

# Pond Water Quality: How to Avoid Common Maintenance Mistakes

*Drs. Foster & Smith Educational Staff*



Water quality is vital in ensuring healthy plant and animal life in a pond. There are two components to water quality. One is the actual chemical make up of the water including pH, alkalinity, hardness, ammonia, nitrite, nitrate, and chemical additives, or impurities. While plants are less sensitive to chemicals than fish, it is still a good idea to keep the water in plant-only ponds that only contain plants as clean as possible.

The second aspect of water quality is water clarity. This contributes primarily to the enjoyment of your pond, but is important nevertheless because unless your water is clear, your pond will not look attractive. Murky water can be an indicator that something is wrong with the chemical composition or nutrient level in the pond.

Poor water quality can be the result of poor planning, maintenance, design, or situations completely beyond your control. What follows is a discussion of

some of the common ways that water quality can degrade in any pond, as well as some ways to prevent and cope with these water changes.

## Improper filtration

Unless you plan to expend a considerable amount of stressful time and energy on maintaining your backyard pond or water garden, you will require a filter. It is true that natural ponds do not require a filter, but Mother Nature has more experience in determining just how to keep everything in balance and she has years of time in developing these ponds. In nature, too, ponds that sustain animal life tend to be larger, and therefore, the inevitable chemical fluctuations take less of a toll on the pond's inhabitants.

There are two basic types of filtration you should become familiar with as a pond owner: mechanical and biological. Each plays an important role in keeping the water in your pond clear and healthy. Mechanical filters are designed to filter out physical impurities from the water. By cycling the pond water through a mechanical filter, bits of debris and solid waste will be eliminated. Like any other kind of physical filtration, the filter must be cleaned or replaced frequently. You should plan to clean out your filter once a week.

Biological filters are actually colonies of bacteria that feed on and break down harmful chemicals in the pond and convert them to harmless chemicals. Biological filtration is extremely important for a man-made pond. If your pond is unlined, chances are that the bacteria in the soil on the bottom will be a good source of biological filtration once the pond has cycled. If you have a lined pond, however, you will most likely need to invest in an external biological filter, similar to those found in aquariums. Inadequate biological filtration can lead to dangerous buildups of harmful chemicals such as ammonia and nitrites, which can injure or kill your fish or other pond inhabitants.

## Inadequate time for adjustment

Natural ponds take many years to develop into successful, thriving ecosystems. You can speed things up a bit through the use of the proper equipment or chemicals, but it still takes patience to develop a new pond. It may take days for plants to become acclimated to an established pond, while fish may take a few weeks. If you want to add new fish, add one or two at a time over a period of several weeks. Any new life in the pond will produce extra waste, and your biological filters need time to adjust to the added ammonia and other waste products.

## Overstocking

Your pond is a delicate ecosystem, and the amount of life that it can sustain is limited. Stocking too many fish can deplete the oxygen supply in the water, and create more harmful chemical wastes than your pond can process. Overstocked ponds require much more maintenance and are stressful to the fish and plant life.



## Overfeeding

Algae will most likely find its way into your pond no matter how you try to keep it out. A little algae is fine, but an excess looks bad and can lead to unhealthy water conditions. Overfeeding your fish is one of the fastest ways to develop an algae bloom. To minimize algae, as well as ammonia buildup, feed your fish only what they can eat in about 3 to 5 minutes once a day. They may still appear to be hungry after you feed them, but they will be healthy, and so will your overall pond environment. Commercial bacterial cultures are available to eliminate the excess organisms that flourish when you make the mistake of overfeeding.

## Fish stress, and bacterial or fungal infections

The most common reasons for widespread bacterial and fungal infections in your pond can all be attributed to poor water quality. If your fish, plant, or amphibian population is frequently developing disease or fungal problems, and you have checked all of the items outlined above, you may have location-specific problems, or you may wish to consider purchasing an ultraviolet (UV) sterilizer for your pond. A UV sterilizer is set up to allow the pond water to pass through it in the normal circulation process. As the water passes through the sterilizer, ultraviolet rays kill algae and other harmful bacteria. UV sterilizers can also be beneficial in controlling algae in ponds. However, for a UV sterilizer to work properly, you need to make sure you purchase the appropriate size.

#### Leaf and debris build-up

Remove dead organic materials from the pond as soon as you see them. Dead leaves, plants, or fish are an excellent source of nutrients for algae, so by removing them, you will slow algae growth. Decaying material of any kind produces ammonia, so by reducing the amount of waste in your pond, you will help your pond to maintain optimum water quality.

#### New water in the pond

Once your pond has cycled and has established the proper biological filters, you should be careful when adding any new water. Replacing "seasoned" water with new water can introduce new toxins or pollutants into the system, which can disrupt the entire biological filtration process. Unless your pond water level is unreasonably low, avoid adding new water to the pond. When you do add more water, do it a little at a time to allow the system to adapt. Water changes should also be avoided unless the pond water has high levels of harmful chemicals that cannot be controlled naturally. Again, a little at a time is the best way to perform these water changes. Also, be certain to check the chemical additives in your tap water before adding water directly to your pond. Chlorine and heavy metals can kill your fish and other pond inhabitants, but can be removed easily and inexpensively through the use of water conditioners and water additives.

#### Poor drainage

Shield your pond from excess rain and rain drainage, especially if you live near a large metropolitan area. Rainwater can pick up all kinds of pollutants from the air, and chemicals and fertilizers from the soil and bring them directly into your pond if you do not take precautions. Building a "lip" around the edge of your pond is a good preventive measure. Likewise, an overflow drain will direct excess water away from the pond. This may not be as much of a problem in areas with low levels of rainfall or minimal air pollution.

#### Too much direct sunlight

Your pond should not be entirely exposed to direct sunlight. Natural shading from trees or bushes helps, but you should also add some plants to the pond (such as water lilies). If the entire pond is exposed to direct sunlight for most of the day, you want to keep anywhere from one-half to two-thirds of the pond shaded. This reduced amount of sunlight will slow algae growth.



#### A final thought...

There can be other things that will cause your pond water quality to suffer. If you have followed the above guidelines and are still troubled by poor water quality, there may be area-specific concerns you need to deal with, such as air pollution, climate, or soil chemistry. You may need to consult with your local nursery, landscaper, or aquatic veterinarian for professional guidance.