

# The Aerial Spraying of MALATHION: How Safe is it?

Interview with Jorge R. Mancillas, Ph.D.

*Jorge R. Mancillas, Ph.D. Neurobiologist at the University of California, Los Angeles (formerly affiliated with MRC's Laboratory of Molecular Biology, Cambridge, England, and the Salt Institute) as interviewed by Betsy Russell-Manning, in her publication "Malathion: Toxic Time Bomb"*

**BRM: How does malathion affect the living organism?**

**DR. MANCILLAS:** All cells in the body are in constant communication with one another. This allows all the tissues to act in a coordinated fashion (this is the key point). One of the chemicals most commonly used for cellular communication, especially in the nervous system, is acetylcholine. Some nerve cells release acetylcholine and this leads to excitation of the cells they contact. The cells that respond to acetylcholine, have an enzyme called cholinesterase, which destroys the acetylcholine (to limit the period of excitation). Malathion inhibits cholinesterase, and as a result, the cells that are exposed to acetylcholine, go into a frenzy of activity, (or a period of activity that does not end) leading to damage or leading to abnormal responses or abnormal activity in the nervous system. It affects humans, flies, insects, dogs, rats or any other animals the same way by binding and inactivation cholinesterase. A short way of saying all of this is to say, malathion interferes with cell communication by inhibiting cholinesterase.

**BRM: In other words, malathion affects the entire nervous system.**

**DR. MANCILLAS:** Exactly. Any part of the system where you find acetylcholine, and therefore cholinesterase, that communication will be disrupted by malathion.

In the nervous system of flies, it acts by disrupting the control of their muscles, and kills them. In our bodies, acetylcholine and cholinesterase are found most commonly in nerve cells that control muscles. They are found in the visual system in nerve cells and muscles that control pupil and lens contraction and eye movements; in the nerves and muscles that control respiration; in nerves and muscles that control the digestive system. They are also involved in the control of blood vessel contraction, release of tears and mucous secretion.

So, not surprisingly, when you examine the many well-documented cases in the clinical literature of people that have been accidentally exposed to malathion in the pesticide manufacturing industry or in agriculture, when it is clear that malathion was the causative agent, all of the symptoms documented involve those areas of the body I just mentioned.

The textbook description of the symptoms of malathion poisoning include increased lacrimation, irritated eyes, blurred vision, breathing difficulties, muscle paralysis, vomiting, diarrhea, increased mucous discharge and flu-like symptoms.

It can also affect the central nervous system, leading to headaches, dizziness, weakness, blurry vision, etc. Which of these symptoms will be displayed depend on the amounts of malathion and the mode of exposure. If the dose of malathion is really large, patients can display generalized convulsion, psychological disturbances, coma and death from respiratory or cardiac failure.

**BRM: For example, if I am in El Monte one night (where they are spraying) and then Pasadena the next night (where they are spraying) will the malathion be cumulative — even if it is a low dose?**

*Continued*