

WVU POLLUTION PREVENTION NEWSLETTER

May 2025

INDUSTRY FOCUS: WATER CONSERVATION

Welcome to the latest edition of the WVU Pollution Prevention Newsletter! In this issue, we are excited to introduce the dedicated members of the WVU Pollution Prevention Team, committed to environmental stewardship. Explore valuable insights as we share best practices around the use of water and water conservation in industrial facilities. Lastly, discover the range of services we offer to support Small and Medium-sized Enterprises and businesses throughout West Virginia. Stay informed, inspired, and engaged with our commitment to environmental excellence and community impact.

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WHAT IS POLLUTION PREVENTION



Pollution Prevention (P2) is one of the key approaches towards an initiative to improve the energy efficiency and productivity of key industries while prioritizing environmental sustainability. The initiative focuses on reducing or preventing pollution at its source.

The primary objective of our Pollution Prevention program is to provide technical assistance to Small and Medium Enterprises in **key industries** and within **disadvantaged communities** in West Virginia by assisting with identification, development, and implementation of P2 methods. The recommendations provided to the industries are designed to help the business lower operational costs by reducing expenditures, water and energy usage, waste, and disposal costs, while at the same time maintaining and often improving productivity.

Key Industries:

- 1. Food and Beverage Manufacturing and Processing
- 2. Chemical Manufacturing, Processing, and Formulation
- 3. Automotive Manufacturing and Maintenance
- 4. Aerospace Product and Parts Manufacturing and Maintenance
- 5. Metal Manufacturing and Fabrication

OUR SERVICES

- 1. **Pollution Prevention Assessments:** The project team will make a planned visit to your facility to assess and gather data on energy, water, material, and personnel use. Assessment data along with input from the facility managers will be used to develop P2 recommendations. A detailed report based on the findings will be submitted to the facility shortly after the on-site assessment.
- Energy Audits/Assessments: Applying for a USDA-REAP grant and need an assessment? Want to save money? The project team will visit your facility and identify opportunities to improve energy efficiency. A detailed report will be provided to the business, including estimates of implementation costs, energy use savings, energy cost savings, and simple payback period for each identified opportunity.
- 3. **Training Workshops:** Training workshops will be conducted to help businesses learn P2 Best Practices, tools, techniques, and resources available, and how to modify their process or site to improve energy efficiency, productivity, and environmental sustainability.
- 4. **Technical Assistance:** The project team can provide on-site or off-site technical assistance on a variety of industrial concerns related to topics including pollution prevention, energy efficiency, sustainability, environmental impact, and process improvement. Contact us for assistance!
- 5. USDA-REAP Application Assistance: Applying for grant funding can be a challenge, especially for the small businesses that do not have an expert at grant-writing on the payroll. Our project team can help you navigate the application process and assist with completing the application for USDA-REAP funding.

P2 INDUSTRY FOCUS

KEY STRATEGIES FOR WATER CONSERVATION IN INDUSTRIAL FACILITIES

As industries across West Virginia aim to improve environmental performance and reduce operational costs, water conservation has become a critical area of focus. To help businesses identify actionable opportunities, the WVU P2 Team has developed a five-part framework of key strategies to help businesses across the state reduce water use, cut costs, and enhance sustainability.

1. Conduct Water Audits and Monitoring: The foundation of any conservation effort is understanding where water is used and wasted. Facilities can use different devices like ultrasonic flowmeters, pressure transducers, and thermal cameras to identify leaks, inefficiencies, and unusual usage patterns. Regular water audits establish baselines and enable real-time tracking of improvements. A Michigan-based forging plant used this strategy to save \$116,000 annually by detecting unaccounted water losses¹.

2. Upgrade Equipment and Optimize Processes: Equipment and processes often utilize significant amounts of water. Water-intensive systems can often be replaced or retrofitted with high-efficiency alternatives. Examples include low-flow valves, automated shut-off nozzles, and Clean-In-Place systems. Process improvements, like switching from continuous rinses to batch processes, can also lead to major savings. One facility cut rinse water use by 100,000 gallons per year through solenoid valve installation².

3. Reuse and Recycle Water: Consider opportunities to reuse and recycle water. For example, closed-loop systems and greywater reuse reduce the need for freshwater intake and ease the burden on wastewater systems. Reuse applications include floor washing, irrigation, and cooling. Carlsberg Brewery's on-site treatment system enabled it to cut water use by 50%, saving over 500 million liters annually³.

4. Implement Smart Water Management Systems: New technology has enabled new methods to assist in water management and conservation. IoT-based solutions allow for automated leak detection, water shut-off during non-operational hours, and predictive analytics. These systems reduce water use by up to 15%, prevent costly damage, and support maintenance planning.

5. Explore Alternative Water Sources: Not all water-intensive processes or equipment require fresh municipal water. Facilities can harvest rainwater or reclaim treated wastewater for landscaping, equipment cleaning, and cooling towers. In areas with supportive infrastructure, this strategy supports regulatory compliance and long-term water resiliency.

¹ Metaldyne Case Study – U.S. Department of Energy, Industrial Technologies Program (DOE/GO-102005-2119).

² Industrial Assessment Center, West Virginia University. (2017). Energy and Water Assessment Report for Berkeley Springs Water, Berkeley Springs, WV.

³ Water Cycle Denmark. (n.d.). Carlsberg Brewery Water Reuse Showcase. Retrieved April 29, 2025, from <u>https://watercycledenmark.com/showcase/carlsberg/</u>

HIGHLIGHTING OUR IMPACT

The WVU Pollution Prevention (P2) team takes great pride in the impact we have within the borders of West Virginia since January of 2023. From energy savings to CO_2 reduction, the recommendations we develop for these businesses not only help these businesses improve their sustainability, but also their bottom line!

Look at the impact of the opportunities we have found! \rightarrow

- 27 Energy Efficiency/P2 Assessments
- 57 Recommendations

With Annual Savings of...

\$513,309 in Energy Costs

3,672 MWh of Electricity

12,452 MMBtu of Natural Gas

3,153 Metric Ton CO₂ Equivalent

UPCOMING EVENTS

WVU Pollution Prevention Conference @ West Virginia University June 20, 2025 @ 10:00 AM – 4:00 PM ET



Location: Advanced Engineering Research Building, Room 120 101 Research Way, Morgantown, WV

Topics: Attend in-person or virtually via Zoom to enjoy presentations on various Pollution Prevention topics related to:

- Behavior-Based Approaches to Pollution Prevention
- Novel Approaches to Energy Efficiency & Sustainability
- Efficiency of Industrial Systems
- Case Studies
- And More...

Register Here or use the QR Code!



Webinar: Water Conservation – Practical Strategies, Examples, and Best Practices *May 30, 2025 @ 12:00 – 1:00 PM ET*

Topic: Join us for a webinar on water conservation, including a framework toward identifying water conservation opportunities and discussion of specific best practices to reduce industrial water use.

Register Here or use the QR Code!

THE P2 TEAM

Faculty & Staff

Students



Dr. Ashish Nimbarte PhD, PE, CEM Principal Investigator



Dr. Christopher Moore PhD, CEM Project Manager, Co-PI



Dr. Imtiaz Ahmed PhD



Dr. Avishek Choudhury PhD



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P2 Website



CONTACT US

Inquire about Services



Questions or Comments?