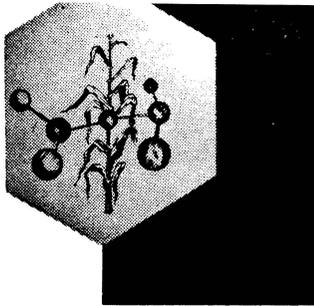


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# CHEMICAL-DRUG-PESTICIDE

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## THE EFFECTS OF PESTICIDES ON ANIMALS

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The following information is from a report of Kansas State University and discusses the effects of pesticides on animals.

The question as to whether or not a pesticide will produce a toxic effect upon animals depends upon the two following general considerations:

- The manner in which the compound is handled outside the body, and
- The manner in which the compound is handled inside the body.

It sometimes appears that one of the most constant findings in working with pesticide toxicities is the variability, not only of the effects produced, but the severity of these effects. The purpose of this presentation is to attempt to put forth some of the factors involved in this problem.

The factors responsible for determining the effect of pesticides on animals.

1. Improper use of the pesticide-This includes, in general, NOT FOLLOWING THE DIRECTIONS ON THE LABEL and specifically such errors as using the wrong compound, improper timing, improper application and accidental contact.

2. Species-No two species of animals react to or metabolize a compound in the same manner.

3. Biological variation-No two animals of the same species react to or metabolize a compound in exactly the same manner. Certain inherited factors are responsible for controlling the response of an animal to any compound. These inherited factors are thought to control the functioning of enzyme systems, which in turn, control the way an animal responds to a compound. This is why some individuals are highly sensitive to a compound and others less sensitive. Some individuals do not react at all and are said to be tolerant. Tolerance may also be built up in some cases.

4. Age-The very young and the very old are more susceptible to the effects of many compounds. This also is related to the status of many of the enzyme systems. In the young they have not had time to develop, while in the old, the enzyme systems may be worn out.

5. State of the animal's body-This includes such variables as body weight, amount of fat present, amount of food in digestive tract and type of digestive tract,

whether pregnant or not, or if animal is lactating. Example: DDT toxicity, oral ingestion,

Increase in body weight - can withstand larger amounts

Large amounts of body fat - less susceptible

Fasted animal - more susceptible

Ruminants - less susceptible - dilution, bacterial degradation

6. Route of entry-The means by which compounds enter the body may be listed, in general, in the order of their decreasing ability to produce toxicities as follows:

1. Injection
2. Inhalation
3. Oral
4. Through the skin.

7. Health of animal-Many diseases, especially those of the liver and kidney, may drastically alter the ability of an animal to detoxify or excrete a compound.

8. Other drugs in the animal's body-Many times a given compound will increase the toxicity of another compound when they are used simultaneously.

Example: Phenothiazine (a worming compound) and organic phosphate insecticides.

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