



## A Primer on PFAS Chemicals & Why They Matter

By Pastor Laura Baumgartner and  
Dr. Brian Naasz

A class of chemicals called PFAS has been building up in drinking water and in people for years and is now reaching a critical point. In this issue of Earth Letter, we explore the PFAS crisis, which began with innovation and the desire for chemistry to solve problems, but has grown to a global scale and touches every person and creature in the developed world.

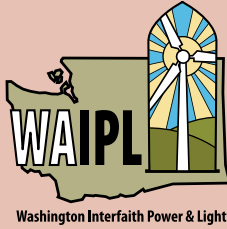
As chemistry instructors, we find that our students are often confused about the role of chemistry in environmental crises. We work hard to answer their questions, but we also want to be able to tell them stories of environmental clean-up that have relied on people of good faith coming together and making a difference. As people of faith ourselves, we know that the religious community can play a key role in tackling complex environmental issues.

We hope you'll find the articles in this issue helpful as you put your faith into action with Earth Ministry. We'll kick things off with a primer on PFAS compounds and why they matter – it's a

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## ABOUT US

Earth Ministry transforms faith into action for the well-being of communities and the environment. We organize people of faith to advocate for strong environmental policies and provide strategic guidance to religious communities working toward environmental justice.

Founded in 1992, Earth Ministry has a history of leading the way in caring for the environment from a faith perspective. Our Greening Congregations program was the first in the country to help houses of worship implement sustainable practices, and our Faithful Advocacy program is on the cutting edge of empowering clergy and lay leaders to speak out on public policy issues. Earth Ministry's Washington Interfaith Power & Light (WAIPL) project organizes an interfaith religious response to climate change, and is part of a national Interfaith Power & Light network that is 40 states strong and growing. Our programs and resources are available to all. [www.earthministry.org](http://www.earthministry.org) [www.waipl.org](http://www.waipl.org)

## FROM THE EXECUTIVE DIRECTOR

I love the photo of the girl drinking from a water fountain that graces the cover of this Earth Letter. I imagine that as she leans in for that first satisfying sip, she assumes that it will be wet, cool, and pristine. Clean drinking water, rivers, and streams are necessary for life to thrive. And yet, we know that much of the water that is essential to life is contaminated with toxic chemicals that threaten the future of people, creatures, and the food on which we all depend.

In this issue, we look at the specifics of one pervasive toxic chemical, PFAS. PFAS in drinking water threatens the health and well-being of our communities and the environment. The good news is that Washington State is leading the way in addressing toxic chemicals in consumer products and our water supplies, and there are actions we can all take to speed the phase out PFAS.

The escalating pace of climate change coupled with roll backs of environmental regulations can be overwhelming. Yet, as people of faith we hold in creative tension the pain of our world and hope for the future. We are compelled by a moral and spiritual imperative to care for our families and all creation, not only now but for succeeding generations. Together we imagine a world in which water and food is untainted by toxic chemicals like PFAS, and then we work toward it step by step.



Blessings,

## GOINGS-ON at Earth Ministry

Earth Ministry relies on donations from individuals like you to make this important work possible. Join or renew your membership in Earth Ministry, sign up for monthly giving, or make a special gift at [www.earthministry.org](http://www.earthministry.org) or by calling (206) 632-2426. Thank you for your support!

### Earth Ministry Events & Presentations

Earth Ministry's recent congregational outreach included presentations at or events with First Presbyterian in Port Townsend; St Augustine's in-the-Woods Episcopal on Whidbey Island; First Lutheran in Richmond Beach; Bothell United Methodist Church; St. James Cathedral, University Lutheran, Queen Anne Lutheran, and Peace Lutheran in Seattle; St. Mark's Lutheran Church by the Narrows and St. Leo Catholic Church in Tacoma; and the Eastside Social Concerns Council at St. Margaret's Episcopal in Bellevue. We also taught religion and environment classes at Pacific Lutheran University in Tacoma and at Seattle University.

Earth Ministry was pleased to co-host two major faith and environment events this summer, including the fourth *Laudato Si* Summit on July 9, which united Catholics from around the state to live into Pope Francis' call to care for creation. We also co-sponsored an Interfaith Climate Forum on July 31 at which State Senator Reuven Carlyle spoke on the significant climate bills that passed in the 2019 legislative session, and we and our partners provided opportunities for attendees to take action on current environmental issues.

Last but not least, Earth Ministry met with clergy and lay leaders from Seattle Japanese Baptist Church, Kavana Cooperative, Urban Grace, Mercer Island United Church of Christ, and Epiphany Episcopal, and joined several of our Colleague Connections for in-person gatherings.

### Earth Ministry Across the Nation

Earth Ministry was well represented at several national events in the last few months. We were in Washington, DC this summer, presenting at the national Interfaith Power & Light conference and to lobby for climate protections on Capitol Hill.

Joining over 70 other religious leaders from 35 states, we led a popular lobby training session to help prepare state leaders for Congressional visits on the Climate Action Now Act (HR 9), Driving America Forward Act (S 1094/HR 2256) supporting electric vehicles, and faith principles for the Green New Deal.

Earth Ministry also participated in Ecumenical Advocacy Days in Washington, DC and the United States Climate Action Network national conference in St. Paul, Minnesota.

### Oil on the Tidelands

On the embattled Tacoma Tidelands, the US Oil refinery was recently purchased by Par Pacific which has stated its intentions to expand the facility. Expansion will increase oil-by-rail that will impact local water quality and raise the risk of spills across our region and in the Salish Sea.

Earth Ministry members attended a Department of Ecology hearing on August 7 to ask the agency to protect our community and clean water from dirty oil pollution. This refinery currently accepts tar sands oil, a heavy oil that sinks in water, making it nearly impossible to recover.

Any expansion that increases the amount of crude oil at this facility will only further endanger both human



*Interfaith Power & Light network members celebrating solar on the roof of the Lutheran Church of the Reformation in Washington, DC*



*Sk'ali Ch'elh-tenaut taking a bite out of the LNG plant at the Tacoma totem pole journey*

and aquatic life in and around Commencement Bay, as well as everywhere along US Oil's rail and barge import and export routes. We will continue to engage with Ecology to strengthen the regulatory process while paying close attention to any news of expansion.

### **Bringing *Sk'ali Ch'elh-tenaut* Home: Salmon, Orcas, and the Salish Sea**

This summer, Lummi Nation welcomed their orca totem pole home from Miami in a series of events along the west coast. The totem pole is named for *Sk'ali Ch'elh-tenaut*, otherwise known as *Tokitae* or *Lolita*, who is the last surviving orca taken from Puget Sound nearly 50 years ago and who remains in captivity at the Miami Seaquarium. The Lummi are demanding the release of *Sk'ali Ch'elh-tenaut* so she may return home to her native waters and family in the Salish Sea.

For years, Earth Ministry/WAIPL and Northwest faith leaders have supported the Lummi Nation Totem Pole Journeys. This year's focus was resilience and healing for *qwe lhol mechen*, the "killer whale people that live under the water," and for us all in a troubled time from which we shall rise again.

The Puyallup Tribe graciously hosted the Totem Pole Journey stop in Tacoma, uniting tribal members, faith leaders, and the local community in a shared effort to protect the Salish Sea by recovering endangered orca populations and stopping the nearby fracked gas (LNG) plant being built in violation of tribal treaties. Lutheran Bishop Richard Jaech was one of the featured speakers.

In Seattle, a representative from Nimiipuu Protecting the Environment (Nez Perce Tribe) shared a message of solidarity with Lummi and awareness of the connection between endangered Snake River salmon and our beloved orcas. From California to Washington, people of faith joined with Native

leaders in calling for immediate action to release *Sk'ali Ch'elh-tenaut* and to restore orcas, salmon, and the Salish Sea.

### **The Fight Continues on Tacoma LNG**

Earth Ministry/WAIPL continues to be a strong ally to the Puyallup Tribe in their opposition to the Liquefied Natural Gas (LNG) plant being built adjacent to the Tribe's land and waters on the Tacoma Tidelands.

At the Puyallup's request, Earth Ministry wrote, circulated, and delivered a letter that was signed by 17 other social justice organizations asking that the City of Tacoma address the special threats that the LNG plant poses to those who are detained at the Northwest Detention Center (NWDC).

The facility, a for-profit immigration prison, is within the potential hazard zone of the LNG facility. No official document explains how the 1,575 people that can be detained at the NWDC would be kept safe in the event of an explosion at the LNG plant similar to the one at Plymouth, Washington in 2014 which injured five people and caused \$69 million in damages.

The unique coalition effort spearheaded by Earth Ministry represented indigenous communities,

people of faith, immigrants' rights advocates, and communities of color united on an issue of intersectional justice. We asserted that we stand with the Puyallup Tribe in their request for more studies that would properly address the project's safety risks, especially in regard to individuals detained at the NWDC.

In the meantime, Puget Sound Energy has disregarded public process and proceeded to build the LNG facility without fully consulting with the Puyallup Tribe or obtaining proper permits. This is a moral failing and totally unacceptable.

Earth Ministry coordinated faith community turnout at a Puget Sound Clean Air Agency hearing in Tacoma on August 27 and input during the public comment period. Together we demanded that the agency address the lack of meaningful consultation with the Puyallup Tribe and deny permit approval for this dirty and dangerous project.

## Earth Day Northwest 2020

Next year marks the 50th anniversary of Earth Day! Earth Ministry Program & Outreach Director Jessica Zimmerle is co-chairing the Faith Leadership Team for

Earth Day Northwest 2020 and is here to help your community get ready.

Houses of worship, denominations, and religious organizations across a diversity of faith traditions will be invited to develop a creation care covenant by Earth Day (April 22, 2020), and commit to 1-5 projects that exhibit their values. We're hard at work developing a resource toolkit with sample covenants and project ideas, which will be rolled out later this fall. Stay tuned for more information and opportunities to engage your faith community!

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## SAVE THE DATE AND START READING!

**From Active Hope to  
Embodied Hope:**

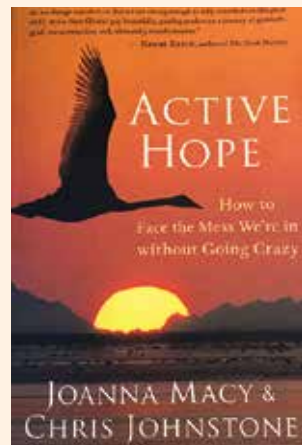
**Earth Ministry Reads  
Joanna Macy**

**Saturday, October 26  
1-3:30pm**

**Congregational Church  
on Mercer Island  
4545 Island Crest Way,  
Mercer Island,  
WA 98040**

Are you experiencing "climate grief," including depression, anxiety, or mourning over climate change? Are you overwhelmed by the scale and scope of environmental destruction we're seeing daily?

You're not alone, and we invite you to join the Earth Ministry community in reading "Active Hope" by Joanna Macy and Chris Johnstone, which shows us how to strengthen our capacity to face this planetary crisis so that we can respond with resilience and creative power.



Whether or not you're able to read the book in advance, we'll gather on October 26 to learn together how we can incorporate its lessons into our own lives and the lives of our faith communities.

Led by Earth Ministry board members Rev. Marilyn Cornwell and Rev. Terry Teigen, and Earth Ministry member Dr. Francie Rutherford, our discussion will offer a process for navigating what

the future holds. We'll begin the work of equipping ourselves by naming our grief, seeing with new eyes, and taking steps to embody the active hope Macy and Johnstone envision. Please join us!

## GROUNDED IN FAITH

### *Pikuach Nefesh: Saving a Life* By Maddie Smith

The seventh Unitarian Universalist principle (or the UU “green rule” as I like to call it) is “respect for the interdependent web of all existence of which we are a part.” To me, this means recognizing that we can’t simply look at social or environmental injustices as separate issues; they are inherently connected. We cannot view ourselves as separate from nature, especially when our actions consistently have critical environmental consequences in the world.

As someone who studied science before I found Unitarian Universalism, the seventh principle sounds a lot like another principle I learned about in class: the precautionary principle. It states that when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.

This secular, scientific principle also reminds me of a teaching a Jewish former colleague would often cite in her work in the religious environmental movement. *Pikuach nefesh* translates to “saving a life,” and is understood to mean that it is not only permissible to violate rules like those of Shabbat, but mandated that one do so if someone’s life is in danger.

The rabbis go further to say that this still applies even if the outcome is that no one’s life was actually in danger – that it is better to err on the side of caution and violate Shabbat instead of risking even the possibility of someone coming to grievous harm. At the time of origin of this Jewish law, rabbis and scholars could not have possibly conceived

of pesticides or PFAS chemicals, yet *pikuach nefesh* shows that mandating the protection of environmental health is faithful action.

Science today allows us to better connect environmental pollutants to human health outcomes and consequences. Morality tells us that we shouldn’t pollute, and *pikuach nefesh* says that protecting human life against pollution is so important that it is OK to violate other important religious laws to do so.

I trained as a chemist in college and became well acquainted with the precautionary principle long before considering myself a person of faith or learning anything about the UU and Jewish traditions. Now I rely on both science and faith to help me form my worldview.

The seventh principle wasn’t adopted by Unitarian Universalists until 1985, well after the publication of Rachel Carson’s *Silent Spring*. Published in 1962, this seminal book is widely credited with educating the American public about the dangers of using pesticides and chemicals indiscriminately, harming ecosystems and human communities.

However, *pikuach nefesh* and the Christian equivalent, “love your neighbor as yourself,” are older than any chemical manufacturing facility. Now that we as a society have a knowledge of the dangers of PFAS and other chemicals, we can’t love our neighbors but stand idly by when our faith compels us to take action.

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*Maddie Smith is Earth Ministry’s Operations & Development Manager and has a degree in chemistry from Pacific Lutheran University.*



# Waking Up from the Non-Stick Nightmare By Rachel Shinabarger

I had the privilege of working as Earth Ministry's Outreach Coordinator for the last year through the United Church of Christ's Justice Leadership Program for young adults. As part of my year of service, I had the opportunity to learn about a wide variety of environmental justice issues, including toxic chemicals.

Fighting toxics in our homes, workplaces, and neighborhoods unites people because toxic chemicals are, by definition, poisonous and harmful. That's certainly the case for a commonly found group of per- and poly- fluoroalkyl chemicals, or PFAS for short. PFAS are used for non-stick purposes in our everyday products such as Teflon cookware, clothing, and carpet. Exposure to PFAS can result in severe health issues, yet they are still commonly found in every day products.

As I learned more about how prevalent PFAS are, I wanted to take action. Earlier this year Earth Ministry launched our campaign against the "non-stick nightmare." I've worked with congregations across the state to host screenings of the documentary "The Devil We Know," a documentary about how DuPont knowingly put PFAS chemicals into our waterways, allowing them into our homes, the environment, and even into our blood. [see page 12 to learn how to host a screening in your congregation.]

Hearing about issues like this can be quite alarming at first. I immediately became concerned about the impact of PFAS on myself and those I love. It made me want to tell my friends, family, and anyone else who's willing to listen. So that's what I do.

I thought of that one Teflon pan that has been sitting in my family's cupboard for years. After a lengthy discussion with my mom about the health impacts of PFAS, she chose to get rid

of it. I know many people have felt the same way after learning more. There's an urgency to act now so we can start the wheels turning of completely phasing out the entire class of toxic PFAS chemicals.

After each "Devil We Know" screening, we take the time to reflect on the film. It's a heavy topic, so many people have expressed a sense of dismay and righteous anger around the damage caused by PFAS. Injustice is painful and heartbreaking to see. The film reminds us that there are real people experiencing real harm. That should break my heart, and I hope it breaks yours too.

However, I'm always encouraged because the heartbreak is paired with a desire to do something to help. Earth Ministry always includes an opportunity for congregants to put their faith into action to protect our communities from PFAS. Turn to pages 8-9 to learn more about what Washington State is doing to regulate and prioritize cleanup of PFAS chemicals and how you can make your voice heard.

PFAS has spread everywhere across the globe, yet is widely unregulated. As people of faith who care about the wellbeing of each other and our planet, we know that PFAS does not belong in our homes, water, or bodies. Let's all wake up from the non-stick nightmare.

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*Rachel Shinabarger was  
Earth Ministry's Outreach  
Coordinator for the 2018-2019  
JLP program year.*



## What's lurking in your closet and cupboards? By LeeAnne Beres

Raise your hand if you have a non-stick pan. Most of us do, right? Teflon is the miracle coating that gives us perfect fried eggs that slide right out of the pan. What about that new couch or carpet? Did you opt to get the stain-resistant coating on either of them? And don't forget a family favorite, microwave popcorn. No movie night is complete without it.

What do all these products have in common? They were made using PFAS (perfluoroalkyl and polyfluoroalkyl compounds) chemicals, which threaten the health and well-being of our communities and the environment.

Toxic PFAS chemicals are used to make many of the consumer products that we use on a daily basis – you likely have some in your own home. Don't believe me? Greenpeace cites tests that found PFAS compounds present in or used to produce jackets by North Face, Patagonia, Adidas, and Columbia; shoes by Nike, Puma, and Adidas; and swimwear from Disney and Burberry. The new Apple watch sports model wristband is also made with PFAS chemicals, according to information from the company itself.

The Environmental Working Group warns that PFAS chemicals are used in coatings on carpets and clothing, in microwave popcorn bags, and on fast-food wrappers. Some waterproof or stain-repellent clothing is coated with them. While many responsible clothing companies are seeking safer alternatives, the alternatives have not been fully tested and PFAS coatings remain common in the marketplace. PFAS are also used as a stain-resistant coating on some chairs and sofas. Whether in carpet, clothing, or furniture, fabric may be labeled with brands such as Teflon, Scotchguard, Stainmaster, Polartec, or Gore-Tex, but these are only a handful of brands that contain these compounds.



Before you go on a cleaning spree and toss out everything in your closets and cupboards (except for your Teflon pans – get rid of those, I'll get to that in a moment), there is some small bit of good news. The majority of PFAS exposure isn't due to consumer use of these items, but rather from water contaminated with PFAS during the initial manufacture of these products, or from direct exposure to small molecule dispersants such as fire-fighting foam or water-repellent sprays.

What this does mean is that the best choice for both you and the planet is to avoid products manufactured with PFAS in the first place. By pledging to buy toxic-free alternatives, you can ensure that PFAS doesn't get in to our water systems or our bodies. The Royal Society for Chemistry in the United Kingdom recommends an "evaluate and phase out" approach, starting with eliminating non-essential uses of PFAS and focusing on alternatives where they exist.

Do your research when buying outdoor gear, and be wary of all fabrics marked stain- or water-repellent if they don't clearly state they are PFAS-free. Other options are available: according to Detox Outdoors, alternatives to hazardous PFAS coatings are egg waxes, paraffins (such as ecorepel®), dendrimers (such as Bionic Finish Eco®) and silicones. Alternatives to membranes made using hazardous PFAS are Sympatex, Paltex, or Toray. Some outdoor companies, such as Fjällräven, Paramo, Pyua, R'ADYS,



Rotauf, or Vaude already have entire collections of weatherproof clothing that are PFAS free.

When buying carpet or upholstered furniture, skip the stain treatment. 3M, the company that produced Scotchguard, stopped making it in 2000 after tests showed that the PFAS compounds used to make the product linger in humans and the environment for years. However, many companies simply switched to a different form of PFAS chemicals, so-called “short-chain” PFCs. Don’t be fooled – these chemicals haven’t received as much scrutiny as their long-chain cousins, so manufacturers are simply substituting one harmful chemical for another.

Take the same approach with your kitchen. Toss the Teflon and opt for non-toxic alternatives, including cast iron, ceramic, or stainless steel pans. Even though Teflon does not present an exposure risk to PFAS in your cupboard, at high heats, the Teflon coating can break down to other fluorinated chemicals which are toxic. Last but not least, unless you live in Washington or another state that has banned PFAS in food packaging, skip the microwave popcorn and start a new family tradition of making it the old-fashioned way, on the stovetop. Buying bulk popcorn also has the added benefit of reducing garbage waste.

You can also put your faith into action through advocacy. Washington has been a national leader in safe chemical reform – Earth Ministry and the faith community played a key role in successful efforts in our state to ban PBDEs, BPA, multiple forms of the toxic flame retardant Tris, and PFAS from food packaging materials such as fast-food wrappers and microwave popcorn bags. Yet the pervasive spread of PFAS chemicals has precipitated a public health and environmental crisis.



People of faith know that we have a moral obligation to protect present and future generations from toxic contamination in the products we use every day. Low-income and frontline communities are the first and most profoundly affected by toxic contamination. As people of faith, we are called to act for justice and ensure that policy makers at the state and national level put strong standards for PFAS in place and to also clean up contaminated sites.

Washington’s Department of Ecology is working on implementing SSB 5135, the Pollution Prevention for Our Future Act, which the faith community helped pass in the 2019 state legislative session. This new law requires Ecology to identify priority consumer products that contain PFAS and four other highly toxic chemicals and then adopt regulatory measures to reduce exposure. Earth Ministry is urging the department to address all forms of PFAS as a class of chemicals and phase out PFAS in products where safer alternatives are available, such as carpet and upholstery.

In addition, the Departments of Ecology and Health are developing a joint chemical action plan for PFAS, which is expected to be ready for public review and comment soon. The Board of Health also began rulemaking for PFAS in drinking water in 2017, which is expected to run through 2019.

People of faith will have opportunities to make our voices heard in these public comment processes – stay tuned for more information from Earth Ministry. Together we will remind policymakers that PFAS contamination affects real families in Washington whom they have a moral obligation to protect.

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*LeeAnne Beres has been Earth Ministry’s Executive Director since 2005. She and her husband skipped the stain guard when purchasing new living room furniture. Bones the dog (pictured on page 8) approves.*

## Fueling Hope Through Power, Love, and Self-Discipline By Anna Johnson

A woman's voice comes over the store intercom, "Good Evening Costco shoppers! The store will be closing in fifteen minutes. Please make your final selections and proceed to check-out." I furiously keep sorting through the kid's pajama section trying to find my children's sizes. *This is cute*, I think to myself as I feel the material in my hands. A small voice questions, "Where is the garment tag? I need to check and see if these are safe."

I look over the pjs and finally find the tag, which says something to the effect of "this item has been treated with fire retardant." Well . . . shoot. I keep digging, trying to push the voice away as I search for the bright yellow tag telling me the garment is close fitting and didn't need to be treated with fire retardant chemicals.

This voice pops into my head whenever I am shopping for my children, when I place cookware on the stovetop, when I purchase plastic products, and when I compost produce that isn't looking so pretty anymore.

I have known Jessica Zimmerle, Earth Ministry's Program & Outreach Director, since we were in college. She's now the Godmother of my son. After Jessica began working at Earth Ministry, she started to help inform and guide me on issues of chemical and environmental safety.

Most people have a similar small voice in their heads and many think that it's their conscience. I often hear the voice of

loved ones, and I am very aware of who the small voice in my head is when I am doing something that may affect my children or our planet. It's Jessica, coming in strong and, at times, unrelenting. Her voice regularly reminds me that I should do my best to keep dangerous chemicals out of my family's home.

I have always tried to be aware of what I am doing in regard to my own self-care and the care of our planet. Now that feels like nothing when compared to the heightened awareness I have experienced since my two children were born. As a mom, I feel the true burden of worrying about the life of someone else.

I worry about my children's health and about what they are being exposed to, whether it be fire retardants in their clothing, constant exposure to plastics, or the inundation of screens. Not only do I try to get them to eat right, I also try to ensure that what they are eating isn't filled with pesticides or toxic chemicals.



I worry about the world they are growing up in and what is needed to make sure they will have a prosperous future. If you are a parent you know this is just one of the many worries we face, and yet I would put it near the top of my list of things I am constantly thinking about while I raise these two precious gifts.

When my husband joined the fire service I became even more concerned. I heard about the chemicals fire fighters are exposed to in the line of duty. How flame retardants meant to keep things from burning are extremely hazardous when released during building fires. Plus, the firefighting foams used to put out fires are filled with chemicals themselves – most notably toxic PFAS. I researched cancer rates among fire personnel and was astounded at their numbers. My husband loves being a firefighter and I feel the pull on him to do this important work, but still I worry.

More and more precautions are taken by fire departments to protect these brave men and women, but it doesn't mean much when the buildings they are trying to protect are filled with chemical-

laden products. Thankfully, the Washington Legislature listened to advocacy groups like Earth Ministry and, starting in 2020, will be the first state to implement a ban on PFAS chemicals in firefighting foam. Yet even after it's phased out of use in the foams, PFAS will stick around as a persistent poison in our drinking water.

I'm worrying about my children, worrying about my husband, worrying about our planet, and yet all this worrying accomplishes nothing. 2 Timothy 1:7 says "For the Spirit God gave us does not make us timid but gives us power, love, and self-discipline." This verse helps pull me out of my whirlwind of worrying and into a place of noticing what I do have control over and claiming what I do have a say in changing.

I have the power to talk to lawmakers about what chemicals we should not be using because they are causing lasting effects on our bodies and our planet. I have the love to teach my children to grow up loving this planet that God has given us. God gifted us the Earth, not to simply use up its resources but to care for it and all its inhabitants. I have the self-discipline to change my habits to be more eco-friendly. I have far more power, love, and self-discipline when I trust and follow God's plan rather than listen to what industry pushes as safe or easy.

I hope that one day I will not have to check every label on my children's clothing in order to make sure I'm not putting chemicals on their little bodies. My family hopes that my husband, and those he serves alongside, will not face the added worry of developing cancer because of the chemicals they are exposed to when they are saving the lives and property of others – while trying to stay alive themselves. For the wellbeing of all, I hope that those in power make decisions that will have lasting positive impacts on our planet instead of choosing the more profitable paths or the status quo.

In the end, these are hopes, and cannot become a reality until we put them into action. Let us remember that God did not give us a timid spirit but one full of power, love, and self-discipline. Now is the time to get out there and use it.

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*Anna Johnson is the mother of two young children and the wife of a firefighter.*



## Host a Screening of *The Devil We Know* in Your Congregation

Earth Ministry is partnering with congregations across Washington to host a screening of the documentary of *The Devil We Know* – and your house of worship could be next!

*The Devil We Know* tells the story of 3M and DuPont corporations introducing harmful PFAS chemicals into the environment. PFAS are highly persistent nonstick chemicals, such as Teflon, that are linked to very serious, sometimes lethal, health issues. These toxic chemicals are now commonly found in our households and drinking water, making it a moral issue for the health of our families and all creation.

The good news is that Washington State is already a leader in addressing these toxic PFAS chemicals. In 2018 people of faith joined with fire fighters, health care professionals, scientists, and activists from all walks of life to ensure that the state legislature banned PFAS from food packaging and fire-fighting foam. But as you'll read elsewhere in this issue of *Earth Letter*, there is more to do, including putting a strong Chemical Action Plan for PFAS into place.

The first step to taking action is to become informed. Contact Earth Ministry to set up a screening of *The Devil We Know* in your congregation – you can call us at (206) 632-2426 or email [maddie@earthministry.org](mailto:maddie@earthministry.org).

When possible, an Earth Ministry staff member can attend your screening to provide the local context and current updates on PFAS chemicals in our state. We'll share how you can take action to help Washington continue to lead the phase out of PFAS chemicals. Sign up today!

### *The Devil We Know*

When a handful of West Virginia residents discover DuPont has been pumping its poisonous Teflon chemical into the air and public water supply of more than 70,000 people, they file one of the largest class action lawsuits in the history of environmental law.

As the citizens of Parkersburg rise up against the forces that polluted their town, the story builds out to dozens of other American cities. In fact, as many as 110 million Americans may be drinking water tainted with PFAS chemicals. Exposure to this class of chemicals has even become a global phenomenon, spreading to places like Italy, the Netherlands, and China.

Parkersburg is ground zero for this story, but this clearly is not about one place or one chemical: because of the power of the chemical lobby, PFOA [a form of PFAS] is one of more than 80,000+ untested chemicals that have been approved for use, their dangers unknown.



## The Good News: Washington leads in addressing PFAS

Washington State is on the prophetic edge of addressing PFAS chemicals, both by calling them out as toxic and by leading in phasing them out. The Earth Ministry community has played an important role as advocates for the state's leadership on chemical safety. Thanks to your faithful advocacy, we have celebrated passing these landmark bills!



### THE HEALTHY FOOD PACKAGING ACT 2018

Bans PFAS chemicals in paper food packaging, like microwave popcorn bags, sandwich wrappers, and french fry boxes once the Department of Ecology identifies safer alternatives.



### SAFER FIREFIGHTING FOAM BILL 2018

Prohibits the sale of PFAS-containing firefighting foams for use in Washington State beginning July 1, 2020. Manufacturers must recall their PFAS products and reimburse retailers once in effect.



### THE POLLUTION PREVENTION FOR OUR FUTURE ACT 2018

Directs state agencies to address classes of chemicals, one of which is PFAS. A big shift away from a chemical by chemical approach!



## The Extra Good News

These first-in-the-nation legislative victories are setting a precedent for action elsewhere. Washington's leadership is also driving market reform, especially because manufacturers do not want to make different products for different states. We are already seeing a nation ban on PFAS firefighting foam being considered by the US Congress!

## Up Next for Washington

A joint chemical action plan on PFAS by the WA Departments of Health and Ecology

Board of Health rulemaking for PFAS in drinking water

Implementation of the Pollution Prevention for Our Future Act



Follow Earth Ministry for PFAS advocacy actions or email [emoffice@earthministry.org](mailto:emoffice@earthministry.org) to get involved.

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little technical but bear with us! Knowledge is power and we are chemistry teachers, after all.

Perfluoroalkyl or polyfluoroalkyl substances go by the acronym PFAS. The story of their development started back in the 1950s when chemists realized that the characteristics of PFAS, and the compounds synthesized with them, had a host of desirable functions. This allowed for the development of many materials that were oil- and water-repellant due to the characteristics of the carbon-fluorine bonds in them.

The Organization for Economic Cooperation and Development estimated in 2018 that PFAS are a group of more than 4700 substances. Each PFAS compound consists of carbon atoms, surrounded by fluorine atoms and often one or two other elements like oxygen or sulfur. The carbon atoms form the basic structure of the molecule, and the number of carbon atoms forming the structure determines whether each compound is considered “long-chain” or “short-chain.”

PFAS compounds are used to manufacture products most people use without a second thought. Examples include water-resistant coatings for carpets and rain-repellent coatings for clothing, food packaging, firefighting foams, waxes, cleaners, building and construction materials, medicine, and textiles. This is just a partial list.

Once made, PFAS last a long time without reacting. That makes them useful for many applications yet persistent in the environment. PFAS compounds are of environmental concern because they tend to accumulate in waterways and in people over time, causing increased exposure and increased risk.

Beyond their persistence and their basic long- or short- chain structure, PFAS compounds react together in a process called polymerization, resulting in one of the most famous applications of this class of chemicals: non-stick cookware. While non-stick cookware contains the polymerized product of the PFAS starting materials, and not PFAS itself, cooking with it has other hazards. At high temperature, the non-stick coating can begin to decompose, reversing the polymerization process and producing hazardous gases as by-products.

There is not currently evidence that eating food prepared on non-stick cookware increases risks due to PFAS exposure, but there are still two concerns.

First, breathing in the toxic gases from decomposed non-stick cookware can pose health risks. Second, creating demand for more non-stick cookware increases the PFAS chemicals used in producing them.

People may be exposed to PFAS materials in several ways, including both occupational and residential exposure – usually when PFAS is dissolved in water. Clearly drinking contaminated water represents a major health concern. It is also possible to be exposed by the use of some consumer products, eating contaminated food, or through direct contact in the workplace.

Health risks from PFAS exposure include increased cholesterol levels, changes in the concentrations of thyroid and sex hormones, changes in liver enzymes, immune effects, reproductive effects, and some cancers. More research into these and other health impacts is ongoing.

Due to the concerns about the persistence and health effects of PFAS compounds, several are already being phased out of production. Globally, the amount of PFAS produced today is smaller than it was in the early 2000’s. The class of compounds replacing those being phased out are shorter molecules, and less persistent. Long-chain PFAS are generally thought to present greater toxicity in humans than



the new shorter chain alternatives, but the toxicities of the short chain variants have been less thoroughly studied.

Since much of the exposure is through water, many of the proposed policy solutions involve strengthening drinking water and water treatment standards.

The US Environmental Protection Agency (EPA) should use its authority under the Safe Drinking Water Act to establish an enforceable maximum contaminant level for the PFAS compounds most often found in drinking water.

EPA has already set a lifetime health advisory of 70 ng/L for the two PFAS materials that have the highest exposures. 70 ng/L is 70 parts per trillion, or about 70 drops in an Olympic sized swimming pool. It should be noted that a lifetime health advisory is a non-regulatory suggestion. Enforceable maximum contaminant levels in addition to the lifetime health advisory

would be a big step forward and help speed removal of PFAS from our drinking water.

In addition to protecting our drinking water supply, preventing future contamination of our waterways would also decrease exposure for people as well as domestic and wild animals. The Clean Water Act is the front line of defense against waterborne soluble pollutants like PFAS. Expanding the types of waterways and water sources that are protected by the Clean Water Act would effectively reduce emissions of PFAS into surface waters and groundwater. In addition, more research that seeks to develop new detection and remediation strategies for PFAS found in water and soil would allow for earlier and more reliable action when contamination does occur.

Beyond working toward better water safety policies, what will the next steps be in our response to the pervasive and persistent exposure to PFAS that humans have caused? The most important long-term response is the gradual phase-out of PFAS use in consumer products and industrial applications. Phase-out will require collaboration in research, policymaking, implementation, and enforcement across political and geographic boundaries.

This phase-out will need to be a gradual process due to the scope of the materials involved. Some materials have

replacements that are ready to be used, or perhaps don't need to be replaced at all. Another class of materials will need an aggressive, but thoughtful timeline that allows suitable replacements to be completely developed. And finally, there are a small number of materials that have essential uses that might have a longer time horizon before they are phased out.

The other articles in this issue are all about the specific actions you can take in the face of widespread PFAS exposure, and how to engage as a person of faith. Read on to find out how you can take action with us for the well-being of communities and the environment.

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