. Some items, such as *Drosophila* crosses, require 2 or more weeks of preparation before shipment. (See notation in the catalog descriptions.) Plan your orders accordingly.

Experience shows that problems are more likely to occur when shipments of live materials are in transit over weekends. Even Friday deliveries pose problems if you leave for the weekend before delivery occurs.

Promptly open any shipment of live material and begin caring for it appropriately. Never allow a live material shipment to sit unattended, and know what you need to do before taking action. **Note:** *Most organisms can tolerate gradual change but sudden changes can harm them. After you receive the shipment, what you do in the first 1 to 2 hours is critical to success.*

Don't be in a hurry to discard the packing material.

Look for foam plugs, plastic pipets, and other small objects that may be in the packing material. If you ordered isopods (pill bugs), you will find crumpled, damp paper in the shipping cup. Many of the isopods will have crawled up into the folds of the paper. If you discard the paper, you will be discarding much of your living material with it. This is true of other organisms as well.

Avoid skin contact.

Salts and oils on your skin may irritate or injure many small organisms and their touch may affect you, so it is best to avoid skin contact. Even inoffensive creatures, such as millipedes, may produce foul smelling defensive fluids. Protect yourself and the organisms: Wear gloves or use small brushes or other appropriate instruments to transfer and manipulate organisms. Rinse your hands before handling any animal or its habitat, and afterwards wash your hands with soap and water. See our "Amphibians, Reptiles, and the Prevention of *Salmonella* Transmission" care sheet for additional precautions when dealing with these organisms.

If you choose, establish an aquarium and terrarium in your classroom to house leftover organisms.

Position the aquarium near a window or under a light bank. There is no need for filtration but use it if you prefer. Simply add to the aquarium any aquatic organisms (alga and protozoan cultures, *Elodea*, planaria, *Daphnia*, guppies, etc.) remaining from classroom activities. In time, the water should turn green. If not, add an appropriate amount of fertilizer and/or increase the light. This "pond" will provide a continuing source of aquatic organisms for classroom use.

Set up a covered terrarium, in normal room light, with a 3 to 4" layer of moist potting soil covered with 1" of dead leaves or hardwood mulch. This will be suitable for isopods, millipedes, redworms, crickets, and many other organisms. Water weekly or as needed, and add some lettuce or slices of raw potato, carrot, or apple as food. Remove old food before it molds and replace the leaves or mulch as needed. Many animals thrive and even reproduce in terrariums.

Condition tapwater to safeguard your organisms.

Numerous water treatment plants in the US are upgrading their drinking water treatment process to incorporate chloramines, chiefly monochloramine (NH_2Cl). The advantage is that monochloramine is stable in water. Chlorine is not: It may come out of solution in water flowing through pipes, especially if the pipes leak. Monochloramine remains in solution and continues to protect the water from bacterial contamination, all the way from the treatment plant to you. **Note:** *Monochloramine is not removed by traditional aging of tapwater and easily passes through the gills of aquatic organisms and into their blood, where it is toxic.* You must treat water that contains chloramine with a chemical dechlorinator such as our ACE™ Eliminator (item #671939) or AquaSafe® (item #671944) before it is suitable for use in an aquarium. Always read the label to ensure that your dechlorinator removes chloramine.

How do you know if your local water treatment plant uses the chloramine process? Most treatment plants will issue a public statement through local newspapers and other media some weeks before making the change from chlorine treatment to chloramine. You can also find the information posted online under your local government Web site or call your water department.

Consider other water issues.

It is essential when acclimating fish and other aquatic organisms that you avoid temperature shock. The shipping water and the water into which you are transferring them should not differ by more than 1° C or 2° F. See our Freshwater Fish CareSheet or our Freshwater Fish Acclimation video for details.

Tapwater often contains traces of copper and other metal ions. These will kill sensitive organisms such as *Daphnia* and water snails. At higher concentrations, metal ions may even kill other aquatic organisms. AquaSafe® (item #671944) removes many metal ions from tapwater. You can also use springwater or bottled water. If you purchase springwater, read the label carefully to verify it contains no additives, such as minerals or vitamins. Glass-distilled or deionized water is usable if you replace some of the minerals. Brandweins, Chalkleys, and Knops solutions are widely used recipes. If these are not available, use very dilute solutions of marine salt such as our Instant Ocean® Synthetic Sea Salts (item #671440). Although the concentrations of marine salts vary, the following proportion is usually successful: Dissolve 0.5 g of marine salt in 1 L of DH₂O. Dilute 1:10 with DH₂O for use (e.g. 10 mL stock + 90 mL DH₂O).

Follow this advisory on releasing organisms.

Carolina provides living organisms for educational purposes only. As a general policy, we do not advocate the release of organisms into the environment. In some states, it is illegal to release organisms, even indigenous species, without a permit. The intention of these laws is to protect native wildlife and the environment.

After completing classroom activities, we suggest that organisms be:

- Maintained in the classroom
- Donated to another classroom or science department
- As a last resort, disposed of humanely

Find extra organisms in your shipment?

Carolina takes every precaution with your organisms during handling and packing to assure healthy living specimens. As live organisms are difficult to ship, we may add extra specimens to your order to compensate for any that may be lost in transit.

Contact Us

If you need to contact us, use the information below. Carolina customer service will assist you in any way we can.

Problems? We hope not, but if so contact us. We want you to have a good experience.

Orders and replacements: 1-800-334-5551, then select Customer Service.

Technical Support and Questions: caresheets@carolina.com



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