

Death by Poisonous Chemicals

You can never be too careful when using chemicals near your aquarium.

By Stephen M. Meyer

Q. In our family/dining room I have a 30-gallon-high tank with a power filter and an undergravel filter and an airstone for aeration. Three 3-inch orandas were in this tank for 1½ years. I do a 20-percent water change each week.

In November I sprayed a pyrethrin-based flea spray on a dog crate that was situated about 12 feet from the tank. The spray had no contact with the tank — only fumes in the air. That evening the fish were acting a little dopey. Over the next two weeks one oranda lost its ability to stay level. It hung head down in the water, then later it was on its back. It did not float — just swam upside down. A few days later it died.

About a week after that I noticed that my red cap oranda had some scales standing out. In the days that followed this spread. I am now treating it in a 5-gallon hospital tank for dropsy.

My question is, could the flea spray have poisoned the fish and would it take this long for the fish to die? Nothing else has changed in the tank. I cannot figure out why two beautiful fish would die so suddenly. It's driving me crazy.

A. Well, there is a good possibility that the flea spray did cause the death of your fish. Pyrethrin is a natural organic pesticide derived from the dried flowers of *Chrysanthemum cinerariaefolium*. In fact, mixtures using pyrethrins have been tried as a method for killing anchor worm, but the toxicity of these solutions to fish eliminated any chances for their use.

There has not been much detailed research on the toxicity of this compound to fish, but from what information is available it seems to be lethal. Carp (fairly large fish) were affected by 1 part per million (ppm) and were paralyzed and died at 5 ppm. Guppies died within five hours of being exposed to 1 ppm. And 0.009 ppm was lethal to juvenile salmon.

Of course, in a flea powder there are likely to be chemical binders and enhancers that may increase the toxicity of pyrethrin even more when exposed to water. It is impossible to say how much got into the tank, but if you could smell it in the air then it is not hard to imagine that the pyrethrin dust could settle on the water surface where feeding goldfish would suck it in as they ate.

It might well affect nerve system functions (as limited testing shows), which would account for your fish's upside down swimming. It may also affect immune abilities, leading to dropsy and other bacterial diseases. In any case it is not surprising that it took several weeks for the fish to die. That is how sub-lethal doses kill fish: The animals are weakened and something else finishes them off. A full lethal dose would have killed them quickly.

If you have to use any insecticide, fungicide or similar products in the house, you must take precautions. First, cover the tank completely. Second, turn off all power filters and air pumps. Third, open windows and use fans to flow air away from the tanks.

When spraying is finished, add fresh aquarium-grade activated carbon to the power filter and restart it. Carbon will remove many pesticides from water. After 24 hours discard the carbon and replace it with fresh material.

Pondkeepers face this problem all the time when they (or their neighbors) choose to use toxic chemicals to control pests in the landscape near ponds. Accidents happen.