AERF NEWS
Aquatic Ecosystem Restoration Foundation
Restoration
Research
Regulatory
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David Petty, Editor

Message from the Executive Director

Carlton Layne

It's been another crazy year with the Covid pandemic and creeping wokeness. In July the Aquatic Plant Management Society meeting opened the door for live meetings, so it seems as if the aquatics world is slowly slipping back to some semblance of normalcy. Even though live events were rare last year, AERF was involved in plenty of training sessions and activities throughout the goofiness. I'm about Zoomed out as I'm sure most others are as well.

Even though meetings and tours with regulators have been temporarily shelved, AERF has been doing what it can as opportunities arise to achieve favorable regulatory outcomes for the aquatics industry in Wisconsin, Michigan, and other key states. Thanks to our cooperative venture with Compliance Services International, we continue to track and comment on Endangered Species issues involving aquatic herbicides and algaecides. Our relationship with RISE continues to improve and we hope to partner with them on some exciting possibilities this year. Our Twitter campaign "Aquatic Plant Facts" is providing positive and informative posts to counter and combat negative social media posts attacking aquatic plant management efforts around the country,

The fourth edition of the Best Management Practices Manual has been on our website since the fall of 2020. We now have hardcopies available for distribution and we've been providing them for APMS societies to include in their registration packages. You may have as many copies as you wish to distribute to your colleagues, customers, or for your own reading pleasure. Just let me know the address and to whom to send them. There are 25 to a case.

It seems the political tinkering with the regulation and definition of Waters of the United States is never-ending. The Biden administration published its "Revised Definition of Waters of the United States" on December 7th following two district court vacaturs of the previous rule published under the Trump administration. While the legality of the vacatur of a national rule by two District Courts is questionable, the Administration is undeterred since it advances the implementation of the new rule by over a year. The public has until February 7th to comment, and I encourage you to participate. Not surprisingly, the proposed regulation looks a lot like the 2015 Obama administration rule. Be assured we are already working on our comments. It appears that once the February deadline has past, the EPA and the Corps of Engineers will be publishing an addendum to the first proposal. We will utilize Action Alerts to keep you up to date from here on out.

Your past contributions helped make all our efforts possible. Your individual participation and financial support helped the Foundation achieve the stature it enjoys in the aquatic's

community at large in the United States and Canada. AERF has accomplished much since its inception, but there is much more to be done. If you haven't already, please consider a contribution this year to AERF.

Don't forget that AERF is listed as a charitable organization in Amazon SMILE. Amazon donates .05% of your purchases under the SMILE program. It costs you nothing and the Foundation receives a small donation from Amazon. Also keep in mind that the AERF is a 501(3)(c) Nonprofit Foundation – Fed I.D. No. 38-3304154 – so your contribution is tax deductible.

I look forward to working with you in the coming year and sharing the sense of accomplishment as we develop and implement new and exciting approaches toward the realization of our goals in the aquatic plant management arena. Please feel free to call me if you have any questions.

The 2021 UF/IFAS Aquatic Weed Control Short Course is a wrap!!!

The much-awaited 45th UF/IFAS Aquatic Weed Control Short Course took place August 16-19, 2021 at the Renaissance Orlando at SeaWorld. We had around 380 people in attendance – not a bad showing, given the COVID-19 situation. Sponsors and attendees have reported that they had great opportunities to make new connections and catch up with old friends. This venue was significantly larger than our former home (the Coral Springs Marriott) and allowed us to give each attendee their very own 6' table to occupy during the Short Course. The welcome social Tuesday afternoon was well-attended and offered live music by Regrowth (aka "the Thayer boys" – Kyle, Jake and Dan). All in all, a good time was had by all – and I, for one, am very glad to put it to bed! We're still finalizing plans for the 2022 Short Course but we're shooting for another "August in Central Florida" scenario. Stay tuned and hope to see you soon!!!

Lyn Gettys, Stephen Enloe and Conrad Oberweger kickin' it at the welcome reception

Short Course house band Regrowth (aka the Thayer boys). Light blue shirt: papa Dan; dark blue shirt: Jake; green shirt: Kyle

Fluoropolymers ("PFAS"): Understanding the Issues

Bernalyn D. McGaughey
Compliance Services International

The acronym "PFAS" has become a household word (pea-fass) because media has brought attention to the term as an ominous hazard that is getting "worse and worse" in our environment. The meaning of the acronym, what it encompasses in different chemistries, and the hazards is does, or does not present, are obscured by the lumping of a very large group of products into one perceived entity and not distinguishing their different uses over time or their very different profiles of toxicity and degradation from product to product. Within the pesticide industry, and as relevant to the use of aquatic herbicides, there have also arisen questions about whether PFAS are in pesticides and if so, is there a concern for them being found in certain pesticide products and thus introduced into the aquatic environment when aquatic herbicides are applied. This white paper first explains the general class of chemistry now tagged as "PFAS," then gives a review of general properties and regulation and presents details on the issue of PFAS in registered pesticides. But for the reader who likes to get to the bottom line first, *PFAS products of concern are not contaminants of aquatic herbicides and the application of aquatic herbicides for weed control presents no introduction of PFAS products to the aquatic environment.*

The broad family of fluorinated chemistries included under the acronym PFAS, which stands for **p**er- and poly**f**luoro**a**lkyl **s**ubstances, consists of individual products that have distinct physical and chemical properties that differentiate if or how they are used and regulated. There has been growing pressure to regulate all PFAS as a single group, but this is neither scientifically based or defensible. The two chemistries in this group that were in use and are extremely persistent are PFOA (perfluorooctanoic acid) and PFOS (perfluorooctanesulfonic acid). "GenX" and PFBS chemicals are replacements for the older PFOA and PFOS products, respectively. PFOA and PFOS were phased out beginning in 2000, but because of their persistence, PFOS and PFOA are still found in the environment. GenX and PFBS chemicals are less persistent than PFOA/PFOS but have also been found in various types of waters (surface, ground, drinking, rain) as well as air in some areas.

To limit the potential for exposure of humans to PFOA and PFAS in their drinking water, EPA has evaluated data on these products and conducted human health risk assessments in support of setting a drinking water health advisory for them. This value (70 parts per trillion) provides drinking water system operators, and state, tribal and local officials who have the primary responsibility for overseeing drinking water systems with information on the health risks of these chemicals, so they can take the appropriate actions to protect their water users if needed. One such action is water treatment. In addition to studying the amount of PFAS and PFOS in the environment and its potential to cause harm, EPA has developed recommended methods for water treatment to remove these chemicals from drinking water should the 70 ppt advisory level be exceeded in a water supply system.

In April 2021, EPA announced the release of the final *Human Health Toxicity Values for*

Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3), which can be found at https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=350888 . These assessments found that the toxicity of PFBS was about 10 times lower than that of PFOS, and that 99.8% of the public drinking water systems in the US have not detected any PFBS in their systems. Likewise, a draft report on GenX chemicals was released in 2018 and found that these chemicals were also less toxic and persistent than those products they replaced. The draft report may be reached from a link at https://www.epa.gov/pfas/learn-about-genx-chemicals-toxicity-assessment.

While the older PFAS chemistries are no longer in use in most of the world, it is possible for them to show up in some imported products, such as plastic containers not used for food. It is this situation that led to the very limited appearance of an older PFAS chemical as a contaminant in pesticides. The presence of PFAS in a pesticide product is so far limited to its discovery in one mosquitocide product from one manufacturer of containers, and is a result of PFAS contamination from the container the pesticide is stored in. The registrant of that product voluntarily stopped shipment of any products in fluorinated high-density polyethylene (HDPE) containers that were the source of the PFAS and is no longer sourcing containers from that supplier. Most importantly, the discovery reported in the news was from low levels of PFAS that were detected in rinse waters from the container, and do not represent environmental concentrations to which humans would be exposed.

On March 5, 2021, EPA released testing data showing PFAS contamination from the fluorinated HDPE containers used to store and transport the mosquito control pesticide product. EPA analyses detected eight different PFAS chemicals from the fluorinated HDPE containers, with levels ranging from 20-50 parts per billion. The agency also outlined its next steps as it continues working with a variety of stakeholders to collect additional information on this issue. EPA continues to explore the matter to ensure that this is not a widespread issue. To date, no further detection of PFAS chemicals has been reported by EPA.

On September 29, 2021, EPA released an update on their efforts to address PFAS in pesticide packaging. In that update they noted that EPA is releasing an internally validated method for the detection of 28 PFAS compounds in oily matrices, such as pesticide products formulated in oil, petroleum distillates, or mineral oils. EPA, in collaboration with the Maryland Department of Agriculture, used this method to analyze three stored samples of mosquito control product, and reported "*To date, the only PFAS contamination in mosquito control pesticide products that the Agency has identified originated from fluorinated HDPE containers used to store and transport a different mosquito control pesticide product (Anvil 10-10)*."

No PFAS contamination of herbicides, and in particular aquatic herbicides, has been reported. The contamination that was reported was not from the product or inherent in the product and to date it is only associated with one insecticide, at levels of 20-50 ppb in the rinsate from the insecticide container, and only one source of manufactured containers seems to have contributed to that contamination. Herbicides are diluted before they are applied and are applied to weed- or algae-infested waters at part-per-million rates. This means that any PFAS entering herbicide treated water, had there been contamination – which there wasn't – would

be at levels even more infinitesimal than the 70 ppt health advisory level set for PFOA/PFOS.

So then, why the alarmism, and how does one know what to believe and what is not factual? Reporting and information on this issue essentially comes from two types of sources: (1) one that is the pooled findings of science, industry and government regulatory bodies and (2) the other from advocacy, political and media organizations. The nature of these two types of communications on PFAS are summarized in the table that follows. One way to determine how factual a given statement is, is to go to its source. It is interesting that in the two sources used for the table below, links to references in the Center for Truth in Science webpage article went to published peer-reviewed articles or relevant regulatory guidelines, while links to references in the Earthjustice webpage typically went to newspaper articles or television news broadcasts. Since these media broadcasts are what the public sees, when their concerns on PFAS turn to the use of herbicides in aquatic weed treatment, they may not have the patience to understand the science, but they should be willing to understand that the fact that *nothing* connects the use of an aquatic herbicide with exposure to PFAS and any concerns they may have about that are unfounded.

1. There is no information on EPA's PFAS website concerning the issuance of a final report. EPA continues to refer to this website for updates: https://www.epa.gov/pesticides/pfas-packaging

2. USEPA (2021). Pesticide Program Update: Updates on EPA Efforts to Address PFAS in Pesticide Packaging (distributed September 29, 2021).

3. The method may be found at EPA Method 537.1

Understanding the Issue: Contrasting Descriptions

Scientific/Regulatory/Industrial	Advocacy/Political/Media
What Is "PFAS?"	
Per-and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes the two most well-known compounds—PFOA and PFOS. PFOA and PFOS have been phased out, first voluntarily by manufacturers and then through regulation, but now are the subject of monitoring and potential clean-up where drinking water sources are threatened from past manufacturing, disposal or use of products having high levels of them. Health-based limits are set for levels in drinking water.	PFAS discussions center on the general class of products which "don't easily break down, persist in your body and are pervasive in the environment." These dangerous chemicals have been used widely historically and in present practices and products. The group of products of whatever type, at whatever level, in whatever use, are described as toxic, cancer -causing and immuno-suppressive threats to your individual health and as having little or no regulation.
How has the Manufacture and Use of PFAS Evolved over Time?	
The preferred PFAS chemistries have evolved since the 1940s, with change driven by development of products with shorter half-lives and lower toxicity. PFAS have become essential ingredients in several innovations critical to human progress, including automobile anti-lock braking systems, 5G data networks, implanted medical devices, and aircraft firefighting foam. They are critical to life in the 21st century.	Chemical manufacturers have covered up evidence that PFAS has negative human and environmental impact. They have replaced them with chemicals in the PFAS family that are just as dangerous as those that were phased out. Non-stick cookware, waterproof materials, beauty products and dental floss can contain PFAS and stricter government regulation is needed to protect the consumer.

Are PFAS Regulated?	
In 2016, the U.S. Environmental Protection Agency (EPA) adopted a voluntary drinking water guideline of 70 ppt of PFOA and PFOS, individually and in total. To put this in perspective, one part-per-trillion (ppt) is approximately a one drop in an Olympic-sized swimming pool. Modern PFAS still in use are regulated by the Toxic Substance Control Act. Drinking water is monitored for the presence of these compounds, and water treatment procedures can remove them.	The EPA has known for decades about the dangers of these toxic chemicals. Yet the agency only recently jumped into action, but they are slow in establishing water and cleanup regulations and the EPA continues to drag its feet. Some states have taken actions on their own because the federal government is not doing anything to protect people from dangerous PFAS chemicals in drinking water. Citizens need to contact their local political representatives and alert them to this serious health threat.
Is Exposure to PFAS Dangerous?	
Studies of effects of PFAS at environmental exposure levels have not established a link between such exposure and a human health effect. Epidemiological studies vary in design and outcome, and some are flawed. Results in animal studies do not translate well to what might be expected in humans. No clear connection of an effect potentially from an exposure to environmental concentrations exists.	Scientists have discovered unusual clusters of serious medical effects in communities with heavily PFAS-contaminated water, many of which are near military bases. Several recent studies have shown a link between COVID-19 and PFAS, suggesting that PFAS exposure may increase the risk of contracting infectious diseases like COVID-19 and reduce the effectiveness of vaccines.

4. Summarized from "PFAS Issue Primer" published by The Center for Truth in Science and accessed on June 21, 2021 at https://truthinscience.org/pfas-issue-primer/

5. Summarized from "Breaking Down Toxic PFAS" published by Earthjustice and accessed on June 21, 2021 at https://earthjustice.org/features/breaking-down-toxic-pfas?gclid=CjwKCAjw8cCGBhB6EiwAgORey4JJxhLbfmqTOR_fxqOl7SROjrs1eXmx32J8t9WxDVPhL50ksEj6YhoC8o8QAvD_BwE

2022 Sponsorship renewal letters have been sent out. If you are a current sponsor, be on the lookout for those. If you aren't a sponsor, or have let your sponsorship lapse, please consider supporting out efforts. Information can be found later in this newsletter, or on our website at: http://aquatics.org/sponsorship.html

Have you seen the moose? The popular Silent Auction item from regional chapter APMS meetings hasn't been spotted for a few years. If you have it in your possession, or know of it's whereabouts, please contact Carlton. A reward for its safe return may be offered.

Federal Funding Landscape for the Prevention, Monitoring, and Treatment of Harmful Algal Blooms

In early November 2021, the EPA hosted a webinar with several federal agencies presenting their programs for funding programs related to harmful algal blooms. Participants included EPA, NOAA, USACE, USGS and USDA. While many of the programs presented are limited in scope or availability, there are an impressive number of funding sources. These are summarized in the table below.

Funding Source	Eligible Recipients	Funding Type	Description
Environmental Protection Agency (EPA)			
Drinking Water State Revolving Fund (DWSRF)			
Drinking Water State Revolving Fund	Local communities	Loans	Communities may use the DWSRF to reduce HABs and Cyanotoxins in their drinking water systems
DWSRF Set Asides for Source Water Protection Loans	Local communities	Loans	States may offer loans to community water systems to finance source water protection activities through the Local Assistance and Other State Programs set-aside.
General DWSRF Set Asides for Source Water Protection	States and communities	Loans and grants	Recipients may use DWSRF set-asides to safeguard sources of drinking water.
Using DWSRF Set-Aside Funds to Assist Small Water Systems	Local communities (small systems)	Grants	As a result of the 1996 Amendments, states are required to provide a minimum of 15 percent of the funds available for assistance to small systems to help address infrastructure needs. This could include HABs prevention and treatment.
Explanation of DWSRF set-aside eligibilities	Local communities	Loans	This link provides additional details and DWSRF program guidance documents related to set-aside eligibilities.
Clean Water State Revolving Fund (CWSRF)			
CWSRF Source Water Protection	Public, private, or nonprofit entities	Loans	Funding for many types of source water protection projects, including both green and grey infrastructure water quality solutions for both surface water and groundwater.

Funding Source	Eligible Recipients	Funding Type	Description
Other EPA funding sources			
Source Reduction Assistance Grant Program	States, local governments	Grants	Funds support pollution prevention activities through source reduction and resource conservation.
CWA Section 106 (Water Pollution Control) Monitoring	States, tribes, interstate agencies	Grants	Funds support water pollution prevention and control programs and activities such as monitoring and assessing water quality, developing water quality standards, and identifying impaired waters.
CWA Section 319 (Nonpoint Source)	States, territories, tribes	Grants	States have flexibility to focus these funds with the goal of reducing nonpoint sources of polluted runoff.
Great Lakes Restoration Initiative	States, tribes, local governments	Grants	Funding for projects that aim to accelerate environmental progress in the Great Lakes, including reducing phosphorus loadings that often cause HABs.
Chesapeake Bay Program	States, tribes, local governments	Grants	Funds for restoration projects of all sizes across the Chesapeake watershed.
EPA Gulf of Mexico Division	States, tribes, local governments	Grants	Funds and implements projects to protect, maintain, and restore the health and productivity of the Gulf of Mexico.
EPA Office of Mountains, Deserts, and Plains	States, tribes, local governments	Grants	Addresses federal hard rock mining cleanup sites west of the Mississippi River.
Urban Waters Small Grants	States, tribes, local governments	Grants	Funds to help local residents and their organizations, particularly those in underserved communities, restore their urban waters in ways that also benefit community and economic revitalization.
National Estuary Program	States, regional entities, tribes	Grants	Funds to protect and restore the water quality and ecological integrity of estuaries of national significance.

Other Funding Sources

Natural Resource Damage Assessment (NRDA)	States and tribes	Grants	Funds legally recovered from responsible parties from oil spills or other hazardous leaks for restoring natural resources.
National Institute of Environmental Health Sciences (NIEHS)	Researchers	Grants	Funds for projects to improve the prediction of HABs.
National Science Foundation (NSF)	Researchers	Grants, contracts, cooperative agreements	Funds for research and education in science and engineering
United States Housing and Urban Development Community Development Block Grant (CDBG)	States and local governments	Grants	Funds for a wide range of community development needs, with the mission to encourage urban revitalization and development in underserved communities.

Bayer Statement on the EPA Final Biological Evaluation for Glyphosate November 29, 2021

Glyphosate is currently undergoing a routine registration review by the U.S. EPA, and as part of the registration review process an endangered species assessment is being conducted.

• In January 2020, the U.S. EPA published its Interim Registration Review Decision on glyphosate. Before the EPA issues a Final Registration Review Decision, the EPA needs to complete an endangered species assessment, which will eventually be conducted for all approved pesticides as part of the routine registration review process.

• Previous environmental assessments conducted by the EPA for non-endangered species have determined that glyphosate-based products pose no unreasonable risks when used according to label requirements.

• In November 2021, the EPA release its final BE for glyphosate. There are no significant differences between the draft BE and the final BE.

• The EPA will now consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to decide if additional protective measures are needed (e.g., no-spray buffer zones, drift-reduction technology).

• There are still several steps ahead in this process before the assessment is completed by the EPA and the Services. Bayer, grower groups, and others will continue to have opportunities to participate in this process to help ensure any new measures proposed by the EPA are fully informed and based on sound science.

The outcome of this ongoing assessment could be some additional protective measures.

• The EPA identified non-agricultural uses (e.g., aquatic systems, public lands, forestry, rights-of-way) as the primary uses that potentially impact the endangered species and critical habitat.

• In the meantime, the EPA's current determination – that glyphosate products pose no unreasonable risks when used according to label requirements – still stands, and growers and others can continue to use glyphosate products according to current label instructions.

Your AERF Sponsorship is key to:

►maintaining critical efforts in education and outreach
►expanding partnerships with regulatory agencies
►building partnerships
►supporting high quality research
►attracting graduate students
►expanding an aleady diverse membership
►being a source for resource management agencies

To donate, join or renew your Sponsorship in the AERF **please send the completed application form and payment to Treasurer, AERF, 1860 Bagwell Street, Flint, MI 48503-4406.**

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☐ Check here if you are an applicator company, so we can include you on our applicator pages.

☐ Check here if you would like to receive a free copy of the BMP with your membership.

Please use the following as a guide in the selection of the desired level of Sponsorship:

Of course, you are welcome to join AERF at any level and additional donations are appreciated.

☐ **Gold** is recommended for manufacturers and registrants	$15,000
☐ **Silver** and above is recommended for formulators	$5,000
☐ **Bronze** and above is recommended for distributors	$2,500
☐ **Affiliate** and above is recommended for consultant and application companies, equipment manufacturers/resellers and biological producers/resellers	$1,000
☐ **Associate** and above is recommended for societies, federal and state agencies, aquatic resource management associations, applicators and consultants	$250
☐ **Individual** and above is recommended for individual members	$50
☐ **Student** and above is recommended for students	$0

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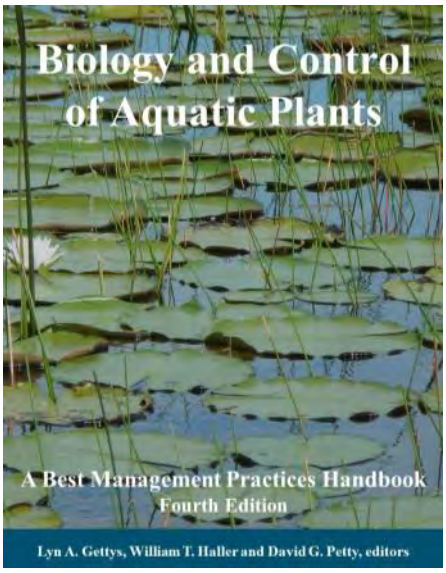

Sponsorship

The AERF respectfully requests that you consider sponsorship. AERF will continue to work on your behalf, and as a member, you will greatly benefit from our work on regulatory and research aspects of aquatic plant management. With changes in the regulatory environment now and in the future, it is essential to be involved and to support all the hard work of your AERF associates.

Please contact Carlton Layne for information on how you can best participate.

The AERF Mission

The Aquatic Ecosystem Restoration Foundation is committed to sustainable water resources through the science of aquatic ecosystem management in collaboration with industry, academia, government and other stakeholders.

Strategic Goals

- Provide the public information concerning the benefits and value of conserving aquatic ecosystems including the aquatic use of herbicides and algaecides in the aquatic environment.
- Provide information and resources to assist regulatory agencies and other entities making decisions that impact aquatic plant management.
- Fund research in applied aquatic plant management at major universities.

Upcoming Events

MAPMS	Feb 28-Mar 3, Lake Geneva, WI
WAPMS	Mar 7-11, Tucson, AZ

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