How is the Assessment Process for Groundwater Contamination from Pesticides Used for BMP Selection?

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In the field, natural conditions of climate, soil, and geology play a dominant role in determining pesticide degradation and movement. This is unlike the farmstead, where pesticide contamination of groundwater is more closely related to handling activities and the farm well.

The selection process for field best management practicies (BMPs) that protect groundwater must consider the most important environmental conditions. For this reason, a system was designed to assess those factors most likely to affect pesticide fate and BMP selection in North Dakota. NDSU Extension Bulletin EB-63, "An Assessment System for Potential Groundwater Contamination from Agricultural Pesticide Use in North Dakota," explains in detail how to account for these factors.

The assessment process helps to organize natural resource information into categories of groundwater sensitivity that should have similar contamination potential and management requirements. Priority areas and the most appropriate management methods for groundwater protection can be identified, so attention and effort is placed where it is most needed.

Field BMPs for *High* Sensitivity Areas

The general field BMPs outlined in the Groundwater/Pesticide Assessment and BMP series of fact sheets are expected to be most effective in areas that are categorized as High Sensitivity. The potential for groundwater contamination from pesticides diminishes from High to High Intermediate to Low Intermediate to Low Sensitivity categories.

High Sensitivity results from all important chemical and physical factors having a high potential for pesticide contamination. The practical implication is that several types of BMPs may be required to reduce contamination potential. All of the general field BMPs are expected to be useful in the High Sensitivity areas.

Field BMPs for *High-Intermediate* Sensitivity Areas

The High-Intermediate Sensitivity category includes a broader range of situations than the High Sensitivity category. There are many combinations of factors that fit this category, and they cannot be treated in the same way. The assessment process helps isolate which factor or factors are most likely to increase the potential for pesticide contamination. The BMPs that relate specifically to these factors will be most effective.

Field BMPs for *Low-Intermediate* Sensitivity Areas

Areas categorized as Low-Intermediate Sensitivity do not have obvious factors on which to focus field BMPs. Unless groundwater monitoring data indicate otherwise, pesticide contamination of groundwater below these areas is most likely to occur from farmstead activities around the well. Farmstead BMPs should receive most of the emphasis in these areas.

Field BMPs for *Low* Sensitivity Areas

The groundwater assessment is based on potential or probability of groundwater contamination. There is no guarantee that contamination will or will not occur in any specific area. Just because an area is categorized as Low Sensitivity does not mean contamination from field applications will never happen. It does mean that it is less likely to happen compared to the other categories. In areas of Low Sensitivity, farmstead sources of groundwater contamination are the most probable compared to field sources. Farmstead BMPs should receive most

if not all of the emphasis.

BMPs for Land Outside of Groundwater Sensitivity Areas

Part of the groundwater assessment process is to separate locations that overlay valuable aquifers from those that don't. This is an essential step to delivering effective management to those areas that have the highest priority needs.

Due to this process of elimination, many areas will lay outside of a groundwater sensitivity area, because no defined aquifer exists below the surface. It is recognized that groundwater contamination may occur in locations that do not have an aquifer shown in the county groundwater study report. Many private water supplies have wells that occur in low-producing materials or aquifers so small that they were not recognized as distinct sources of groundwater.

The assessment and field BMP selection processes can be used to protect undefined groundwater resources. However, the steps outlined in Extension Bulletin EB-63 will be more difficult to follow, because some of the natural resource information will not be as accessible. Farmstead BMPs should always be considered to help protect these types of aquifers.

Further Information

This circular is one of seven **GROUNDWATER/PESTICIDE FACT SHEETS**. Please refer to the following fact sheets for additional information.

- AE-1110 What is the BMP Selection Process for Groundwater Protection from Pesticides?
- AE-1111 How is the Assessment Process for Ground-water Contamination from Pesticides Used for BMP Selection?
- AE-1112 Farmstead BMP Recommendations for Groundwater Protection from Pesticides
- AE-1113 Improved Pesticide Application BMPs for Groundwater Protection from Pesticides
- AE-1114 Integrated Pest Management (IPM) BMPs for Groundwater Protection from Pesticides
- AE-1115 Soil and Water Conservation BMPs for Groundwater Protection from Pesticides
- AE-1116 Irrigation BMPs for Groundwater Protection from Pesticides

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