

# Pesticides and You

News from the National Coalition Against the Misuse of Pesticides (NCAMP)

*One in a Series of NCAMP "How-To's"*

## Understanding Toxicological Terms

### TOXICOLOGICAL TERMS

- **Acute toxicity** is toxicity that develops soon after a single large dose is administered (e.g. vomiting).
- **Chronic toxicity** is toxicity resulting from a low level exposure over a long period of time. Symptoms may not appear until much later (e.g. cancer).
- **LD<sub>50</sub>** is the "lethal dose at the 50th percentile," or that dose in mg/kg of body weight which will kill half of the test animals to which it is administered. It is used to compare the acute toxicity of chemicals, since the smaller the LD<sub>50</sub>, the more toxic the compound. Examples: LD<sub>50</sub> of aldicarb (Temik™)=0.5 mg/kg. LD<sub>50</sub> of 2,4-D=375 mg/kg. (Conclusion: Temik is 750 times more lethal than 2,4-D.)
- **Oncogens** cause tumors, whether benign (non-fatal) or malignant. **Carcinogens** cause malignant tumors,

which are collections of cells that multiply uncontrollably, invade other tissues, and can metastasize to, or colonize, other parts of the body.

- **Mutagens**, from the Latin "mutare" (to change), are agents that can alter genes. These changes can then be perpetuated in subsequent cell divisions. Most mutations are detrimental, and most are lethal.

- **Teratogens**, from the Greek "terata" (monsters) are agents which can cause birth defects.

### CHEMICAL TERMS

- **Organic chemicals** are made of carbon, hydrogen and/or oxygen. Although this branch of chemistry started out looking at "natural" chemicals like sugars and enzymes, today the term embraces synthetic as well as "natural" chemicals. Examples: car-

bon tetrachloride, DDT, ethanol, sucrose, estrogen. Only the last three are biologically derived.

- **Hydrocarbons** include any chemical compound containing hydrogen and carbon. Examples: methane (a natural product), chlorinated hydrocarbon (= organochlorine) pesticides.

- **Organochlorine pesticides** contain carbon, hydrogen and chlorine, and are very persistent in the environment. Examples: vinyl chloride (made into plastic), DDT, chlordane.

- **Organophosphate insecticides** (OP's) contain phosphorus and inhibit acetylcholinesterase (AChE), an essential nervous system enzyme. Examples: diazinon (Spectracide™), malathion (Cythion™).

- **Carbamate pesticides** can be just as toxic as OP's, but the AChE inhibition is more transient. Examples: carbaryl (Sevin™), bendiocarb (Ficam™).

- **Botanical pesticides** are extracted from plants. Examples: pyrethrins, rotenone, sabadilla.