

## Pesticide Safety Around Animals<sup>1</sup>

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Pests of domestic animals are a serious threat to the animals' health since many feed on body tissues such as blood, skin, hair or feathers, and wounds. Skin irritation produced by these pests often results in discomfort for the animal. Many pests are also vectors of disease. In general, infested animals are unhealthy and cannot be managed efficiently.

Pesticides are commonly used to protect animals from pests. However, it is important to remember that any pesticide should be considered an active poison. The successful control of pests requires careful mixing and application of recommended pesticides according to label directions. Besides controlling pests, pesticide application at recommended rates is necessary to prevent injury to the animal. Never use more insecticide than is recommended. It is illegal to mix and apply pesticide except in the manner specified on the label; violators can be fined.

### Selecting Pesticides

Pesticides should be carefully selected after reviewing the recommendations made by extension personnel and carefully reading the labels of

pesticides. Prior to purchase, the pesticide label should be read to determine whether:

1. The label lists the name of the pest you plan to control.
2. The animal or site on which you plan to use the pesticide is listed.
3. The formulation is proper for the job.
4. The right application equipment is available.
5. The proper safety equipment is available. Also read the label to determine the amount of pesticide needed and the restrictions on its use. Do not purchase more than you will use.

### Storage of Pesticides

Pesticides should be stored in a locked, well ventilated, dry room away from food or feed, and out of reach of livestock, pets, and children. The storage room should be located away from buildings where people live or animals are kept, and a sign should be posted near the entrance warning that poisons are inside. Construction should be of fire-resistant

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materials with insulation to prevent freezing and overheating. An exhaust fan should be installed in one wall at a point most distant from the door and designed to operate only when the door is open. This will remove pesticide fumes and keep fresh air flowing through the storage room while you or others are inside.

Pesticides should be stored in the original containers and checked periodically for leaks. Leaking containers should be placed inside of larger containers. Do not store herbicides and insecticides together since contamination can occur. Spills should be cleaned up promptly and properly. Use sawdust or absorbent cat litter. Empty containers should be kept in the pesticide storage room until they can be disposed of as directed on the pesticide label. Keep an up to date inventory of the pesticides in the storage room.

## Pesticide Application

Before applying the pesticide, read the label again and look for the following additional information:

1. The target pest
2. The animal or area to be treated
3. The necessary protective equipment
4. Special warnings and first aid measures
5. Correct mixing procedures
6. Rate of application
7. Restrictions on use

Never use more pesticide than is stated on the label. Overdoses of pesticides are potentially fatal and can weaken animals making them susceptible to disease. Young animals, because of their low body weight, are particularly susceptible to overdoses of some pesticides.

Precautions should be taken during mixing, application and equipment clean-up to insure the safety of the animal. These are:

1. Cover feed and water containers to prevent contamination during application.
2. Keep chemicals thoroughly mixed in sprayer. Some formulations will separate unless constantly agitated, resulting in overdoses for some animals and underdoses for others.
3. Do not mix pesticides or load a sprayer where animals (or children and pets) may have access to spilled chemicals.
4. Do not use a pesticide if an oily or gummy film appears on the surface. The chemical may have deteriorated in storage.
5. Pesticides should not be applied to animals already treated with other pesticides or drugs. The combination of chemicals may produce undesirable effects.
6. Sick or stressed animals should not be treated with certain pesticides.
7. Young animals are often susceptible to pesticides. Read label precautions before treating young animals.
8. Do not use sprayers with leaking tanks, hoses or connections. Leaking pesticide solution increases the chances for contamination of humans, livestock and premises.
9. Certain types of animals are susceptible to some pesticides. Sensitive animals should not be treated. (See Problems with Pesticides below).
10. Have a special area for cleaning sprayers so excess pesticide and wash water do not contaminate animals or food and water. Keep drainage out of water supplies and streams. Do not let animals into areas where sprayers are cleaned.
11. Mix only the amount of chemical needed for the number of animals to be treated at that time.
12. Some solvents tend to stay in the air and cause toxicity problems to animals while in the holding area. To prevent this problem, animals should not be treated during hot still afternoons.

13. Excess pesticide solutions left in spray tanks should be disposed of properly. Do not store pesticides after they have been mixed for use except where permitted by label instructions. Many pesticides lose their potency when mixed for use and then stored. In addition to the above precautions, protect yourself from the effects of pesticides by following all safety procedures on the label and using accepted pest control practices.

## Pesticide Residues

Many animals are raised for human consumption. At slaughter, these animals must not contain potentially dangerous amounts of pesticides in the edible tissues. The Federal Government through the Food and Drug Administration guards our food from harmful pesticide residues by establishing pesticide tolerance levels. A pesticide tolerance level is the amount of pesticide that may remain as a residue in food. For example, the tolerance level for the chlorinated hydrocarbons in meat, eggs and milk is zero. It is important that illegal levels of pesticide residues do not accumulate in edible tissues. If a food product containing amounts of pesticide greater than the established tolerance level is found by the Food and Drug Administration, the product may be seized and destroyed. Legal action may also be taken against persons and businesses responsible for producing the high-level residues.

To prevent a build up of high-level residues, observe the following precautions:

1. Use only approved pesticides at the recommended dosage.
2. After application of a pesticide, allow the prescribed number of days to elapse (read the pesticide label) before slaughtering the animal or using its edible products such as milk or eggs. The interval will permit the animal to eliminate the pesticide from its tissues prior to processing of edible commodities.
3. When preparing backrubbers, use only recommended materials and carriers. Do not use waste motor oil since it may contain materials which produce undesirable residues.

4. Pastures, forages, and feed crops should only be treated with pesticides that will not contaminate the crop. Allow the prescribed number of days to elapse between pesticide application and crop harvest or use.

5. Clean application equipment thoroughly so residues from previously-used chemicals are not applied to animals.

6. Do not give animals feed or food of unknown origin unless you are sure it will not cause illegal residue problems.

7. Do not allow pesticides being applied in nearby areas to drift onto animals or into areas frequented by animals.

8. Do not allow feed or water to become contaminated with pesticides.

9. Do not make repeat applications unless specified on the label.

## Problems with Pesticides

Applicators should be aware that certain breeds of animals may react adversely to certain pesticides or materials contained in pesticide formulations. Sensitive animals should not be treated or should be treated with extreme care. For instance, Brahman cattle may be sensitive to organophosphate pesticides. If a pesticide label states "Do not treat Brahman cattle," the pesticide should not be applied to those animals. Also the skin of some horses and dogs is sensitive to some pesticide formulations. If there is uncertainty about an animal's sensitivity, treat a small area of skin and observe the area for 24 hours before treating the entire animal.

Individual animals may also react adversely to a pesticide or pesticide formulation. Sensitive animals should be identified and treated only with acceptable chemicals. If an animal does react adversely to an application, efforts should be made to remove the pesticidal formulation from the animal.

The age, size and condition of an animal are important when applying pesticides. Young animals are usually smaller than mature animals and consequently more susceptible to pesticides. Care

should be taken when treating young animals, and precautions on the label should be checked to determine whether application to young animals is permitted. Many insecticides should be applied according to the size of the animal. Generally speaking, less pesticide should be applied to smaller animals to prevent toxicity problems. Dusts and wettable powder formulations are usually less toxic than emulsifiable formulations. Stressed or diseased animals are also more sensitive to pesticides. Often the additional stress of a pesticide application is enough to kill stressed or diseased animals.

Certain precautions can be taken during routine applications to prevent pesticide problems. These are:

1. Do not apply pesticides on extremely hot still days; chances for toxicity problems are increased.
2. Do not wet animals with spray or dip during cold or freezing weather.
3. Use dust formulations whenever possible since they are absorbed more slowly through the skin than liquid formulations and are, therefore, usually less toxic. Dusts do not add excessive moisture to the animal. For sensitive animals, use dust or wettable powders.
4. Whenever possible, apply small amounts of pesticide to specific sites on the animal to control pests. Frequent treatments with small amounts of pesticide are preferable to infrequent treatments with larger dosages. This minimizes overdosing and sensitivity problems.
5. Do not treat stressed or diseased stock, young animals or small animals without consulting the pesticide label.
6. Do not overdose animals by treating them at the same time with several different pesticides, each aimed at a different target pest. Choose one pesticide that most effectively controls all pests involved; or treat each pest individually at different times.

## Pesticide Toxicity

Since the application of many of the chlorinated hydrocarbon pesticides in recent years has been restricted or eliminated, the use of organophosphate and carbamate pesticides for pest control on or around animals has increased. In general, the organophosphate and carbamate pesticides are more toxic to warm-blooded animals and active for shorter periods of time than the chlorinated hydrocarbons. Consequently, a more toxic compound must be used more often and there has been increased incidence of pesticide poisonings among domestic and agricultural animals.

It is necessary to recognize the signs of pesticide poisoning in animals and initiate prompt treatment when poisoning is suspected. When an animal presents any of the following symptoms for chlorinated hydrocarbons, organophosphates, or carbamates, it is essential that a history of the animal for 24-48 hours preceding onset be compiled. It is also essential that pesticides in or around the area be located to determine the causative poison.

### Chlorinated Hydrocarbons

The chlorinated hydrocarbons are neurotoxins and usually act on the central nervous system although kidney and liver functions can also be impaired. Symptoms of chlorinated hydrocarbon poisoning in animals are:

1. Vomiting
2. Restlessness or excitability
3. Tremor
4. Abnormal postures
5. Convulsions
6. Respiratory failure
7. Coma

When chlorinated hydrocarbon poisoning is suspected, a veterinarian should be consulted immediately. There are no specific antidotes, but therapy is directed towards removing the poison and treatment of the symptoms. If exposure is by dermal

contamination, skin and hair should be washed with soap and water. If exposure is by ingestion, emetics or gastric lavage is recommended. (note: Do not induce emesis if the ingested poison is principally a hydrocarbon solvent). Veterinarians may administer barbiturates in appropriate dosages if necessary for restlessness or convulsions. Watch breathing closely, and provide artificial respiration or resuscitation if needed.

### **Organophosphate Pesticides**

Organophosphate pesticides inhibit cholinesterase (irreversible), and specific antidotes are available for treating animals exhibiting organophosphate poisoning. Symptoms of organophosphate poisoning in animals are:

#### Mild Poisoning

1. Sweating
2. Tremors of tongue and eyelids
3. Excessive constriction of pupils of the eye
4. Tearing
5. Excessive salivation and other respiratory tract secretions

#### Moderate Poisoning

1. Vomiting
2. Tearing
3. Slow pulse
4. Uncontrollable muscle tremors
5. Earlier symptoms become more severe

#### Severe Poisoning

1. Unconsciousness
2. Diarrhea
3. Pinpoint and non-reactive pupils
4. Loss of reflexes

5. Loss of sphincter control
6. Coma
7. Convulsions
8. Cyanosis

Animals poisoned with organophosphate pesticides should have prompt and aggressive therapy. For extreme symptoms of organophosphate poisoning veterinarians usually administer atropine until atropinization (dryness of mouth and dilation of pupil) is reached. Usual doses (1 grain = 65 mg) or atropine are 2 to 4 mg (dogs), 30 mg/100lb (cattle), and 6.5 mg/100lb (horses). Repeated doses may be required every 5-10 minutes except in cattle where the effects of atropine generally last for 1-2 hours. Atropine should not be given to a cyanotic animal. After administering atropine, veterinarians will also administer intravenous doses of 2-PAM (Protopam chloride). If symptoms persist, a second dose may be administered.

Morphine, aminophylline, and phenothiazine should not be given to animals exhibiting organophosphate poisoning.

As soon as possible, hair and skin should be washed with soap and water if exposure was by dermal route. If by ingestion, emetics or gastric lavage are indicated. Although removal of the toxicant is attempted the reappearance of signs of poisoning may persist for 24-48 hours in non-ruminants and up to 5-8 days in ruminants. It is suggested that close surveillance of affected animals be maintained for those time intervals.

### **Carbamate Pesticides**

The symptoms of poisoning by carbamate pesticides are almost identical to the organophosphates. Treatment is also similar only 2-PAM should not be used since carbamate action on cholinesterase is reversible.

### **Pyrethroid Pesticides**

Mammalian toxicity levels to pyrethroid pesticides are extremely low and chances for poisoning would be almost nonexistent unless

animals ingested formulations that had not yet been mixed for application. If poisoning is suspected, a veterinarian should be contacted immediately. Pyrethroids have been noted to cause eye irritation. Eyes should be flushed with water and the area around the eyes washed with soap and water. Notify a veterinarian if irritation persists.