Groundwater Monitoring for Pesticides
Frequently Asked Questions

The Nevada Department of Agriculture (NDA) monitors a network of groundwater wells across the state for pesticide contamination. In a study from 1992-2001, the Environmental Protection Agency (EPA) found one or more pesticides or pesticide breakdown products in 50 percent of shallow wells across the United States (Thodal 2009). Groundwater monitoring allows the NDA to evaluate possible risks and provide education to agriculture and pest control industries to prevent the risk of contamination.

How would pesticide compounds get into groundwater?

A pesticide (any substance used to kill or control insects, weeds, plant diseases and other pests) could get into groundwater through agricultural and urban runoff, erosion, leaching from application sites and precipitation that has become contaminated by applications upwind from a water source. Although rare, pesticide spills near poorly sealed wellheads and malfunctioning irrigation systems that are used to apply pesticides may also contribute to contamination.

Why and how did the monitoring program begin?

In 1993 the NDA installed three pilot wells in cooperation with the United States Geological Survey (USGS) to begin monitoring groundwater for pesticide residue and provide background information on drinking water quality. Each sample was analyzed by the NDA Chemistry Laboratory for 37 common pesticide compounds. This voluntary program continues today with approximately 60 monitoring wells throughout the state, which are sampled twice yearly and analyzed for more than 70 pesticide compounds.

Additional Resources

- **Water Resource Protection**
  - agri.nv.gov/water-resource-protection
- **Pesticide Waste Disposal Events**
  - agri.nv.gov/pesticide-waste
- **Groundwater Monitoring Video**
  - youtu.be/TKiAW7FMHPQ

What does the NDA do if pesticides are detected in groundwater?

If a pesticide contaminant is found and likely to approach or exceed a human health or an environmental benchmark within localized areas, the NDA will take steps to tailor outreach, education and training to that product, and/or adjustments in pesticide application practices (such as use restrictions, suggesting alternative products or recommending other chemical-free control methods). The goal of management efforts is the overall reduction of pesticide concentrations and frequency of detections in local watersheds.

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How does the NDA sample groundwater?

Most of the wells sampled by the NDA are shallow wells built specifically for groundwater monitoring. These monitoring wells are not the typical drinking or supply wells. They consist of a two-inch pipe which accesses an aquifer (underground water storage) anywhere from fifteen to sixty feet below the surface. The top of the pipe is at ground level and secured by a concrete riser with a steel or composite wellhead cover for protection against traffic and potential vandalism.

By sampling shallow groundwater, the NDA can detect pesticide contamination early, before it reaches deeper water supplies, which many rural Nevada communities rely on for drinking water and can be difficult and expensive to clean-up. Results from the collected samples are evaluated through a ten-year trend analysis.

How were the well site locations determined?

Groundwater well site locations are based on pesticide usage and primary land use. Some factors that determine site selection are agricultural production regions, depth of the water table (the upper surface of underground water storage), historic use of leachable pesticides, site access, property ownership and soil type (e.g. sand, silt or clay).

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Does the NDA collect any other water samples?

Surface water samples are taken from lakes, rivers, streams, wetlands and irrigation ditches near the groundwater monitoring wells to determine if a physical interaction exists between the different water sources. Pollution of surface water can cause degradation of groundwater quality.

Samples are also taken from the Virgin River in Moapa Valley near Las Vegas to collect water quality data regarding the Environmental Protection Agency's (EPA) Endangered Species Protection Program for two endangered fish species: the woundfin and Virgin River chub.

What can I do to help prevent pesticides from contaminating the groundwater?

The best way to ensure safe application and groundwater protection is to follow the label directions to safely apply pesticides. The label is a legal document that helps ensure the applicator is using the right amount, at the correct site, while wearing the proper protective equipment. Additionally, ensure proper disposal of waste pesticides and pesticide containers at the NDA's pesticide waste disposal events, which are free to the public: **agri.nv.gov/pesticide-waste**