## Reducing Pesticide Risk to Wildlife

Pesticides are substances that kill, repel, or otherwise control pests. The pest controlled defines the type of pesticide. For example, insecticides kill insects, herbicides kill plants, rodenticides kill rodents, etc. Pesticides are used ubiquitously in our society to control a variety of pests both indoors and outdoors. They are useful tools for increasing agricultural production, reducing insect-vectored disease, and creating favorable habitat for wildlife (*e.g.* controlling noxious weeds and promoting preferable forage species). However, they can also be highly toxic and can pose a substantial risk to fish and wildlife populations. This brochure provides information that can help you minimize the risk to wildlife when using pesticides or other pest control methods.

Pesticide Impacts to Wildlife

Pesticides may adversely affect wildlife through direct toxicity or indirectly by modifying the availability of food or cover. Direct effects include mortality, reduced reproductive capability, and behavior impairment (*e.g.* neurotoxins that can cause death t ability to forage, escape predators, thermoregulate, etc.). Direct effects depend on the pesticide and its "mechanism of action". For example, the most toxic modern insecticides (organophophates, carbamates, pyrethroids) are acute hrough respiratory failure, whereas chronic exposure to the older organochlorine insecticides can cause reproductive failure in birds due to eggshell thinning. The indirect effects of pesticide use are often not considered and are not easily observed. Pesticide-related habitat modifications, such as herbicide-related changes in vegetative community can be either beneficial or detrimental depending on the habitat requirements of the species.
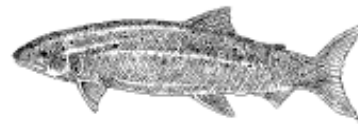
Regulatory Safeguards

Current regulatory requirements for pesticides help to *minimize* impacts to wildlife but do not completely eliminate risk.   Additionally, requirements and enforcement of pesticide regulations varies between countries. In the United States every pesticide product must receive a registration before it can be sold. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that risk of pesticides to wildlife be assessed during the pesticide registration process which is administered by the U.S. Environmental Protection Agency (EPA). The chemical manufacturer must provide EPA sufficient data to assess risk to humans and environmental health. For registration approval, the EPA must determine

that the pesticide will not cause unreasonable adverse effects to people, wildlife, or the environment. The ultimate decision to grant or deny registration of a pesticide product hinges on a benefit-to-risk analysis.

Labels defining how a product is to be used are required for every product. Pesticide users are legally required to read and follow label specifications. Labels contain Environmental Hazard Statements that forewarn the user of potential adverse effects on wildlife and/or the environment, and identify precautions that will reduce or prevent exposure of wildlife and contamination of the environment. If instructions on the label are unclear, you should consult your state agricultural agency or Cooperative Extension Service educators for assistance.
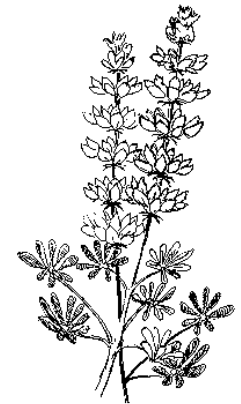
Risk Reduction Methods

Risk is a function of exposure and toxicity. You can reduce risk by selecting products that are less toxic and minimizing the potential for wildlife exposure to pesticides. Following are some helpful hints for risk reduction.

Selecting a Product? Read the Label!

- Compare Environmental Hazard Statements on several labels to select a product that poses the least risk to wildlife. Generally, risk to fish, birds, and other wildlife are greater with insecticides than other pesticides. Organophosphate, carbamate, and pyrethroid insecticides are generally the most acutely toxic. "Biocontrols" such as the microbial insecticide *Bacillus thuringiensis* (B.t.) tend to pose far less risk to wildlife.

- Consider how the potential adverse effects identified on the label pertain to your intended application site (*e.g.* if a compounds is hazardous to aquatic organisms don't apply near water or drains).
- Select products that are specific to the target pest. Avoid broad spectrum pesticides that are toxic to a wide range of organisms
- Pesticide labels have manufacturer emergency numbers. Be alert to wildlife that inhabit the application site and adjacent areas, and report any observations of possible effects to the manufacturer and local wildlife agencies.
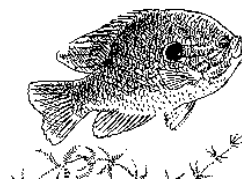
Application Considerations

- Precisely follow all label requirements. It's the law!
- Avoid applying pesticides in areas that are frequented by wildlife or are ecologically sensitive (including nesting sites, wetlands, endangered species habitats, native plant communities)
- *Apply pesticides only when pests are present at unacceptable levels.* This helps promote beneficial arthropod populations that control pests naturally.
- Apply the minimum amount needed to control pests
- Do not make pesticide applications when rain is imminent
- Control weeds and insects in home lawns and gardens by spot treating to reduce the amount of pesticide applied

- Do not wash application equipment near aquatic habitats or other wildlife habitats, or drains leading to these areas
- Calibrate your application equipment carefully to ensure you are applying the appropriate amount

Reducing Chemical Exposure

- Use non-chemical alternatives when available (*e.g.* mechanical removal of weeds, growing pest-resistant plants).
- Use "no spray" buffer zones to minimize potential of spray drift or runoff to environmentally sensitive areas
- Select disease and insect resistant trees and shrubs that reduce the need for pesticide use
- If mixing is required, prepare only the amount needed for application
- Dispose of pesticide containers and leftover material in an approved manner (read label directions or contact County Extension Service)
- Do not feed wildlife near pesticide storage or mixing areas
- Immediately clean up pesticide spills or contact state police & local wildlife agencies if spill is not manageable.