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OCT 24 1990

Current Information Series No. 861

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Quality Water for Idaho

Pesticide Handling Practices to Protect Groundwater

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Idaho aquifers provide more than 90 percent of the state's drinking water. They cannot remain a source of high-quality groundwater for future needs unless they are protected now.

It is almost impossible to clean a contaminated aquifer. Treatment is complicated, time consuming and expensive. The best approach to groundwater problems is to prevent contamination in the first place. The following pesticide management and handling practices can reduce the potential for groundwater contamination.

1. **Practice integrated pest management.** Pesticide applications should be carefully timed and combined with other pest management practices. Pests should be accurately identified, and pesticides should be applied only when necessary, using the lowest label rate that gives adequate pest control. Minimizing pesticide use makes good economic sense and reduces the potential for environmental problems.

2. **Select pesticides carefully.** Pesticides that are not adsorbed to soil particles can readily move in water, do not vaporize easily, are relatively stable, and thus have the greatest potential to leach into groundwater. Read the pesticide label carefully for information and restrictions on the rate, timing and placement of the pesticide. All these factors can influence a pesticide's potential for leaching. Also note any groundwater advisories or other water protection guidelines on the label.

3. **Consider the vulnerability of the area.** Determine the relative susceptibility of the soil to leaching. Soil texture, organic matter content and permeability affect pesticide movement. To the extent possible, determine the depth of the water table and the relative permeability of the geologic layers between the soil surface and the groundwater. Sinkholes (sinks) can be especially troublesome because they allow surface water to quickly reach groundwater with little natural soil filtering.

4. **Consider the location and condition of wells.** Wells should be properly capped and sealed to prevent groundwater contamination. Slope the area around the wellhead to keep runoff away from the well. Pesticides spilled near wells can move directly and rapidly into groundwater. Some recommendations advise against mixing, storing or disposing of pesticides within 100 feet of a well. Properly close all abandoned wells and never dispose of wastes in unused wells.

5. **Measure accurately.** Carefully calculate how much pesticide concentrate is needed to treat the specific site with the equipment you plan to use. Careful calculations will save money by reducing the amount of pesticide used and will help to eliminate disposal problems associated with excess spray mix. Prepare only enough pesticide for a single application.

6. **Calibrate accurately.** Calibrate equipment carefully and often to be certain it will apply the proper amount of pesticide. To minimize the potential for pesticide accidents or spills, check the equipment for leaks and malfunctions.

7. **Mix and load carefully.** Handle pesticides carefully to avoid spills. Mix and load pesticides on a concrete surface to avoid saturating the soil with pesticide. In the Midwest, most pesticide-contaminated aquifers have resulted from applicators cleaning their equipment in the same spot year after year.

Fill the spray tank as far from the water source as possible. This can be done by increasing the length of the water hose or filling the tank in the field using an alternative water source. Never leave a spray unit unattended during filling.

8. **Prevent back siphoning.** To prevent pesticides from siphoning back into the water supply, keep the end of the fill hose above the water level in the spray tank. Use an anti-backflow device (check valve) on the fill hose, especially when siphoning water directly from a pond or stream. Wells should be constructed with check valves to prevent back siphoning. Add check valves to existing systems if they are used for filling pesticide tanks or for chemigation.

9. **Do not overlap.** Turn off the sprayer or granular applicator device on turns, especially at the bottom of an irrigated field.

10. **Consider weather and irrigation.** Delay the application of pesticides if you expect heavy or sustained rain or plan a heavy irrigation. Pesticide runoff and leaching are increased by rainfall occurring soon after application. When applying chemicals through irrigation systems (chemigation), carefully control the quantity of irrigation water to minimize the potential for pesticide leaching and runoff.

11. **Store pesticides safely.** Minimize your pesticide inventory by buying only what you need for a season or specific treat-

ment. The pesticide storage area should be located away from all water sources and constructed on a concrete floor sealed with an impervious material. This will make pesticide cleanup easier in the event of a spill or leak. Inspect containers regularly for leaks and corrosion. Use the pesticides that have been stored longest before using those just purchased. Bulk pesticide storage tanks should be inspected frequently and placed on concrete pads surrounded by dikes to contain pesticides if a leak develops or a spill occurs.

12. **Dispose of wastes carefully.** Follow Idaho regulations when disposing of pesticides and pesticide containers; label directions for disposal may be illegal in Idaho. Triple rinse or pressure rinse pesticide containers as soon as they are emptied and pour the rinsates into the spray tank. Excess spray mix and rinsates from equipment cleaning can be sprayed on another site or crop listed on the label. A source of water at the application site makes it easier to rinse equipment and spray rinsates in the field. When practical, excess spray mix or rinsates can be held in the tank for use in a later spray mix.

Never dispose of pesticides or pesticide containers near a water source, over a shallow water table, in sinkholes or in abandoned wells. Such disposal violates both federal and state laws. Excess pesticide concentrates can be stored safely until a hazardous waste collection day or disposed of through a hazardous waste transporter, which is very expensive. Triple-rinsed containers are not considered hazardous and may be disposed

of at a landfill that will accept them. Unrinsed containers and excess pesticides must be disposed of at a disposal site approved by the Environmental Protection Agency.

13. **Prevent spills.** If a spill occurs, contain and clean it up immediately. Repeated pesticide spills in the same area can exceed the capacity of the soil to adsorb or degrade the chemical and can increase the likelihood of groundwater contamination.

14. **Leave buffer zones around sensitive (easily contaminated) areas.** When mixing, applying or storing pesticides, consider the location of sensitive ground and surface waters. These include springs, streams, ponds, wetlands and other surface waters. Also consider wells and groundwater recharge areas. A buffer zone between a pesticide use or handling site and a sensitive area can be established by planting vegetation or leaving an untreated border in the field.

The fate of a pesticide and the likelihood of its movement into groundwater are affected by its chemical and physical properties and those of the soil. Also important are geology and climate. In addition, the pesticide handling practices of the applicator are important. Consider each factor when determining the susceptibility of groundwater to pesticide contamination.

Be sure to understand how your activities, including handling and use of pesticides, can affect groundwater. Seek assistance from the University of Idaho Extension agricultural agent in your county if you have questions or problems.

Checklist for Protecting Water from Pesticides

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| <ul style="list-style-type: none"> <input type="checkbox"/> Does your storage facility have a concrete floor? <input type="checkbox"/> Do you clean your pesticide application equipment so that you can easily collect rinsates? <input type="checkbox"/> Does your water hose have a check valve to prevent back siphoning? <input type="checkbox"/> Have you sealed the wellhead? <input type="checkbox"/> Have you sloped the area around your well to divert surface runoff away from the well? <input type="checkbox"/> Have you properly closed all abandoned wells near a pesticide handling or application site? <input type="checkbox"/> Are there dikes around your bulk tanks to prevent off-site movement of pesticides? <input type="checkbox"/> Do you know if the pesticides you use have a potential for soil leaching? <input type="checkbox"/> Do you delay the application of pesticides if rain is forecast or if a major irrigation is scheduled? <input type="checkbox"/> Do you always read pesticide labels for information about irrigation practices, rates and application methods? | <ul style="list-style-type: none"> <input type="checkbox"/> Do you leave a border of untreated vegetation between treated and sensitive areas? <input type="checkbox"/> Do you have information about the geologic features in your area and about the depth of the groundwater? <input type="checkbox"/> Do you use pesticides only when necessary and then at the lowest label rate needed to control a pest? |
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Need More Information?

Pesticide recommendations for various crops and pests may be obtained from the University of Idaho Extension agricultural agent in your county. Contact your county Extension office for information.

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This publication is one of a series on water quality issues produced by the University of Idaho Cooperative Extension System for the people of Idaho. The material is based upon work supported by the U.S. Department of Agriculture, Extension Service, under special project number 90-EWQI-1-9216.