

TOXICS REDUCTION PROGRAM

2021 Annual Report



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Publication 22-04-015
Revised March 2022

LETTER FROM THE **PROGRAM MANAGER**

When we work with Washington businesses, we make great strides reducing toxic chemical use and limiting the generation of dangerous waste.

For decades, we've enacted regulations that protect human health and the environment from the contamination caused by smokestacks, sewage discharge pipes, and landfills.

But even the strongest end-of-pipe regulations aren't going to solve the toxics challenges we face today. To do that, we need to tackle toxic chemicals at their source before they become waste or make their way into consumer products.

Reducing or removing toxics earlier in the industrial process can help businesses reduce both their dangerous waste disposal costs and the risk of spills that are massively expensive to clean up. Our Toxics Reduction Program will continue working directly with businesses and manufacturers in Washington through our Product Replacement Program and Pollution Prevention Assistance. **These programs help businesses shrink their environmental footprint and switch to safer alternatives or practices.**

Pollution prevention typically saves Washington businesses money, but because we are a regulatory agency, businesses can be reluctant to take advantage of the technical assistance our engineers, chemists, and environmental specialists offer. I encourage businesses to rethink this reluctance! Using fewer toxic chemicals has many tangible benefits, including:

- Reducing business costs.
- Minimizing regulatory costs.
- Improving worker safety.
- Fostering clean water and protecting wildlife.
- Avoiding the creation of costly new toxic cleanup sites.

Our technical assistance services are confidential and non-regulatory, **meaning our free consultation won't result in any surprise penalties.** You can rest assured knowing we are here to help you better manage your waste and reduce both your costs and use of toxics in your business.

This report demonstrates that our toxics reduction efforts are making a difference in Washington—we're setting the example for other states and helping to secure both environmental protection and a vibrant economic future for our state and planet. Let's keep going and do even more!



Katrina Lassiter, Program Manager
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Washington State Department of Ecology

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THE PROBLEM

Toxic chemicals are in everyday consumer products, and they're used in industrial processes that power our economy. The release of toxic chemicals—either during use or at end-of-life—increases risks to the environment and public health. Promoting the use of safer chemicals and preventing the use of toxic chemicals in products and processes can lead to less dangerous waste, improved worker and consumer safety, lower regulatory burdens of dangerous waste management, a cleaner environment, and lower economic costs.



OUR RESPONSE

The Washington State Legislature passed the Hazardous Waste Reduction Act in 1990, launching the statewide toxics reduction and pollution prevention planning efforts that continue to this day.



“We’re out here to help you understand the regulations [and] understand how to comply. But we’re really out here to help you reduce pollution, reduce waste, be more efficient, improve your profits, reduce your costs, and help the workers at the company have a safer environment, help the communities around those factories have a healthier, safer environment for all of us in Washington state.”

—Hugh O’Neill, Ecology toxics reduction specialist [since 1991](#)*



* <https://ecology.wa.gov/Blog/Posts/January-2022/30-Years-of-Toxics-Reduction-and-Pollution-Prevent>

OUR MISSION

The [Hazardous Waste and Toxics Reduction \(HWTR\) Program](#)* protects Washington's residents and environment by reducing toxic chemicals, helping businesses manage dangerous waste, preventing new contaminated sites, and cleaning up existing contamination.

OUR VISION

Our vision is to become national leaders in minimizing and eliminating the impacts of toxic chemicals and dangerous waste.



* <https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Hazardous-Waste-Toxics-Reduction>

HOW WE **ACHIEVE OUR MISSION**

The Toxics Reduction Program helps businesses generate less dangerous waste and even save money. We help by:



Finding ways to reduce the use of toxic chemicals.



Focusing on safer alternatives and green chemistry.



Increasing efficiency in the manufacturing process.



Improving worker safety.

Our goals include:

- Identifying toxic reduction opportunities at 50% of the technical assistance visits we provide to Washington state businesses.
- Establishing reduction projects that measurably reduce pounds or dollars spent by at least 10%.

OUR SERVICES

Our team of engineers, chemists, toxicologists, and environmental specialists want to help. We provide **non-regulatory, confidential, and free** [technical assistance](#).*

We identify opportunities and implement projects in the following areas:

- Toxic chemicals used in production processes.
- Toxic chemicals in products.
- Toxic Release Inventory chemical emissions.
- Dangerous waste generated.
- Other measurable environmental impacts (e.g., energy use, water use/quality, solid waste generation).



* ecology.wa.gov/TRA

OUR PARTNERS

The [Toxics Reduction team](#)* works closely with businesses, non-profit organizations, and local governments to identify pollution prevention opportunities. These opportunities are customized recommendations that help our partners reduce waste and increase efficiency, often resulting in cost savings and quicker results.



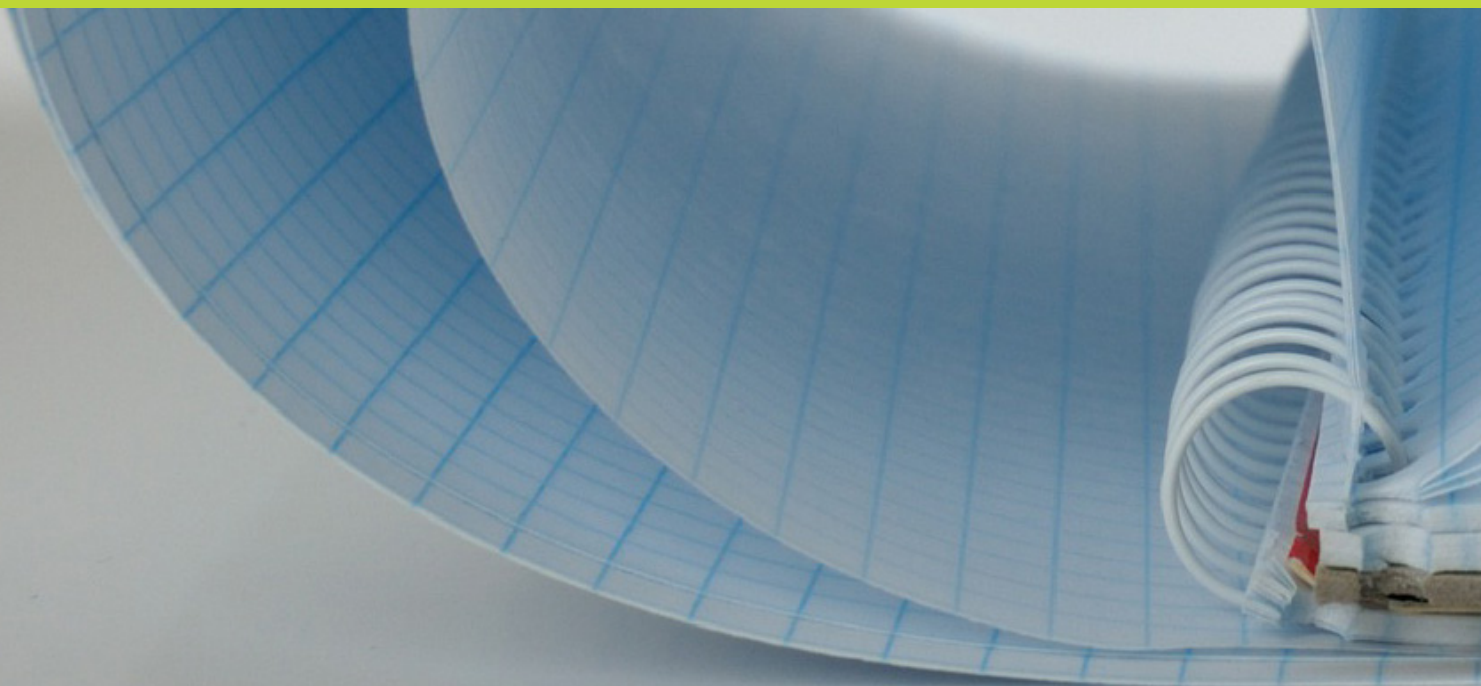
* <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Toxics-reduction-assistance/Meet-our-team>

POLLUTION PREVENTION **PLANS**

Since 1990, [Washington law](https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214)* requires significant generators of dangerous waste or entities that report toxic releases to submit [Pollution Prevention \(P2\) plans](https://ecology.wa.gov/Regulations-Permits/Reporting-requirements/Dangerous-waste-reporting-requirements/Pollution-prevention-plan)** to Ecology.

A P2 Plan helps businesses track and report on their efforts to:

- Decrease the amount of dangerous substances they use.
- Reduce the dangerous waste they generate.
- Conserve water, energy, and other natural resources.
- Reduce air emissions.
- Recycle waste into usable materials.
- Identify cost savings.



* <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.214>

** <https://ecology.wa.gov/Regulations-Permits/Reporting-requirements/Dangerous-waste-reporting-requirements/Pollution-prevention-plan>

THE POLLUTION PREVENTION **GRANT PROGRAM**

The Environmental Protection Agency (EPA) awards [Pollution Prevention \(P2\) grants](#)* to Ecology to support the national goal of reducing or eliminating pollutants from entering any waste stream. This is often achieved collaboratively with other programs, organizations, and businesses.

Over the last year, the P2 grant program has supported projects in the following areas:

- Energy audits and environmental consulting to manufacturing sectors including aerospace, food manufacturers, and metal fabrication.
- Support for food manufacturers in finding safer refrigerants, optimizing Clean-In-Place systems, and preventing acid wastewater problems.
- Pilot testing for safer brake cleaners at select automotive repair shops.
- Collaboration with the Toxics Use Reduction Institute lab to identify safer cleaning techniques and substances.
- Encouraging green chemistry to prepare the future workforce.
- Safer chemistry training and outreach.
- Virtual spray efficiency training.



* <https://www.epa.gov/p2/grant-programs-pollution-prevention#p2grant>

OUR **IMPACT**

The Toxics Reduction Program works with businesses across the state of Washington. Most of our outreach is to businesses that must prepare P2 plans. We help them find and realize opportunities to reduce their environmental footprint. Some small or medium businesses reach out to us directly, and we connect with them through programs within Ecology or through other state or local agencies.

WASHINGTON STATE POLLUTION PREVENTION

Toxics Reduction staff help businesses develop their pollution prevention plans. This year,* businesses that prepared plans reported saving **\$3.2 million** in costs thanks to things like:



* Numbers reflect reductions and savings achieved in 2020 that were reported by Washington state businesses in 2021.

OUR **TECHNICAL ASSISTANCE** IN 2021

Despite business closures and physical distancing requirements resulting from the COVID-19 pandemic, Toxics Reduction staff continued to make significant strides in reducing waste and preventing pollution. In the past year, our staff:



Engaged with **439 businesses**.



Visited **57 facilities**.

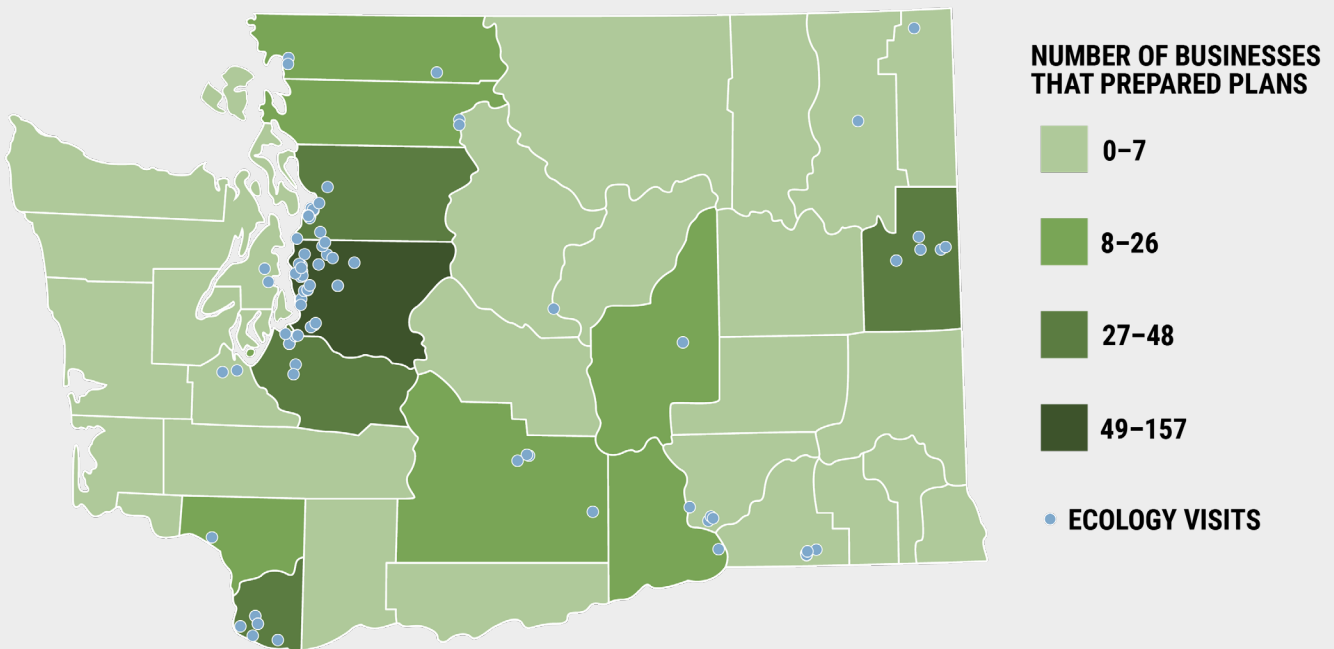


Identified opportunities for improvement during **38 visits**.



Implemented projects during **15 visits**.

TOXICS REDUCTION VISITS IN 2021



PROJECT IMPACTS

Our technical assistance visits lead to toxics reduction projects and become success stories.

Last year, the Toxics Reduction Program completed 11 projects that:



Reduced dangerous waste by
103,272 LBS.



Eliminated toxic chemical use by
27,829 LBS.



Helped businesses save
\$659,000.



SUCCESS STORIES, 2021

Metal Workings Fluids Project

Metal working fluids (MWFs) are widely used for cooling and lubricating during the machining process. We collaborated with multiple stakeholders to identify and encourage the use of safer alternatives to MWFs.

In 2021, we:

- Contacted 100 machine shops in the state to gather data about the MWF products currently in use, and worked with 23 MWF manufacturers to identify the chemicals in their product MWFs.
- Conducted a chemical hazard assessment on 115 MWFs to create an [Alternatives List](#)* that ranks products based on toxicity and communicates the information in an easy-to-understand format.
- Collaborated with MWF manufacturers to further evaluate chemical safety, improve product ratings, and enhance competitiveness.
- Developed a [Pollution Prevention Practices for Metalworking Fluids](#)** publication to help machine shops stop generating MWF dangerous waste and choose a safer alternative.



* <https://apps.ecology.wa.gov/publications/documents/2104041.pdf>

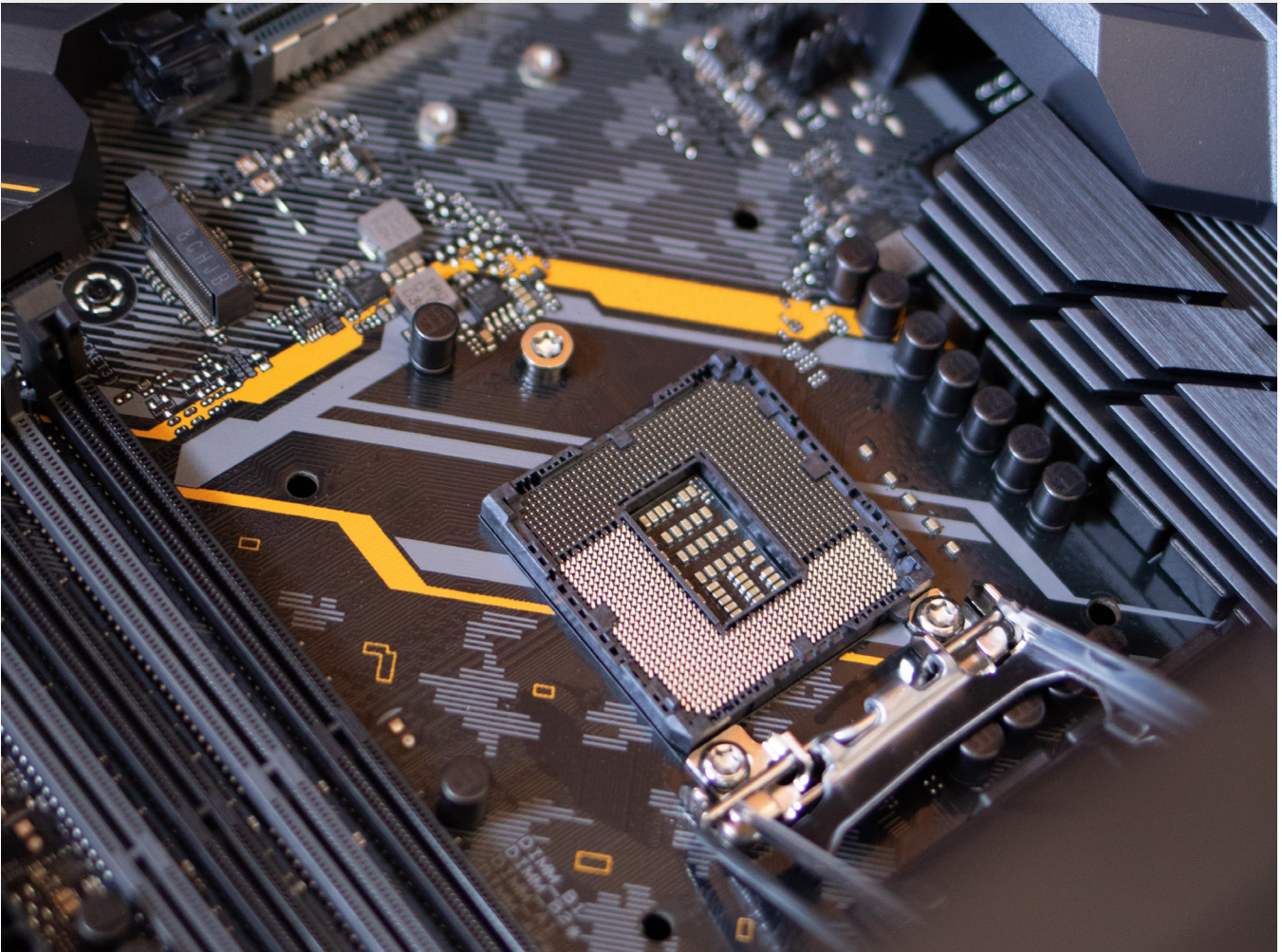
** <https://apps.ecology.wa.gov/publications/documents/2104006.pdf>

Solvent Reduction at Electronic Manufacturers

Many types of solvents are used in electronics manufacturing to provide better performance, especially for sensitive components. We worked with two businesses to help them switch to safer alternatives and lower their risk of exposure.

These projects:

- Eliminated methylene chloride use at the businesses, reducing risk to workers and consumers.
- Removed 3,800 pounds of solvent dangerous waste and saved an estimated \$15,000 in waste disposal by purchasing a solvent recycler.



Food and Beverage Manufacturing Improvement Project

We're working with [food and beverage processors](#)* to improve operational efficiency and reduce energy, water, and chemical use. Our visits will primarily focus on cleaning system improvements, cooling system upgrades, and wastewater pH control measures.

In 2021, we:

- Conducted technical assistance visits at 10 food and beverage facilities.
- Identified significant improvement opportunities at half of those facilities.
- Provided improvement recommendations that would lead to significant reduction in:
 - » Toxic chemical use.
 - » Water use (up to 60,000 gallons per day).
 - » Energy use.
 - » Refrigerant leaks in cooling systems (\$50,000).
 - » Labor.

In 2022, we will implement recommendations on the following:

- Clean-in-place systems to conserve water and reduce cleaning chemical use.
- Refrigeration system optimization (e.g., refrigerant leak detection & repair and safer refrigerant alternatives).
- Training procedures on best management practices for wastewater pH control.



* <https://apps.ecology.wa.gov/publications/documents/2104027.pdf>

Vapor Degreaser Change-Out in Aerospace Industry

Vapor degreasing is a cleaning process that involves boiling liquid solvent to a vapor that removes contaminants from the object being cleaned as it condenses. This process is used to clean some materials during aerospace manufacturing and often requires the use of toxic solvents such as 1-Bromopropane (1-BP). Last year, we helped two facilities in the [aerospace industry](#)* eliminate 1-BP from their manufacturing process.

These projects:

- Eliminated 23,569 pounds of 1-BP.
- Reduced 11,300 pounds of dangerous waste.
- Saved \$60,000 in annual costs.



* <https://ecology.wa.gov/Blog/Posts/September-2021/Tackling-Toxics-Aerospace-Company-transitions-to-s>

Joint Base Lewis-McChord Safer Alternatives Project

We collaborated with Joint Base Lewis-McChord (JBLM) to identify safer alternatives for their [receipt paper](#)* and food packaging products. They successfully piloted demonstrations for both products in several of their operations to provide performance and feasibility data that will help enable the transition.

In the last year, these projects:

- Reduced toxic substance use by 460 pounds.
- Saved \$1,000 in annual costs.
- Removed 1,150 rolls of toxic receipt paper and replaced them with phenol-free thermal paper (removed 24,800 mg/kg phenol total).
- Collected 130 survey responses about new food packaging to promote the transition away from PFAS-containing food containers.



* <https://ecology.wa.gov/Blog/Posts/August-2021/Tackling-Toxics-Helping-Joint-Base-Lewis-McChord-r>

Milgard Vinyl Corporation

This facility uses large amounts of solvents and paint products to manufacture polyvinyl chloride (PVC) window frames, sashes, and accessory parts. We worked with the facility to provide a better understanding of the solvent-contaminated wipes exclusion and the dangerous waste designation process. This visit led to a significant reduction in waste management costs associated with their paint and solvent-contaminated wipes waste streams.

These projects:

- Reduced 21,500 pounds of dangerous waste.
- Saved \$68,000 in solvent-contaminated wipes waste management costs.
- Reduced annual paint waste management costs by an estimated 70%.



Production Plating Inc.

We helped this aerospace product finishing company achieve huge milestones in their toxic reduction efforts for their plating and paint processes.

This project resulted in:

- Increased production significantly after installing three new plating tank lines.
- Reduced wastewater by an estimated 90–95% (20,000 gallons per day) after installing a wastewater reuse system that uses ion exchange recycling technology.
- Increased paint system capacity significantly thanks to a new service that meets aerospace part specifications.
- Reduced annual dangerous waste generation by 160,000 pounds.
- Annual cost savings of \$490,000.
- Qualification for a certification to diversify client base and remain competitive.



Lean and Green Project

We worked together with Impact Washington and Lean Environment Inc. to assist Romac Industries in reducing the volume, costs, and toxicity of their process wastewater, which contained high concentrations of ammonium solution, fluorine and heavy metals.

Phase 1 of this project resulted in:

- The identification of a new process that replaces the need to dispose of batch wastewater with a method that can filter and reuse the wastewater instead.
- A reduction of 54,472 pounds of dangerous waste.
- An estimated \$25,000 in annual cost savings.





LOOKING **FORWARD**

Prevention

Each year, we build on our previous efforts to address specific chemicals in consumer products. We've tackled things like PFAS in food packaging, 6PPD in tires, and various chemicals in antifouling boat paint. With an emphasis on green chemistry in education and manufacturing sectors, we aim to build long-term capacity for developing safer alternatives.

Reduction

Reducing toxic chemical use and the generation of dangerous waste remains at the core of the Toxics Reduction program. Our future goals are to generate more interest in our services and to remove economic barriers for businesses and organizations interested in switching to better alternatives or implementing their P2 plans.

Community Support and Engagement

Race and toxic chemical exposure are often correlated, which is why we must examine our services from an environmental justice perspective in collaboration with the Washington community. There are many businesses and organizations that may not be aware of our services or may be cautious about working with a government agency. We hope to incorporate environmental justice considerations into our technical assistance efforts in order to deliver equitable and consistent services across regions and sectors. This means we must prioritize the tools and methods for information flow, public involvement, and other activities that support our community stakeholders.

CONCLUSION

The year 2021 marks 30 years of instrumental work in the Toxics Reduction Program to protect Washington's residents and environment. There is still much work to be done as Washington works to reduce problems caused by dangerous material exposure and toxic chemical release. As we look ahead, we remain committed to our mission with a renewed focus on prevention, reduction, and community support and engagement.





QUESTIONS? CONTACT US!



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