

Coming out of Cold Weather

If this spring is anything like last spring I dread the phone calls from all the Atlanta Koi Club pond owners with fish health problems. Your KHA crew plans to approach possible sick fish problems with the old philosophy of “an ounce of prevention” attitude. The next few articles will try to help you prepare for the arrival of spring and all the unwanted bad bugs that will come with it. We will recommend possible courses of action to prepare your ponds and fish for those bug attacks. There can be no “Magic Bullet” or the perfect treatment but there are several researched, educated, tested, tried and proven treatments that will help the cause. You just have to choose one that is comfortable for you.

A Review.

Last spring we wrote on the subject “Aeromonas Alley”. The article explained that it is the time when our pond temperature is just high enough to allow Aeromonas and Pseudomonas to become active and our fish’s immune system has yet to become active. Because the fish immune system cannot fight yet, the fish are highly susceptible to illness. One day, all of a sudden we begin to notice our fish have ulcers, fin rot, mouth rot. It always occurs when our pond water temperature is between 40 and 60 degrees F in the spring. Most of us do not have heated ponds so; we must learn to deal with this real world problem for Koi Kichi People and help our fish get over the hump.

Aeromonas become active at 42 F and remain to well above 90 degrees F. Some species of parasites also become active at 45 F. Our koi’s immune system does not become effective to fight off infections until above 45 degrees F. We do not begin to feed our fish until above 50 degrees F. So, by the time our little fishes can even help themselves, those bugs are already doing the dastardly deeds.

So what are we to do? Remember that all bacteria thrive in high (I say any) organic environment. We can not stress enough, **Clean, Clean, Clean your pond**. Clean the bottom, clean your streams, and clean your filters. Clean often. Don’t wait till a problem pops up. “Specific pathogens such as Pseudomonas and Aeromonas depend upon fouled water to attack fish,” wrote Erik L. Johnson, D.V.M. in his book [Koi Health and Disease \(reloaded\)](#). He explains that many parasites thrive with a thick mulm layer on the bottom of the pond. It is imperative that we clean extra carefully at the end of January or early February. The pond bottom needs to be swept or vacuumed, the bottom drain line should be flushed, filters flushed. Very soon your water will be clean and clear. The bad bacteria will not have any reasonable fuel. The koi will be minimally stressed, if at all, and since we are not feeding at this time the biofilters will have time to reactivate as we lightly begin feeding in the spring as the water temperature rises.

Here are a few steps to follow over the next few weeks and months:

1. Our southern temperature begins to rise and fall in February and March. The rise in temperature will mean the Bugs will become more active. So, plan to bundle up, put on the long rubber gloves and waders, and clean your pond and filters before the Bad Bugs get out of their winter bed.
2. Conduct water changes. If we have been conducting a 10, 20 or 30% change weekly, it stands to reason we reduce Aeromonas by that value. (The fishes love fresh water and Please don't forget to declor).
3. If possible, treat your pond with Potassium Permanganate. We know use of PP is very controversial. Many folks are afraid to use it. However, used properly the product is very save and helpful and it is cheap. Many experts now highly recommend the use of PP to combat bad bugs. A therapeutic dose of 2 - 4ppm for 6-8 hours will do the trick. PP kills bacteria, aeromonas, pseudomonas, parasites, fungus, and helps clean organic waste we missed in our pond cleaning. Large deep voice from the clouds...**WARNING** (PP is very dangerous if not used properly. Take personal safety precautions. Know what you are doing or ask for help. A pond owner must know the water volume exactly in order to properly treat).
4. Next, Salt to .3% (after PP treatment is complete) for 14-21 days. Salt has been termed as the "Wonder Drug" of the koi industry. Japanese koi specialist live by proper salt use. Salt will reduce parasites in a few short weeks and in the case of a few of the parasites that invade our ponds, they are dead in as little as a few hours. It is a very safe and cheap way to kill bugs. (Do this when H2O temperatures are above 45 – 50 degrees F, salt has a temperature lowering effect on the H2O). Before you raise the salt levels, take you plants out of the pond and get them ready for spring too. When you have done the treatment, and after several water changes to get the salt below say 1 – 1.5% then put your plants back in the pond. In the mean time put them in a kiddie pool, or large plastic storage containers.
5. DO NOT get in a big hurry to feed when temperatures go above 50 degrees F. Food means feces. Aeromonas feed on feces. Fewer feces, less Aeromonas. Less Aeromonas, less ulcers. Get the picture? When you do feed, feed an immune system enhancing feed for the first few weeks (14-21 days). The last few years our club, through Coastal Pond, acquired Romet. I hope we do it again this year. Watch for it at the meetings. Another recommendation is to soak the food in orange juice just before feeding. You get that extra kick of vitamin C for their immune system.
6. We will also provide articles on alternate treatments for parasites using Proform-C and Prazi. A little more expensive, but good just the same
7. After use of PP, use Koizyme above 45 degrees F. This product is a proven natural enzyme that starves aeromonas. Some people like to begin a regiment in the spring (above 45 degrees F) and again in the fall only. What ever helps.

Potassium Permanganate Use

The following regiment is a safe and proper way to treat your water with PP. There have been many articles written on this subject. The research conducted by Dr. Johnson has been extensive and safety for the fish has been the top priority. So, here is Dr. Johnson's method to conduct a PP treatment extracted from one of his articles.

First step in each application is to bypass biologically active filter media. Turn off your UV during treatments.

Filter bacteria can be killed off by Potassium Permanganate and this can have terrible effect on water quality. If the filter is small, flow rates are low, or fish are crowded or overfed, the effect is more pronounced than if the conditions are less loaded.

Second step in each application, make sure water flow and aeration are optimal.

The water needs to be aggressively agitated during treatment because as the organic molecules are oxidized, and string algae die off, water turbidity becomes threatening and dissolved oxygen can plummet. If you cannot hear the water circulating, splashing and mixing, then concern over dissolved oxygen should be great. You will lose fish due to oxygen starvation. Add additional aeration. You can never go wrong adding more oxygen.

Thirdly, apply 2-4 ppm as a single dose in the morning.

2 ppm is indicated when young fish, un-scaled fish such as Doitsu, or when Orfe are treated. 4 ppm is a better dose for scaled Koi. None of the recommended doses will harm plants; you will be relieved to know. Many retailers use Potassium Permanganate at a higher dosage as a dip for incoming plants to kill leaches and exclude snails and their eggs.

To dose 4 ppm you should measure out 1 gram per hundred gallons. We always recommend getting a gram scale and make all measurements as close to exact as possible. Alternatively, knowing that approximately 6 grams fits neatly into a level, non packed common kitchen measuring teaspoon, you could dose with one teaspoon per six hundred gallons. Add the calculated dose to a plastic bucket of pond water and mix to dissolve it. Once the solution is stirred up thoroughly, distribute it around the edge of the pond, but especially in the water returns to be sure mixing is good and complete. A fish can be clouded by the blast in the pond and remain unharmed.

Once in the pond, the Potassium Permanganate will begin to eat up (oxidize) organic molecules and debris, fish wastes and mulm, as well as string algae. The water will turn a pretty shade of purple. Now we monitor time based on the color of the water. Note the time your water remains purple and gradually turning to pink. It may only remain purple to pink for a few minutes in heavily loaded systems. That is why it is important to clean your pond. Once its energy is spent, the water will turn to tea, amber or orange, or even

brown, and then you may go to the fourth step. If your pond takes only a few hours or less to start turning tea-colored it is permissible to add an additional dosage at 1/2 the original dosage amount. The correct way to judge the color of the water is not by looking at the pond but taking a sample of the water in a white cup.

The fourth step is to resume normal filtration and execute a partial water change.

The following morning you would execute treatment two, adding the calculated dose of Potassium Permanganate in a bucket and dissolving well. Add to the pond with even distribution after bypassing biological media and ensuring aggressive water circulation/aeration.

In treatment two, you should notice that the water remains purple for a longer period of time. The reason is that the initial dose of Potassium Permanganate has oxidized a lot of the mulm and organic loading of the system. Again, after the dose of Potassium Permanganate turns to amber or brown as viewed in a white cup or white plastic bucket, then you may resume normal filtration and execute a partial water change.

The following morning you would execute treatment three, adding the calculated dose of Potassium Permanganate in a bucket and dissolving well. Add to the pond with even distribution after bypassing biological media and ensuring aggressive water circulation/aeration. This treatment lasts even longer, due to the reduction in system organics from the previous two treatments. It is usually this third treatment that begins to let the fungi and flukes in a system know that things are very wrong in Koi Ville.

The fourth treatment *usually* stays purple for over three hours. The fungi, bacteria and flukes during this treatment take a royal pounding. Fish are flourishing as the organic and bacterial load in the system take a dirt-bath. If the third or fourth treatments stay purple for longer than eight hours, then this is the last treatment, this is usually sufficient to eliminate Flukes in the serial treatment. For most people, however, the fifth treatment is the capper, and then they are done.

A major water change (30 -40 %) is suggested after the fifth or final treatment in order to help remove a lot of the leftover brown scum and oxidized material from the system. After this change, you will smell crisp clean water, observe good color in the fish, frenzied feeding behavior, and really *white* whites as the fish enjoy the best water they've been in for years.

We are looking for an honest purple to pink color for minimum of 6 hours with 8 hours being better.

When we use PP it is critical that you know the exact gallons of your pond! It is very easy to overdose with potassium permanganate. PP works by oxidizing. This oxidative process is what kills the crud, bacteria and parasites. It takes a long treatment time to kill flukes (an active treatment time of 6 to 8 hours). The cleaner your pond is the longer and more effective each treatment. Most every one in this hobby has, at one time or another,

killed some of our wet pets by accidentally overdosing something or, pushing the dosage over its limits trying to achieve what they thought was a more effective treatment or to save time! PP is an outstanding product when used properly but a dangerous product for people who do not take the required precautions. Again, the exact gallons of your pond must be known and you must be willing to make water changes between treatments as well as have the time to watch your koi and goldfish while the treatment is active.

Purple to pink color means active. Orange color means turning inactive. Brown or tan color means inactive. If your pond is clean with no residual de-chlorinator in the water you will probably achieve a 6-hour treatment the first time. If you don't get 6 hours of treatment you must change 30 to 40% of the water out and re-treat the pond in a day or two. The water change must be made to eliminate the high content of dissolved organics in your pond water to protect your koi. If you need to re-treat in a day or two you cannot use de-chlorinator or hydrogen peroxide when re-filling the pond because the de-chlorinator will deactivate the treatment. You can get a under counter water purifier at Home Depot with activated carbon filter, get a fitting for your hose and let her rip. Wernerponds.com also carries a hose style filter that removes chlorine. If you use de-chlorinator or hydrogen peroxide during your water change you must wait 2 or 3 days before re-treating the pond to allow the de-chlorinator to dissipate from the water. Also, if your pond is dirty you will have to perform several treatments followed by water changes to achieve the required time of treatment.

When your treatment lasts for 6 to 8 hours it can now be considered successful.

We need to watch our fish during the treatments. If at any time your fish become stressed, gulping for air at the water fall, belly up, etc, or if you overdose you may deactivate the treatment by adding de-chlorinator or hydrogen peroxide.

Sodium Thiosulfate Dose To Neutralize PP	
To Dose 1 gram per 100 US Gallons (about 2.5 ppm)	
System Capacity	Dose This Much Sodium Thiosulfate
500 US gallons	1 teaspoon (5 mL)
1500 US gallons	1 tablespoon (15 mL)
6000 US gallons	1/4 cup (58 mL)
25,000 US gallons	1 cup (236 mL)
50,000 US gallons	1 pint (473 mL)
100,000 US gallons	1 quart (946 mL)

Or use:

Hydrogen Peroxide, 3%. Qty: 1 pint per 2000 US gallons. You do not have to use both. One or the other will do fine.

Last month Michael wrote on the ORP Meter and its use. Several of us have those meters and utilize them for PP Treatments. It allows us to be very exact on amount and time utilization for the PP. It cuts the number of treatments to one 4 – 6 hour concentrated and controlled session. A topic of discussion for a later date for sure.

Oh yea, have that declor and hydrogen peroxide on hand and near by your pond just in case. You don't want to be running around in an emergency situation.

Hydrogen peroxide may be added to your very last treatment to deactivate the treatment. It has the added benefit of turning your water crystal clear and allows you to avoid another water change. It will also add a little oxygen in the process. Use 1 pint per 2000 gallons of treated water.

Wrap up

Measure exactly. DO NOT OVERDOSE! Know your ponds exact water volume.

First, your pond needs to be clean.

Lastly, your pond needs to be clean.

A PP treatment is that extra step in fighting off bacteria and parasites which can harm your fishies.

Next – Proform-C and Prazi.

Joe