

POND TREATMENTS (not for food fish)
Noel L. Shaw, KHA **October 2012**

NOTES: 1) Use the following treatments with caution and discretion. Do not allow dust or fumes from these chemicals to get near your mouth, your eyes, or anything else, such as your pets or children. They are generally safe for koi when used at the recommended dosage schedules. Avoid direct contact of fish with treatment chemicals.

2) Know your pond volume. Calculate volume with salt method (see "POND TREATMENT BASICS". Measure doses carefully. More is not better. These treatments WILL consume available oxygen. They may kill weak fish. They may disable a weak bioconverter (BC) / filter.

3) ALWAYS: • Disperse treatment chemicals as evenly as possible; pre-dissolve and add slowly to a return water stream.

- Maximize aeration and circulation to the pond (waterfall, air stones, extra pump, etc.) during treatments.
- Bypass BC / filtration where noted. Flush BC thoroughly to waste before start up if BC is off line for more than a few hours.
- Be prepared in advance (with dechlorinator, etc.) to perform massive water changes after treatment as directed.
- Treatment efficiency is maximized in clean water: Clean pond well with initial 30 - 50% water change (dechlor except with PP)

SODIUM THIOSULFATE

This solution neutralizes chlorine in any new water added to your pond. Dose only for the amount of new water, not the total pond volume.

In clean gallon jug, add one pound of Sodium Thiosulfate to a half gallon of water. Shake until dissolved. Add water to make a full gallon, shake again.

Dosage: 10 ml / 100 gallons new water. 1250 gallons- ½ cup. 2500 gal = 1 cup solution. etc.

SALT / SODIUM CHLORIDE - INDICATION: soothes new fish, helps maintain osmotic balance, control string algae, reduce nitrite toxicity. MAY control SOME parasites and protozoa. SAFE FOR BC. CAUTION: Salt is a cheap old school remedy that many people indiscriminately throw at pond problems as a safe first line of defense. Salt has become increasingly less reliable. It is not effective against crustacea, and salt resistant strains of protozoans and flukes have developed. Nonetheless, it does have significant benefits in certain circumstances. BEST BET – Scrape and scope FIRST to diagnose for parasites – if you end up with other treatments anyway, you may need to water change down to .1% salt to avoid oxygen starvation.

EFFECTIVE DOSE: a constant **1 ppt (.1%)** helps with string algae, helps healthy koi maintain osmotic balance, is safe for almost all plants.

2 ppt (.2%) generally controls string algae, but may slightly brown the tips of pond plants. Eases osmotic balance in sick fish.

3 ppt (.3%) for two weeks clears some protozoans and flukes. Don't count on it. String algae becomes mush and falls apart, so filter will need frequent attention. Reduces nitrite toxicity.

6 ppt (.6%) for two weeks clears most protozoans and some flukes. MOST PLANTS WILL DIE.

10 lb "SOLAR" salt per 1000 gallons yields a .12% (1.2 ppt) solution. 25 lbs of salt per 1000 gal yields .3% or 3ppt. Add over two days. In sudden fish mortality, add .3% all at once (but not directly through filter or BC). Maintain .3% for two weeks, then allow salt levels to fall with regular water changes.

DIMILIN / TRICHLORFON / ORGANOPHOSPHATES (hereafter "TRICHLORFON") – INDICATION: Crustacea (anchor worms, fish lice), some flukes. SAFE FOR BC. TRICHLORFON is an organophosphate arthropod development inhibitor. TRICHLORFON stops the life cycle of Anchor Worm (Lernea) and Fish Lice (Argulus) by inhibiting molting and growth. TRICHLORFON is toxic to unintentional chitin shelled invertebrate targets as well (crayfish, water fleas, dragonflies, etc.); do not let treated water run into rivers or creek beds. Use responsibly. Trichlorfon (and its analogs) are available in several formulations: Neguvon [Miles or Bayer]; Dipterex [Bayer]; Masoten [Miles or Bayer]; Dylox [Bayer]

EFFECTIVE DOSAGE: .25ppm (point 25 ppm)

1 gram (1/2 teaspoon) per 1,000 gallons. Dissolve in some warm water, and sprinkle the suspension over the surface of the pond. For QT's and small ponds, dissolve 1 gram (1/2 tsp) in 100 cc water. Use 10 cc (2 tsp) of the suspension per 100 gallons, and discard the rest. Apply weekly for four weeks. Repeat at 30 day intervals for season-long control.

CHLORAMINE-T - INDICATION: Bacterial gill disease, bacterial infection, flukes. LETHAL TO BC FILTER BACTERIA.

EFFECTIVE DOSAGE: varies with the pH of the system. Dosage increases with pH; 20ppm (eighty grams per 1000 gallons of water – roughly eight tablespoons) at a pH of 8.0 (most Tucson water). Repeat every other day for four treatments. 25-30% water change after 4 hours. Dechlorinate for entire pond volume after each treatment (sodium thiosulfate). 1000 gal = 80g. 3000 gal = 240g (1/2 lb)

WHEN USING FORMALIN (ProForm C or Rid-Ich) OR POTASSIUM PERMANGANATE AGAINST PARASITE OR FUNGAL INFECTIONS, MULTIPLE TREATMENTS ARE REQUIRED, AT INTERVALS BASED ON THE LENGTH OF THE PARASITE LIFE CYCLE, WHICH IS DEPENDENT ON WATER TEMPERATURE.

- < 60° F, repeat every third day for 4 total treatments.
- Above 65° F, repeat every other day for 4 total treatments.
- 25-30% water change after every other treatment

FORMALIN / MALACHITE GREEN (F/MG) – "PRO-FORM C" &/or "RID-ICH" INDICATION: Flukes, protozoa, fungi, some bacteria; disinfect new plants SAFE FOR BC AT 25ppm. Toxic to fish under 45° F.

EFFECTIVE DOSAGE RANGE: 15 - 25ppm

Proprietary formalin / malachite green products (Pro-Form C, Rid-Ich) recommend a dose rate of 10 ml per 100 gal that only yields 15 ppm of formalin. I adjust the manufacturer's dosage rate to achieve 25 ppm of formalin. Use a correction factor of 1.66 (25 ppm divided by 15 ppm) to yield 25 ppm with these products: 16.6 ml per 100 gallons. That is 166 ml (2/3 cup) per 1000 gallons of pond to achieve 25 ppm of formalin. (16.6 ml per 100 gal X 10 hundred gal). A 2000 gallon pond would dose at about 330 ml, or 1 1/3 cups of F/MG. 250 ml is about a cup.

DISINFECT NEW PLANTS - 125 ppm (5 ml (1 tsp) per 10 gallons) for 8 hours. NOT to be used for fish at this dosage, but used to disinfect plants.

POTASSIUM PERMANGANATE (PP, KMnO4) - INDICATION: Flukes, protozoa, fungi, sometimes helps bacterial infections. Have 3% drugstore hydrogen peroxide or sodium thiosulfate (chlorine neutralizer as well) on hand as an antidote. LETHAL TO BIOCONVERTER FILTER BACTERIA. You **MUST** bypass your BC to use permanganate at these dose levels. Potassium permanganate, a dark purple-grey granular powder, becomes vivid purple in water, stains skin dark brown for a couple of days, and clothing permanently. **EFFECTIVE DOSAGE:** 2.5 ppm to 4ppm.

1 tsp (6g) per 600 gal doses a pond at between 2.6 and 4 ppm (depending on your teaspoon – some hold 8g- both ends of the range are OK).

INSTRUCTIONS:

1) bypass BC (bioconverter), maintain full aeration and circulation

2) pre-dissolve permanganate crystals (1 gram of per 100 gallons of pond = 2.6 ppm ≈ 1 tsp per 600 gal) and disperse mix evenly around pond.

3) Goal is pink for 4 hours. If turns tan in less than two hours, add ½ more of 1st dose quantity. May repeat this additional ½ dose a second time if necessary, for a total of double the initial dose. When pond water viewed in a white cup appears tan, NOT pink, resume BC filtration. Always restart BC with a flush to waste.

• IF WATER TURNS TO "CHOCOLATE MILK", FISH ARE GASPING, OR ACCIDENTALLY OVERDOSED, IMMEDIATELY ADD 16 oz OF HYDROGEN PEROXIDE (drugstore variety) PER 1000 GAL TO NEUTRALIZE THE PERMANGANATE, THEN PERFORM A 30-50% WATER CHANGE.

Time to "tan water" becomes longer with each treatment. After 4th treatment, neutralize residual Permanganate with Peroxide, 1 cup per 1000 gallons.