

An Overview: Water Safety

Water is vital to agriculture and our global food supply. We must all be vigilant in protecting our water supply by minimizing its use and keeping it safe. Innovations in agriculture help ensure that we have water that is safe to drink and available to grow our crops.

The Basics

- // **What:** Very little of the water on Earth is fresh water and readily available for human consumption or agricultural uses.
- // **Why:** Water is a precious natural resource, essential to all living things. Taking care of it is a necessity and innovations in modern agriculture can help solving these challenges.
- // **How:** From digital farming tools that reduce pesticide use to new gene editing techniques that can breed crops that need less water to grow, innovation in agriculture will help ensure that our water supply stays safe and abundant.

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globally



between 2000 and 2030.

The Background

As the global population continues to rapidly grow, the demand for clean, fresh water is growing with it. Only three percent of the water on Earth is fresh water, and most of this is frozen in glaciers and in polar ice caps. In fact, just 0.5 percent of global water supplies are actually available for practical uses. Even without accounting for shifting weather patterns driving regional droughts, demand for fresh water for agricultural, industrial and municipal use is predicted to increase by 50 percent globally between 2000 and 2030.

The Highlights

Water is a precious natural resource, and there's not much of it available for consumption.

- // Water covers 71 percent of the Earth's surface, mostly in oceans. Only 2.5 percent is freshwater available for drinking or growing crops.¹

Trace levels of chemicals in water shouldn't be scary.

- // Some chemicals found in water, like chlorine, are intentionally added to waterways to protect people against harmful bacteria and prevent the spread of certain illnesses.
- // Most reports of pesticide residues in water show that the small amounts found are well below established safety levels. Therefore, they have no effect on human health.²
- // Because scientists today can detect even the smallest traces of chemical residues, it's good to know that a substance's mere presence does not mean it is harmful.

What goes in water doesn't usually stay in water.

- // Most pesticides are made up of carbon-based molecules, so when they're exposed to sunlight, water or microbes, they break down into harmless substances like carbon dioxide and water.
- // Many older, more persistent pesticides are no longer used, and have been replaced with products that do not build up in animals or persist in water.³
- // Some organic pesticides, like copper sulfate, dissolve easily in water, but the heavy metals will sink to the bottom of lakes and ponds where they remain indefinitely.⁴

References

1. USGS. <https://water.usgs.gov/edu/earthwherewater.html>
2. Pesticide Environmental Stewardship. <https://pesticidestewardship.org/water/pesticide-fate/>

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The Highlights

The agriculture community is working to protect our water supplies.

- // More responsible regulatory and management practices have been put in place to protect our water supply. These practices minimize potential chemical or fertilizer runoff from farm operations. For example, Bayer's Phytobac™ system uses millions of microorganisms to clean farm wastewater of crop protection residue and foreign matter.⁵
- // New digital tools and satellite imagery are allowing farmers to only apply pesticides or fertilizers exactly where and when they are needed, which reduces runoff into water.
- // As part of a pesticide's registration approval process, scientists take years to understand how pesticides potentially get into water and what becomes of them if they do.

The agriculture industry is using innovation and sustainability to reduce contaminants in water.

- // Despite the hype, the actual amount of pesticide residues in water has been declining, thanks to newer, less persistent products and more responsible stewardship practices.⁶
- // Residues of neonicotinoids found in U.S. drinking water are vanishingly small – about ten thousand times below the safe levels established by the EPA for human consumption.⁷ Are aquatic animals at risk? More than 95 percent of the time, concentrations of neonicotinoid residues found in U.S. waterways are below the EPA's conservative no-effect level.
- // According to the World Health Organization, the presence of glyphosate in drinking water does not represent a hazard to human health.⁸
- // With modern science, we can detect extremely low concentrations of pesticides in water. These tests provide verifiable proof that our system of regulatory oversight is working to keep us safe.
- // No one wants to consume unwanted substances in our food or water, but we should rest easy knowing that these trivial exposures will cause us no harm.

Key Things to Remember

- // Water is a precious natural resource and essential to all living things. Taking care of it is a necessity and innovations in modern agriculture can help solve these challenges.
- // From product testing to constant monitoring to ensure that levels of chemicals in water are many times below levels that might be harmful, many steps are in place to ensure that drinking water, groundwater and surface water remain safe.
- // Pesticide residues are often found in a concentration of just a few parts per trillion. One part per trillion is the equivalent of one second in 32,000 years, or a one-cm step in 250 trips around the world (10 million km).
- // Responsible water management will help ensure that our water supply stays safe and abundant.

References

5. <https://www.cropscience.bayer.com/en/stories/2017/sustainable-agriculture-in-the-field-innovations-for-water-and-soil>

6. Farmers Weekly. <https://www.fwi.co.uk/arable/pesticide-residues-in-water-show-significant-decline>