

BE ON THE TEAM TO THINK DOWNSTREAM: PESTICIDES

WHAT IS THE PARAMETER?

Pesticides are chemicals used to control pests and include herbicides, insecticides, fungicides and rodenticides. Each different pesticide has a unique chemical formula and degradation residuals that can persist in waterways after the compound is broken down. Current market pesticides have active ingredients to reduce the risk to the environment, but exposure and increased concentration may impact ecosystems.

Agricultural crop with natural contour for water collection. Photo by M.P. Hayes



WHAT AFFECTS THE PARAMETER?

The chemical formula, concentration, location and timing of pesticide application can greatly affect the potential impact it may have in a waterway. Rainfall and irrigation contribute to pesticide movement by washing pesticides from application areas into nearby water bodies through runoff. Soil properties and landscape will influence pesticide absorption and release to surrounding environments. Residual

pesticides can be broken down by microbial activity and photodegradation from sunlight to form different compounds that can impact the environmental systems. It is best to understand the type of pesticide you are applying and follow all instructions for proper location and conversations to prevent pesticides from entering surrounding waterways.

WHERE DOES IT COME FROM BROADLY AND SPECIFICALLY TO LOUISIANA?

Pesticides enter water bodies through agricultural runoff, urban runoff and improper disposal. There are only a small portion of waterways in the state impaired by pesticides, but application areas including lawn care, landscaping, agricultural crops and pest control practices can be the source if not managed correctly. The Louisiana Department of Environmental Quality uses the Water Quality Integrated Report to identify impairments and sources. The following sources were identified as causing pesticide impairments around the state:

- Crop production (irrigated/nonirrigated)
- Industrial point source
- Urban runoff
- Agriculture

HOW DOES IT AFFECT THE SURROUNDING ENVIRONMENT?

Pesticides that enter the waterways can be toxic to fish, invertebrates and other aquatic organisms, disrupting ecosystems and food chains. The presence of pesticides (or degradation products) can reduce biodiversity by harming species unintentionally, including beneficial insects and plants. Pesticides can

also accumulate in the tissues of aquatic organisms (bioaccumulation) and potentially affect predators that consume these organisms. Long-term exposure to pesticides can lead to the development of resistant pest populations.

WHAT ARE TRADITIONAL MANAGEMENT PRACTICES?

Implementing integrated pest management (IPM) practices should reduce the reliance on chemical pesticides. These practices include the use of biological controls, crop rotation and growing resistant crop varieties. Included in this is using precise application methods and equipment to minimize pesticide drift and runoff, as well as following recommended application rates and timings and establishing buffer zones with vegetation between agricultural fields and water bodies to filter runoff and

reduce pesticide entry into waterways. Additionally, residential applicators should carefully read the instructions to determine the proper concentrations and timing for the applications in lawn and garden settings. This can be critical to the transport of pesticides into surrounding ecosystems. For additional information on best management practice for pesticide application, check out LSU AgCenter Chemical Weed Management Guide.

RESOURCES

<https://www.epa.gov/ingredients-used-pesticide-products/basic-information-about-pesticide-ingredients>

<https://www.usgs.gov/mission-areas/water-resources/science/pesticides-and-water-quality>

<http://www.deq.louisiana.gov/page/louisiana-water-quality-integrated-report>

https://www.lsuagcenter.com/~media/system/d/9/c/6/d9c65025862a52032feaf01c7f510f5a/pub1565-2024_lasuggestedchemicalweedmanagementguide_20_aquatic_weed_managementpdf.pdf

https://www.lsuagcenter.com/~media/system/d/9/c/6/d9c65025862a52032feaf01c7f510f5a/pub1565-2024_lasuggestedchemicalweedmanagementguide_22_calibration_procedurespdf.pdf

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