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Board of Pesticides Control

Report to the 130th Maine State Legislature on LD 264 Resolve, Directing the Board of Pesticides Control to Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State

LEGISLATIVE REPORT FISCAL YEAR 2021



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I. Acronyms and Definitions

Adjuvant	A chemical added to a pesticide product to enhance or stabilize the product's performance.
BPC	Board of Pesticides Control
CIASA	Constituents ineffective as spray adjuvants; the portion of an adjuvant that is effectively equivalent to the inert/other constituents of registered pesticide
CSF	Confidential Statement of Formula
DACF	State of Maine Department of Agriculture, Conservation, and Forestry
DEP	State of Maine Department of Environmental Protection
DFAS	Defense Financial Accounting Service
EPA	U.S. Environmental Protection Agency
FFDCA	Federal Food Drug and Cosmetics Act
FIFRA	Federal Insecticide Fungicide and Rodenticide Act
HDPE	High Density Polyethylene
Inert	The constituents of a pesticide product that are not specifically acting to control the pest. Synonymous with 'other' ingredients.
LD	State of Maine Legislative Document
MEPRLS	Maine Pesticide Enforcement, Registration & Licensing System
OECD	Organization for Economic Co-operation and Development
OPP	EPA's Office of Pesticide Programs
OPPT	EPA's Office of Pollution Protection and Toxics
Other	The constituents of a pesticide product that are not specifically acting to control the pest. Synonymous with 'inert'.
PFA	Primary Functioning Agent. PFAs are the term of art used to identify the "active ingredient" in spray adjuvant products while simultaneously avoiding confusion with the term "active ingredient". PFAs are the portion of the spray adjuvant responsible for the effects of the spray adjuvant.
PFAS	Per and poly fluoroalkyl substances
Spray Adjuvant	A term used in this report to delineate the products sold separately from registered pesticide products which function to enhance or stabilize the performance of the pesticide. These products are frequently mixed with the registered pesticide product at the time of application.
TSCA	Toxic Substances Control Act

II. Introduction

In 2021, the Maine Legislature passed LD 264, Resolve, Directing the Board of Pesticides Control to Gather Information Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State. One of the two major provisions of the bill directed the Board of Pesticides Control (BPC) to amend its rules relating to the registration of pesticides and require submission of two affidavits. The affidavits address 1) the use of fluorinated high-density polyethylene containers for storing, distributing and packaging pesticide products and 2) the inclusion of perfluoroalkyl or polyfluoroalkyl (PFAS) substances in the formulation of the pesticide product.

The second provision directed the Board to gather information relating to PFAS substances with a specific focus on developing 1) the framework necessary to regulate fluorinated adjuvants, 2) the framework necessary to prohibit the distribution and use of pesticides and adjuvants containing PFAS substances, and 3) a feasible definition of PFAS adulteration in a pesticide.

This report summarizes the BPC activities and findings. Specifically, the report summarizes the implementation of the required affidavits; findings on what is needed to regulate spray adjuvants (and thus fluorinated spray adjuvants); findings on how to prohibit distribution and use of pesticide and adjuvant products containing PFAS; and findings on how to define PFAS adulteration in pesticide products.

A. Constraints and Demands on Resources

LD 264 was passed with no additional funding to support BPC activities relating to its implementation. The Department of Agriculture, Conservation, and Forestry (DACF) and EPA have committed PFAS related funds and multipurpose grant funding, respectively, allowing the development of key components originating from this resolve. At the time of this writing, approximately \$75,000 has been committed for web development for implementation of the required affidavits and collection and flagging of related product formulation information. An additional \$4,800 has been used to support a part-time student assistant (approximately 320 hours). Within the BPC, work on this resolve has extensively included the Director and the Pesticides Toxicologist, and also involved the Pesticides Registrar, the Policy & Regulations Specialist, and the Certification & Licensing Specialist. Meetings with personnel outside of the BPC office involved staff from EPA Region 1, DACF, DEP, and the Office of the Maine Attorney General. Additionally, this topic has been discussed at each of the 2021 meetings of BPC's public policy board.

B. Summary of Completed and Ongoing Activities

In response to LD 264, the BPC has performed the following activities further described in this report. Throughout the course of this project, staff have:

- developed affidavit language and consulted with the BPC's legal representation for appropriateness;
- researched, planned, and will now work with software programmers to add functionality to the existing registration platform to incorporate the PFAS affidavits starting with the 2022 registration year;
- added functionality of the existing registration platform to collect confidential statements of formula (CSF) for pesticide and, in the future, adjuvant products;
- collected information from other states on the registration of spray adjuvants;
- analyzed statutes, rules, and regulations from Maine and other states in order to identify mechanisms of gaining authority to regulate spray adjuvants;
- collected lists of registered spray adjuvants from those states that collect registrations on spray adjuvants;
- added/commissioned functionality of our existing registration platform to collect spray adjuvant registrations, fees, and CSF data;
- explored definitions of PFAS and PFAS adulteration;
- determined limits of BPC enforcement authority in cases of PFAS adulteration;
- communicated with pesticide repackaging entities in the state about repackaging activities related to the use of fluorinated HDPE containers in product distribution;
- communicated with DEP staff concerning overlap with LD 264 and LD 1503, An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution;
- identified several currently registered pesticide active ingredients that meet the definition of PFAS established in LD 1503; and
- identified areas of concern for implementation of LD 264 due to ambiguity in interpreting the definition of PFAS.

C. PFAS and Pesticides

LD 264 focused on the potential nexus between pesticides and PFAS due to the detection of PFAS in one pesticide product utilized for mosquito control in Massachusetts.

Ultimately, it has been determined that the underlying pesticide formulation does not contain PFAS, nor does the HDPE container that it is packaged within. However, because the container underwent further fluorination treatment by a third party (to prevent container degradation), this process appears to be the source of PFAS compounds found in the sampled pesticide product. As a result, EPA is investigating container fluorination, possible leaching of PFAS, the conditions under which this is likely to occur, and the toxicological significance of the potential leachates.

The insecticide in question in Massachusetts is manufactured by Clarke Mosquito Control. The product is called Anvil 10+10 ULV. In 2018, BPC had one Clarke product registered under the name Anvil—Anvil 10+10 ULV. According to BPC distribution records this product appeared to have been purchased by an entity within Maine (Defense Finance and Accounting Service (DFAS) at Loring Air Force Base in Limestone, Maine), however following investigation, BPC staff have determined that the product invoice was paid by DFAS but shipped directly from Clarke to Altus Air Force Base in Altus, Oklahoma.

In 2021, BPC had two Clarke products registered—Duet Dual-Action Adulticide and Natular DT. Natular DT is a solid tablet packaged in a blister pack and is a ready-to-use larvicide applied directly to water. It is not to be applied via aerial application, and Clarke has indicated that it is not packaged in fluorinated HDPE containers. The sole purchase in Maine of Duet Dual-Action Adulticide was in 2019 by DFS at Loring Air Force Base, and the product was again shipped directly from Clarke to Altus Air Force Base.

Later in 2021, EPA was made aware of PFAS detected in another mosquito control product used in Maryland—Permanone 30+30—manufactured by Bayer. In response to this information, EPA applied its new 2021 internally validated oily matrix method to analyze three stored samples of mosquito control pesticide products (Permanone 30-30 and PermaSease 30-30) and determined that none of the tested samples contained PFAS at or above the Agency's method limit of detection.

It is important to stress that the initial and emerging studies of the Clarke Mosquito Control product links PFAS contamination to containers, not the pesticide formulation. The current science and testing around PFAS leaching due to fluorinated HDPE containers continues to evolve. The BPC staff are actively engaged on this broad topic with colleagues in state pesticide programs, EPA Region 1, and is routinely briefing the BPC board on developments at its monthly meetings.

PFAS detection in pesticide formulations is a whole new area of consideration, investigation, and response, beyond the current issues the Department has already been navigating related to PFAS impacted farms. Information will continue to emerge that will help shape and identify BPC's role related to PFAS. This report reflects BPC staff's current understanding of PFAS and pesticides, the applicability and limitations of current authority, and the applicability of parallel regulations.

III. Activities Related to Amending Rules

A. Affidavits

Section 1 of LD 264 directs the Board to conduct rulemaking to amend the requirements for pesticide product registration and collect affidavits relating to PFAS. These new affidavits will provide attestation to the following:

- 1) *whether a perfluoroalkyl or polyfluoroalkyl substance is in the formulation of the registered pesticide*
- 2) *whether the registered pesticide has ever been stored, distributed, or packaged in a fluorinated high-density polyethylene container*

BPC staff have worked with the web development company Stratosphere to allow incorporation of affidavits into the BPC's existing product registration software solution. Following completion of rulemaking and software development, these affidavits will be compulsory questions in the annual pesticide registration process required for lawful distribution of pesticide products in Maine. In addition, BPC staff are developing a new webpage that offers registrants information about these affidavits. Specifically, registrants are directed to the definition of PFAS established by LD 1503 and provided contact information for the Maine Department of Environmental Protection (DEP).

During the affidavit process pesticide registrants will answer the question, "is this product delivered in bulk to any vendors?" The MEPERLS database will flag affirmative entries for follow up by staff. Thus far, BPC staff have identified six vendors that may refill ("repackage") bulk pesticide containers in Maine. BPC staff are in the process of reaching out to these EPA registered Pesticide Producer Establishments in Maine to discuss this issue.

IV. Sale and Use of Fluorinated Adjuvants Used in Maine

The basic definition of an adjuvant is an ingredient that enhances the effectiveness of pesticide product ingredients or modifies the actions of those pesticide product ingredients. With pesticides, adjuvants are added to enhance the pesticide's performance. This report focuses on adjuvants sold separately from the registered pesticide products, those that are added to a tank mix prior to application. The term "fluorinated adjuvants" used in L.D. 264 is not defined, and it is not a term utilized in pesticide terminology. For the purposes of this report, staff have assumed fluorinated adjuvants to contain 1) primary functioning agents or 2) constituents ineffective as spray adjuvants (CIASAs) that could, under Maine's definition of PFAS (described in section VI below), be considered PFAS.

Adjuvant products are not currently regulated by any federal or State of Maine government entity. Determining if fluorinated adjuvants are definitively present in the state requires access to information to which the BPC is not currently lawfully entitled. Based on BPC staff research, the assumption is that fluorinated adjuvants are potentially available for sale and use in Maine. This assumption is based on the discovery that in some states adjuvants are registered and as many as 1,100 adjuvant products are registered annually. The EPA Master List of PFAS chemicals indicates approximately twenty of the inert/other chemicals known to occur in registered pesticide products may be available for use as ingredients in adjuvant products. BPC has not confirmed the presence of any specific fluorinated adjuvant products for sale or use in the State of Maine.

The BPC regulates pesticide products. Pesticide products must be registered by the EPA prior to being allowed on the market but only following an acceptable risk assessment. Pesticide products, as sold, are almost never composed of 100% pesticide active ingredient, most also include inert/other ingredients. The inert/other ingredients used as part of the pesticide product must also undergo a separate risk assessment prior to being allowed for use in registered pesticide products. This section does not apply to those adjuvants already assessed by EPA as part of pesticide products.

As stated, adjuvants are not currently regulated in Maine or in a majority of the states. Research indicates that nine states do regulate adjuvants and that two of those states require a statement of the complete ingredient list, otherwise known as a confidential statement of formula.

A. Identification of Fluorinated Spray Adjuvants

i. Definition of Spray Adjuvants

A spray adjuvant is added to a pesticide spray mixture to enhance the pesticide's performance and/or the physical properties of the spray mixture. Because spray adjuvants have no pesticidal properties (they do not control the pest), they are not required to be registered by the U.S. Environmental Protection Agency (EPA). However, if they are to be used on a food or feed crop, there must be an established tolerance or tolerance exemption for the adjuvant. Tolerances are the legal maximum amount of a chemical that are allowed to be on a food commodity at the point of sale. The process of establishing a tolerance involves understanding sufficient toxicology and chemical fate data in order to complete a risk assessment to demonstrate at what concentration exposure to the chemical would not cause undue harm to humans or the environment.

ii. Adjuvants Used on Food Crops

Spray adjuvant products to be used on food commodities are required to either have an established tolerance or be exempt from tolerance requirements as required by

Federal Food, Drug and Cosmetic Act (FFDCA), available as per Code of Federal Regulations (CFR) 40 CFR 180. Tolerances are searchable in the CFR at: <https://www.ecfr.gov/current/title-40> by entering the chemical name into the search function. The majority of inert ingredients can be found in 40 CFR 180.910-180.960.

iii. Adjuvants Used on Application Sites Other Than Food Crops

Spray adjuvant products not used on consumable goods are regulated under Toxic Substances Control Act (TSCA). Approval under TSCA requires EPA to review chemicals ensure that chemicals do not present unreasonable risk of injury to health or the environment when used as proposed. Details on how chemicals are assessed under TSCA can be found at: <https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/regulatory-determinations-made>.

There is significant overlap between the ingredients used for inert/other chemicals used in registered pesticide products and spray adjuvant products. One state lead agency reported that during the process of registering spray adjuvant products they cross-check each product's ingredients against EPA's Inerts Finder tool. (Available at <https://ordspub.epa.gov/ords/pesticides/f?p=INERTFINDER:1:0::NO:1::>, the Inert Finder is EPA's clearinghouse for all inert/other ingredients used in registered pesticide products.) That state above does not allow registration of spray adjuvant products that include chemicals missing from the Inert Finder lists. EPA's Inert Finder can be sorted by food and non-food uses.

Appendix B contains the response provided by the Office of Pesticide Programs (OPP) at EPA to questions about adjuvants and required risk assessments. In the response, EPA indicates that during pesticide registration OPP includes all chemicals in the final product formulation and all chemicals mentioned on the product label into the registration risk assessment.

At present, the scope of the Board of Pesticides Control's regulatory authority is the distribution and use of pesticides.

B. Results from Survey of Other States

To better understand spray adjuvant regulation, BPC staff researched the regulatory authorities and processes in other states. States were contacted by direct email and asked a series of questions; additionally, states were queried with a survey distributed via the Association of American Pesticide Control Officials (AAPCO).

Several states responded and provided the following information. Arkansas provided an Excel spreadsheet of all adjuvants currently registered in the state of Arkansas. California was unable to provide any information due to a lack of resources to check the confidential statements of formula for all the adjuvant products to determine if the state had any adjuvants with PFAS, and additionally because the department is unsure if they would be able to provide this confidential business information. Idaho noted that their

new database program requires actives/principle functioning agents to be listed when registering products; however, this is confidential information. They also stated that they would reach out again once they have devised a list of adjuvants registered in Idaho. Utah provided a way for BPC staff to find a list of registered adjuvants in the state of Utah on their state website. Appendix C contains the complete lists of spray adjuvant products registered in Arkansas, Tennessee, and Washington (these are the only states providing lists by the survey deadline).

Washington provided resources to determine a list of adjuvants registered in the state that have been added to the Washington State University website, Pesticide Information Center OnLine (PICOL). This is the official repository of pesticide labels registered in both Washington and Oregon. The list is not currently updated with a full list, but the internal database for Washington indicates there are about 870 adjuvants registered. Full text of how to navigate Washington’s adjuvant registration page is provided as an excerpt of an email in Appendix D.

Requirements of each state’s program is available in Table 1. These details include requirements and details for spray adjuvant registration including: registration fee per product, registration period, copy of product label, copy of confidential statement of formula, and a safety data sheet.

Table 1. Requirements from the nine states that regulate spray adjuvants as pesticides.
 Note: States that require EPA confidential statement of formula (EPA Form #8570-4) for all pesticides (not spray adjuvants) are as follows: California, Colorado, Florida, Hawaii, and New York.

State	Application for Registered Pesticides	Registration Fee per product (\$)	Registration Period (years)	Copy of Product Label	Copy of Spray Adjuvant Confidential Statement Formula (CSF)	Safety Data Sheet (SDS)
Arkansas	Yes	250	1	Required only upon request	Required only upon request	Required only upon request
California	Yes	1,150 for initial registration and annual renewal fee	1	6 copies, and copy of EPA approved label and letter unless product is exempt		
Idaho	Yes	160	1	Yes	Yes, along with efficacy data	Yes
Kentucky	Yes	250	1			

Mississippi	Yes	200	1	Yes (active ingredients & percentage)		
Tennessee	Yes	200	1			
Utah	Yes	195	1	Yes		
Washington	Yes	650	2	Yes	Yes	Yes
Wyoming	Yes		1			

C. Methods for Identifying Specific Pesticide and Spray Adjuvant Ingredients as PFAS

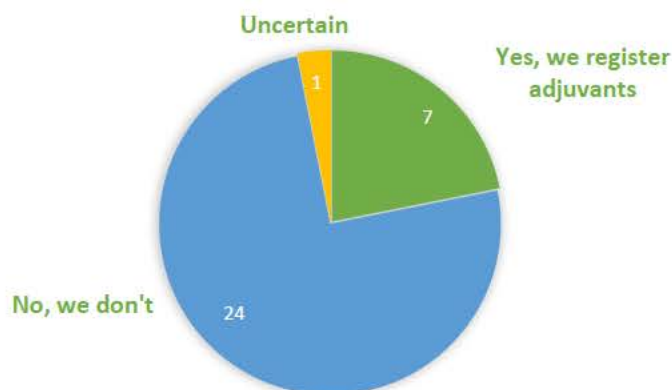
BPC has not identified any specific spray adjuvants as containing PFAS for several reasons. First, what chemicals fit the state’s definition of PFAS have yet to be finalized by the Department of Environmental Protection (DEP), and secondly, BPC is waiting for the release of a software add-on on EPA’s CompTox Dashboard that will allow us to easily compare the compounds listed as adjuvant ingredients to the chemical structure established by DEP. Once there is additional guidance from DEP and a webpage update from EPA, BPC will be able to use qualifying chemical structures established by DEP as search criteria in the CompTox Dashboard and cross reference those chemicals to the potential ingredients in spray adjuvants identified by searching the relevant state and federal adjuvant databases. EPA estimates the CompTox Dashboard add-on to be available to the public starting around December 2021-January 2022.

BPC has initiated the restructuring of the MEPRLS database to collect confidential statement of formula forms (CSF) for pesticides to be registered in the 2022 registration year. Should spray adjuvants become regulated by BPC, adding the functionality for collecting CSF information for spray adjuvants would not be a significant obstacle.

D. State Regulatory Agency Adjuvant Survey Results

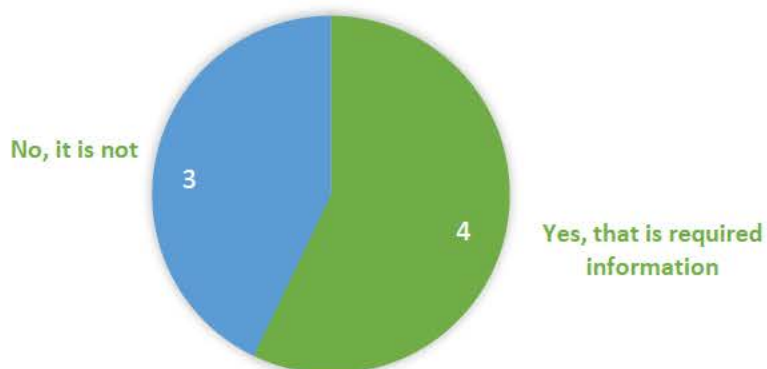
Through the American Association of Pesticide Control Officials (AAPCO), a national organization representing state lead agencies responsible for pesticide regulation, BPC asked other states a series of questions about spray adjuvant registration. The survey yielded results from 32 states. Most of the responses indicated that spray adjuvants are not included in pesticide programs’ responsibilities - see pie chart below.

Survey Responses Asking State Pesticide Programs: Does Your State Regulate Adjuvants?



Survey responses provided contact information from the state lead agencies that regulate adjuvants and, in some cases, lists of registered spray adjuvant products were also provided. For the states registering spray adjuvants, most do not perform risk assessments on the products. Several states indicated that they review the labeling of the product. The labeling review simply matches the product to the types of claims that can be made for that type of product and ensures no misleading statements are present.

Survey Results From States That Regulate Adjuvants Asking: Is Ingredient Information Required?



The survey additionally asked states if ingredient information was collected. There are two aspects to this: states can collect 1) only “active ingredient” information and require it to be present on the label or 2) all product constituents CSF. To avoid confusion during registration, some states use differing terminology to differentiate between pesticides and spray adjuvants. Some spray

adjuvant registrations use the term “primary functioning agents (PFA)” instead of “active ingredient.” The PFAs are required to appear on labels in some states, similar to how active ingredients are required on pesticide labels. In some states, ingredients are reviewed for accuracy, and the ingredients are compared to EPA’s Inert List. All compounds on EPA’s Inert List have been assessed for risk enabling manufacturers to include the compounds in pesticide product formulations. The Inert List is publicly available, but the specific inert ingredients found in a pesticide product are not. Two of the four states appear to collect the CSF. None of the states indicated that they prohibit certain adjuvants.

The purpose of the survey was to gather from states as much information on regulating spray adjuvants as possible. While much of the information ended up being redundant with the information gathered by directly emailing state lead agencies, confirming that most states do not register spray adjuvants was helpful.

V. What is Needed to Regulate Fluorinated Spray Adjuvants?

A. Authority

To determine what is needed to regulate spray adjuvants, the BPC researched authorities necessary for adding spray adjuvants to regulated products. This required an investigation into if other states regulate spray adjuvants and if those states require adjuvants to be registered as pesticides. The following nine states regulate spray adjuvants as pesticides: Arkansas, California, Idaho, Kentucky, Mississippi, Tennessee, Utah, Washington, and Wyoming. To determine how these states regulate spray adjuvants as pesticides, the BPC looked at each state’s statutory definitions (Table 2).

Table 2. State statutory definitions relating to pesticides and spray adjuvants.

State	Statute	Definition
Arkansas	2012 Arkansas Code Title 2 -Agriculture Subtitle 2 – Agronomy Chapter 16 – Plant Disease and Pest Control Subchapter 4 – --Pesticide Control 2-16-403 – Definitions	"Spray adjuvant" means any wetting agent, spreading agent, sticker, deposit builder, adhesive, emulsifying agent, deflocculating agent, water modifier, or similar agent intended to be used with any other pesticide as an aid to the application or to the effect thereof, and which is in a package or container separate from that of the pesticide with which it is to be used

	AR Code § 2-16-403 (2012)	<p>"Active ingredient" means any ingredient which will prevent, destroy, repel, control, or mitigate pests or which will act as a plant regulator, defoliant, desiccant, or spray adjuvant</p> <p>"Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pests; any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; and any substance or mixture of substances intended to be used as a spray adjuvant.</p>
Kentucky	KRS 217.544(26)	"Pesticide" means any substance or mixture of substances intended to prevent, destroy, control, repel, attract, or mitigate any pest; any substance or mixture of substances intended to be used as a plant regulator, defoliant, or desiccant; and any substance or mixture of substances intended to be used as a spray adjuvant.
	KRS 217.544(31)	"Spray Adjuvant" means any wetting agent, spreading agent, sticker, deposit builder, adhesive, emulsifying agent, deflocculating agent, water modifier, or similar agent intended to be used with any other pesticide as an aid to the application or to the effect thereof, and which is in a package or container separate from that of the other pesticide with which it is to be used.
Wyoming	WY Stat § 35-7-354 (2018)	"Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pests; any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; and any substance or mixture of substances intended to be used as a spray adjuvant.
Maine	Title 22. Health and Welfare Subtitle 2: Health Part 3: Public Health Chapter 258-A: Board of Pesticides Control 1471-C. Definitions	<p>"Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.</p> <p>"Pesticide dealer" means any person who distributes limited or restricted use pesticides.</p>

B. Budget Considerations

In a third query, BPC staff sent an email to states that regulate adjuvants to inquire about the staffing demands of spray adjuvant registrations. There is considerable variation in staffing between the states that handle spray adjuvant registrations. These differences parallel the thoroughness of review the spray adjuvants are given. For example, in Washington, each ingredient is verified against EPA's list of reviewed inert ingredients. The spray adjuvant

program demands greater resources as compared to those states that simply collect registration fees and no other documentation. The state responses are summarized in Table 3.

Table 3. State programmatic costs for spray adjuvant registration administration from state programs registering spray adjuvants.

State	Program Cost Description Email Responses
ArkansasThe Arkansas Department of Agriculture, Pesticide Section has 2 employees that handle registration reviews for Adjuvants. 1 Program Manager and 1 Program Coordinator.
KentuckyWe have one staff member that works as our Product Registration Coordinator. Her supervisor is available for questions that may arise on label reviews and there are 3 of us that are involved in 24(c) and Section 18 requests.
MississippiCurrently, I [Branch Director, Bureau of Plant Industry] am the only person who reviews adjuvants in Mississippi. I have an assistant who helps with registrations, but she does not review adjuvants.
UtahWe have one FTE in pesticide registration, which handles all that you mentioned in your email to me [adjuvant registration, regulation, review process, etc.]. Her job classification is Program Specialist. We don't review EPA registered products. Adjuvants and 25(b)'s get a review looking for key words/terms that I have given her. If she sees them, then I review the label. She also makes sure that 25(b)'s meet the EPA Label Review Manual's requirements.
Washington	<p>...Entire registration staff currently consists of 7 people 2 pre-registration/helpdesk, 4 registration specialists 1 registration supervisor that also performs registrations</p> <p>Review/Registration Process: We currently have 15,500 pesticides registered, and of these 895 (5.8%) are spray adjuvants. Washington state regulates spray adjuvants as pesticides. (This same staff also maintains and registers fertilizers—we have about 10,000 registered currently.) Spray adjuvants are our most difficult and most time-consuming registration type. There is no federal oversight, so all the review is done within our program. We also require the complete formula to be submitted, which can be challenging if a registrant is using a 100% repack of someone else's "proprietary" formula. We also have difficulties getting an acceptable label that meets WA state laws and rules. You probably also know that there are only a few states that register spray adjuvants—and that WA and CA do the most intensive review. California review is data focused, and Washington state review is label focused.</p> <p>We do not allow any adjuvant to be used aquatically unless data is submitted. In this case, everything gets sent to our agency toxicologist for his review and approval. I have heard that most spray adjuvant registrants will get their product approved in WA and CA, and then will submit them to other states. The other states (knowing that they passed the test in WA and CA) will register without much review.</p>

	<p>Estimates of FTEs: .10 FTE for Pre-registration/help desk: time spent making sure application is complete (confidential statement of formula, safety data sheet.) Staff are Customer Service Specialists FTE for Registration: application review, proper labelling, verifying ingredients, chasing down the complete formula, corresponding with registrants, component suppliers, manufacturers. Staff are Senior Registration Specialists .05 FTE for Tox review. Staff is a Senior Toxicologist</p> <p>Total is about 1.15 FTE for us. I think it gives you a good flavor that spray adjuvants at 3.5% of our total (pesticide and fertilizer) registrations requires over 16% of our staff resources.</p>
Wyoming	Department only has one person designated to product registration.

In sum, as modeled by states, spray adjuvants may be regulated by: 1) creation of a statutory and regulatory rubric that allows for adjuvants to be regulated by the controlling pesticide agency, including key definitions and collection of fees equivalent to pesticide registrations; 2) collecting spray adjuvant information in a manner similar to the pesticide registration process; and 3) requirement (by some states) of copies of confidential statements of formula. The degree to which states review pesticide product registration and adjuvant registration applications is directly dependent upon the availability of dedicated staff. Maine has dedicated 0.75 FTE to pesticide product registration, and the BPC is currently in the process of hiring an additional full-time FTE to better address existing registration and water quality monitoring responsibilities. Any additional staff time required for adjuvant registration application review will be additive to existing responsibilities and it should be noted that some states dedicate staffing for this purpose.

Should Maine require registration for the approximately 870 spray adjuvants registered in Washington State, implementation would likely require at least one FTE to process new applications. The increased staff demand depends on the extent of the review required. Registration of adjuvants will add to the inspection workload, referrals to the registration specialist, and follow up with companies.

If adjuvants will be registered and defined as pesticides, then registration will be subject to registration requirements for pesticides such as label review unless the statute specifically exempts spray adjuvants from label review. Review will require time and likely follow up with companies regarding label and CSF deficiencies.

VI. A Feasible Definition of PFAS Adulteration

For BPC to enforce regulations specific to PFAS adulteration, there first needs to be an established definition of PFAS. Further, established and efficacious methods must also be available to detect the presence of PFAS for enforcement purposes.

A. Variety of Possible PFAS Definitions

BPC staff explored a variety of different PFAS definitions. Appendix E contains a list of alternative definitions for PFAS categorization that were discovered in this process. However, the BPC public policy board has moved to adopt the PFAS definition established with LD 1503 (<http://www.mainelegislature.org/legis/bills/getPDF.asp?paper=HP1113&item=5&snum=130>), hereafter referred to as the “State’s definition.” The State defines PFAS as “one fully fluorinated carbon”; this definition is similar to several PFAS definitions from relevant authoritative bodies (e.g., EPA’s Office of Pollution Prevention and Toxics and Organization for Economic Co-organization and Development (OECD)), but it is not precisely the same. The state’s definition includes a greater variety of compounds than the definition used by BPC’s federal counterpart.

LD 1503 requires manufacturers of products with intentionally added PFAS to report the presence of those substances in those products to DEP beginning in 2023, and those products may not be sold after 2030, with limited exceptions. Adopting the definition established in LD 1503 will aid harmonization of State rules. In addition to being subject to LD 264, pesticide products are also subject to the reporting requirements of LD 1503. Given the broad reach of LD 1503, compliance will be aided by using a singular definition. To further assist compliance, BPC is communicating with pesticide registrants regarding their obligations under LD 1503.

i. Enforcement Limitations

Currently, there is not a suite of methods available that enables testing for all PFAS in pesticide products. The delegated enforcement authority granted by the cooperative agreement with EPA demands properly executed and repeatable sample testing methodologies. In the fall of 2021, EPA released approved test methodology suitable for PFAS in oily-based pesticide products. This new method, an adaptation of EPA method 537.1, identifies 28 unique PFAS and is available at:

<https://www.epa.gov/system/files/documents/2021-09/epa-pfas-method-in-oil.pdf>.

Hence, while BPC can collect affidavits regarding PFAS during the registration process, there currently exists only limited testing capabilities to detect the presence of the compounds in actual pesticide products.

There are somewhere between three to 190 constituents currently in pesticide products and adjuvants that may become classified as PFAS under the new definition referenced in LD 1503. Their presence is currently legal, but should they be become State prohibited, enforcing against them may prove to be difficult. One approach to establishing their presence could be following up on CSF records submitted to the BPC. The other approach, analytical testing, is more difficult for several reasons. Current analytical capabilities could only identify 28 of the 12,039 PFAS known to exist. Furthermore, even if it was possible to analytically identify all known PFAS, enforcement would be prevented due to a lack of regulatory allowable limits for each of the compounds. Given the background concentrations of PFAS found in many media, allowable thresholds need to be set before adulteration could be defined for enforcement purposes.

ii. Regulating PFAS As a Class

One approach to accommodate the uncertainty associated with this large class of chemicals has been to treat all PFAS as one class. While this is a simpler and seemingly easier approach, it is not consistent with current chemical regulations which are based on risk. Lumping PFAS into a single group ignores that they are likely to have differing effects in the body as well as differing movement through the environment. In Vermont, this approach was assessed but not endorsed because of the lack of toxicological data and lack of test methods for all the potentially regulated compounds, among other factors (<https://dec.vermont.gov/sites/dec/files/PFAS/20180814-PFAS-as-a-Class.pdf>).

Pesticide active ingredients are described in published literature at a level of detail not seen for thousands of PFAS chemicals, and many of the concerns surrounding PFAS are addressed as part of the pesticide registration review process. For pesticide registrations, there is publicly available information that describes toxicity and environmental fate in a way not seen for most PFAS. For example, a concern with PFAS is persistence in the environment--the amount of time it takes a pesticide to break down in the environment is required information for every pesticide registration. Of the federal laws that regulate chemicals, the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) that regulates pesticides is more restrictive and transparent than the Toxic Substances Control Act (TSCA) that regulates general and industrial chemicals, like PFAS.

iii. Federal Approach to Adulteration in Pesticides

Currently, pesticide registrants are required (under FIFRA Section 6(a)(2)) to submit information to EPA when they discover or are made aware of PFAS in their products. This requirement under FIFRA stipulates manufacturers and registrants must report to EPA any known adulteration issues. PFAS are classified as adulterants because EPA has indicated ‘any level of PFAS to be potentially toxicologically significant’ in pesticide products. Therefore, when pesticides contain any amount of PFAS, reporting due to product adulteration is triggered under 40 CFR 159.179(b)(2). Adulteration by contaminants and impurities under FIFRA is set with the following criteria from 40 CFR 159.179(b):

- (1) Quantities greater than 0.1 percent by weight (1,000 parts per million).
- (2) Quantities that EPA considers, and so informs registrants, to be of toxicological significance.
- (3) Quantities that the registrant considers to be of toxicological significance.
- (4) Quantities above a level for which the registrant has information indicating that the presence of the contaminant or impurity may pose a risk to health or the environment.
- (5) Quantities that a person described in § 159.158(a) has informed the registrant is likely to be of toxicological significance.

VII. What Is Necessary to Prohibit Distribution and Application of Pesticides & Adjuvants Containing PFAS?

A. Current state and federal laws

i. Pesticides

Current Maine law allows the BPC to collect CSF information for pesticide products as part of the annual registration process. Assessing each product against a list of prohibited PFAS could occur once the MEPERLS development work is completed. The newly enacted affidavits, in combination with the new CSF submission requirements, provide a mechanism to identify all pesticide products with intentionally added PFAS.

ii. Spray adjuvants

Currently, Maine does not regulate spray adjuvants. Authority to the state to regulate spray adjuvants would need to be established by the Legislature. A mechanism used in other states is to re-define pesticides in a manner that specifically brings in spray adjuvants. A clear statement of prohibition of PFAS chemicals in spray adjuvant products would further be required to create a prohibition of PFAS intentionally added to spray adjuvant products.

iii. Containers

Current state and federal law allows the use of HDPE containers that have been fluorinated in many applications, including for pesticide and spray adjuvant packaging. EPA has asked pesticide companies to voluntarily stop this practice and to seek alternative packaging. Certain products have been pulled from shelves and none of the products associated with PFAS adulteration from containerization are available on the market. The newly enacted affidavits identify pesticide products contained in fluorinated HDPE containers. A clear statement prohibiting the use of fluorinated HDPE containers at any stage of pesticide product storage would be required to prohibit the use of these containers.

B. Related State Laws

LD 1503 will prohibit PFAS chemicals as intentionally added components in pesticides starting in 2030. However, DEP may allow for a product with intentionally added PFAS to be sold if such product's use of PFAS is designated as "unavoidable" by DEP.

For registered pesticides, the prohibition of distribution of items containing intentionally added PFAS, as detailed in LD 1503, would also effectively ban use of the same in Maine unless DEP were to find their use "unavoidable." If sale is prohibited, however, pesticide

registration could not occur, and under Maine State law, all pesticides must be registered in order to be lawfully used.

Helpful Resources:

Spray Adjuvants-

Winand Hock, PH.D., Pennsylvania State University <https://extension.psu.edu/spray-adjuvants>

PFAS Definitions-

Office of Pesticides Programs page on PFAS in pesticide packaging:

<https://www.epa.gov/pesticides/pfas-packaging>

OECD recent publication: <https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/terminology-per-and-polyfluoroalkyl-substances.pdf>

PFAS General-

OECD Portal on Per- and Poly-fluorinated Chemicals

<https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/>

Advance Notice On The Regulation Of Perfluoroalkyl, Polyfluoroalkyl Substances (Pfas) As A Class. Vermont Agency Of Natural Resources Department Of Environmental Conservation Drinking Water And Groundwater Protection Division. August 14, 2020. 11pp. <https://dec.vermont.gov/sites/dec/files/PFAS/20180814-PFAS-as-a-Class.pdf>

Bulk Pesticide Distribution-

EPA: A two-page brochure on refilling issues with the container and containment rule is available at: <https://www.epa.gov/sites/default/files/2015-05/documents/ccrule-brochure.pdf>

APPROVED	CHAPTER
JUNE 21, 2021	83
BY GOVERNOR	RESOLVES

STATE OF MAINE

IN THE YEAR OF OUR LORD
TWO THOUSAND TWENTY-ONE

H.P. 185 - L.D. 264

**Resolve, Directing the Board of Pesticides Control To Gather Information
Relating to Perfluoroalkyl and Polyfluoroalkyl Substances in the State**

Sec. 1. Board of Pesticides Control to amend rules relating to registered pesticides. **Resolved:** That the Department of Agriculture, Conservation and Forestry, Board of Pesticides Control shall amend its rules governing the registration of pesticides in the State to require manufacturers and distributors to provide affidavits stating whether the registered pesticide has ever been stored, distributed or packaged in a fluorinated high-density polyethylene container and to require manufacturers to provide an affidavit stating whether a perfluoroalkyl or polyfluoroalkyl substance is in the formulation of the registered pesticide.

Sec. 2. Board of Pesticides Control to gather information relating to perfluoroalkyl and polyfluoroalkyl substances. **Resolved:** The Department of Agriculture, Conservation and Forestry, Board of Pesticides Control shall conduct a study to determine if fluorinated adjuvants are being used or sold in the State. The board shall explore what is needed to regulate fluorinated adjuvants in the State and shall explore what is necessary to impose a prohibition on the distribution or application of pesticides or adjuvants containing perfluoroalkyl or polyfluoroalkyl substances in the State. The board shall develop a feasible definition of perfluoroalkyl or polyfluoroalkyl adulteration in a pesticide. The board shall submit a report based on the study with findings and recommendations to the Joint Standing Committee on Agriculture, Conservation and Forestry no later than January 15, 2022. The joint standing committee may submit a bill to the 130th Legislature relating to the subject matter of the report.

Appendix B EPA Email Response Clarifying Risk Assessments For Adjuvants and Spray Adjuvants

Email Response from EPA:

Spray adjuvants are not pesticides and not covered under FIFRA, right? Tolerances are set for those spray adjuvants to be used on ag commodities but that comes from FFDCa and FQPA, right?

When evaluating a pesticide product for registration under FIFRA, EPA considers the proposed directions for use as well as widespread and commonly recognized practice of how it is used. That consideration may include how an adjuvant affects the use of the pesticide. Although adjuvants are not registered as pesticides, they are still regulated because adjuvants are chemicals added to a pesticide by users to improve the pesticide's efficacy. Such agents are often included in pesticide formulations as "other ingredients," in which case the ingredient is reviewed during registration and any necessary tolerances or exemptions from the requirement of a tolerance are established. Where a product label directs the user to add a particular adjuvant before use, the registering division will treat that adjuvant as if it were an "other ingredient" in making the registration decision, and will assure that any necessary tolerances or exemptions from the requirement of a tolerance are established. It also would be within the Agency's authority to treat any tank-mixed substance as part of the pesticide (and thus needing an FFDCa tolerance) in that it met the FIFRA definition of pesticide – i.e., a "mixture" of substances intended to kill a pest. See [Chapter 1](#) of the Pesticide Registration Manual.

I feel like inert/other ingredients are covered under FIFRA but registration is not required, is that true? and if so, is the same true for spray adjuvants? How can I find the requirements for tolerance setting on spray adjuvants and inert/other ingredients?

EPA registers pesticide products, i.e., a product that includes a pesticidal active ingredient and any inert or other ingredients that make up the whole formulation. The registration of pesticide products under FIFRA include a determination that the pesticide product formulation meets the registration standard under FIFRA section 3 (including the lack of unreasonable adverse effects on the environment). The entire formulation, including the inert ingredients, must meet this standard. Inert ingredients themselves are not registered under FIFRA; the same applies to adjuvants. In addition, the Federal Food, Drug, and Cosmetic Act (FFDCa) requires that pesticide chemical residues, including any active ingredient and inert ingredients in pesticide products, used on food and feed crops, agricultural commodities, or livestock must have a tolerance or tolerance exemption under 40 CFR Part 180. See Chapter 8 of the Pesticide Registration Manual. Approved inert ingredient tolerances and tolerance exemptions are found in the Code of Federal Regulations (CFR) under 40 CFR Part 180. Links to inert ingredients approved for nonfood uses are listed on the Inert Ingredients Web page.

If the use of an adjuvant may result in detectable residues on food, the applicant should contact the EPA product manager or registration ombudsman (Chapter 21) prior to submitting the application to discuss the potential need for a tolerance. See Chapter 11 of the Pesticide Registration Manual; and Code of Federal Regulation, Title 21 Part 178 –Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers

Continued... Email Response from EPA:

For spray adjuvants not intended for ag commodities what authorization are they regulated under?

If an adjuvant is listed on the product formulation, it would be evaluated by EPA as part of the overall formulation. If it is not listed as part of the product formulation, and there is no expectation of residues in or on food as a result of the use of the pesticide (e.g., because it is not intended to be used on food crops), then EPA would not regulate its use. Generally, it is likely that the adjuvant would be identified on the label, and so there might be some consideration of the adjuvant as part of the reviewing the label. This [guidance](#) on inert ingredient for non-food use may be helpful insight for an example of a process that could apply to an adjuvant. [Inert ingredients guidance for new nonfood use \(pdf\)](#)

Appendix C List of Registered Adjuvant Products in Other States (Arkansas, Tennessee, & Washington)

Arkansas

3M 6000 Copper Granules	Poolstyle Pool Products 3" Triple Action Tabs	Super Algi-Gon	HTH Pool Care Algae Guard 30
3M 7000 Series Copper Granules	Poolstyle Pool Products Bright Shock	Clearigate EC9	HTH Pool Care Algae Guard Granules
Water Bath Additive	Pool Season Brominating Tablets	Swintrine 90	HTH Pool Care Algae Guard Ultra
c-series Water Bath Additive	Re-Fresh	Applied Biochemist Power Blast 70	Poollife Exclusive Pool Care Collection Complete Control Shock and Algaecide
Ultima Total Control Shock and Algaecide	Re-Fresh Dry Chlorinating Granular	Applied Biochemist Power Blast II	90 Years of HTH Perfect Pools
Ultima Nix	Super Shock-It 73	Cutrine Plus Algaecide	Ultimate 3" Chlorinating Tablets
Ultima Platinum Plus	Regal Pool Care System Algaecide 60	Silvertrine	90 Years of HTH Perfect Pools
Aqua Silk Algaecide	Regal Pool Care System Poly-Algaecide 30	Applied Biochemists 3" Tablets	Ultimate Algae Guard
Ultima TKO	Regal Pool Care System Algaecide 50	Applied Biochemists Chlorinating Capsules	90 Years of HTH Perfect Pools Algae Guard 30
Ultima Swamp to Swim I	Regal Pool Care System Granular 90	Applied Biochemists Triple Action Tablets	90 Years of HTH Perfect Pools 1" Chlorinating Tablets
Ultima Yello-Free Algaecide	Pool Season Algae Control 60	Phycomycin-SCP Algaecide & Oxidizer	Constant Chlor Plus Marathon Tablets
Salt Solutions by Ultima Algaecide	E-Z Clor Algaecide	Stocktrine II Algaecide	90 Years of HTH Perfect Pools
Aqua Silk Alage Control	Pool Season Algae Control 30	Swimtrine Plus	Liquid Chlorinator
Ultima Swamp To Swim (Kit)	Pool Season Super Algae Destroyer	Algi-Cure Algaecide	Chlorine-Free BaquaSpa Start-Up Kit
AEM 5772 Antimicrobial	Pool Logic Think Clear Brominating Tablets	YELLOWTRINE	Poollife Exclusive Pool Care Collection NST Patrol
Bug Out Sticks	Pool Season Concentrated Algae Kill II	Clearigate	Poollife Exclusive Pool Care Collection NST Purge
Stabrom 909 Biocide	Alligare 8% Copper	Aquamira Water Treatment	Poollife Exclusive Pool Care Collective NST Prime
Clarifect	Argos	Aquashade Aquatic Plant Growth Control	90 Years of HTH Perfect Pools Floater
Clor Mor Calcium Hypochlorite 3 Inch Tablets	AB Brand Copper Sulfate Crystals	Baquacil Algicide	90 Years of HTH Perfect Pools Shock! Treatment
Clor Mor Cal-Shock Cal Hypo Granules	Algimycin-PWF	Baquacil Performance Algicide	90 Years of HTH Perfect Pools 3 Inch Chlorinating Tablets
E-Z Clor Quick Dissolve	Algaecide/Cyanobacteriocide	Chlorine-Free Care Free Baquacil	90 Years of HTH Perfect Pools Pre-measured Water Soluble Pods Algae Guard
E-Z Clor Mustard Algae Plus	Black Algaetrine	AD Auto Dosing System	90 Years of HTH Perfect Pools Water Soluble Pods Shock!
Super Shockwave Shock Treatment	Cutrine Ultra	Chlorine-free Care Free Baquacil	
Re-Fresh+	CutrinePlus Algaecide/Herbicide	AD Automated Dosing System	
E-Z Clor Algaecide Plus	CutrinePlus Granular Algaecide	Com Chlor 3" Stabilized	
Pool Logic Think Clear Solution 60	Algaetrine	Chlorinating Tablets	
Regal Pool Care System Brom-A-Gard	Pooltrine 60	Constant Chlor Plus Calcium	
Regal Pool Care System Algaezone Plus	Swimtrine 7.4	Hypochlorite Briquettes	
	Wintertrine	HTH Pool Care Liquid Chlorine	
	Applied Biochemists Phycomycin	HTH Pool Care Algae Guard Advanced	
	SCP Algaecide/Cyanobacteriocide	HTH Pool Care Algae Guard 10	
		HTH 3" Chlor Tabs	

90 Years of HTH Perfect Pools
 Ultimate Shock! Treatment
 90 Years of HTH Perfect Pools Pool
 Care Kit for Opening/Closing
 90 Years of HTH Perfect Pools
 Super Green to Blue Shock System
 90 Years of HTH Perfect Pools
 Algae Guard Granules
 90 Years of HTH Perfect Pools
 Super Algae Guard
 90 Years of HTH Perfect Pools
 Super 3" Chlorinating Tablets
 90 Years of HTH Perfect Pools
 Super Green to Blue I
 90 Years of HTH Perfect Pools
 Super Shock! Treatment
 90 Years of HTH Perfect Pools
 Ultimate Mineral Brilliance
 Chlorinating Granules
 HTH Salt Pool Care Algaecide
 Pool Breeze Pool Care System
 Defender
 Pool Breeze Pool Care System Extra
 Pool Breeze Pool Care System
 Opticide
 90 Years of HTH Perfect Pools
 Algae Guard 10
 90 Years of HTH Perfect Pools
 Chlorine Granules
 HTH Super Green to Blue I
 HTH Super Shock Treatment
 HTH Ultimate Shock Treatment
 HTH Ultimate Algae Guard
 Pace Premier Shock Treatment
 Poolife Exclusive Pool Care
 Collection Algaecide 90
 HTH Pool Care Kit
 HTH Algae Guard 10
 HTH Algae Guard 30
 HTH Shock Treatment
 HTH Super 60 Shock Treatment
 HTH Super Algae Guard 60

Pool Breeze Pool Care System Algae
 Clear
 Pace 3" Chlor-Tabs
 HTH Algae Guard Granules
 Baquacil Select Algicide
 Reputain D20 Preservative
 Pond Oasis Algaecide
 Poolife Exclusive Pool Care
 Collection Back to Blue I
 Pool Breeze Pool Care System
 Yellow Eliminate
 HTH Super Algae Free
 Densil ZOD Antimicrobial
 Dry Tec Extra Shock
 HTH Green to Blue Super Shock I
 Poolife Exclusive Pool Care
 Collection Defend +
 HTH Pool Shock
 Reputain D20 Antimicrobial
 HTH Clear Shock
 HTH Super Shock Treatment
 Reputain B30 Preservative
 Poolife Exclusive Pool Care
 Collection AlgaePhos Algaecide
 Baquacil Algidefense
 Open/Close Algistat
 HTH Super 3" Chlorinating Tablets
 Outlast Mold-Buster Additive
 Poolife Exclusive Pool Care
 Collection Brite Stix
 Pool Breeze Pool Care System Start-
 up & Winterizing Algicide
 HTH Algaeguard 3x Concentrate
 Poolife Exclusive Pool Care
 Collection AlgaeBan II
 Poolife Exclusive Pool Care
 Collection Mustard Algae Treatment
 Pool Breeze Pool Care System Super
 AlgiKill
 Poolife Exclusive Pool Care
 Collection AlgaeKill II

Poolife Exclusive Pool Care
 Collection Instant Clear Cleaning
 Granules
 Poolife Exclusive Poolife Rapid
 Shock Shock Treatment
 Poolife Exclusive Pool Care
 Collection Super AlgaeBomb 60
 Algaecide
 Poolife Exclusive Pool Care
 Collection Turboshock Shock
 Treatment
 Poolife Exclusive Pool Care
 Collection Super Shock 'N Swim
 Shock Treatment
 Pulsar Plus Calcium Hypochlorite
 Briquettes for Commercial Swim
 Pool Use
 Reputain K50 Preservative
 HTH Spa Shock
 HTH Super Algae Guard
 Poolife Exclusive Pool Care
 Collection Active Cleaning Granules
 Chlorinator
 Poolife Exclusive Pool Care
 Collection AlgaeBomb 30 Algaecide
 Poolife Exclusive Pool Care
 Collection Cleaning Sticks Stabilized
 Chlorinator
 Poolbreeze Pool Care System
 Algicide 60
 Proxel BD 20 Industrial Microbiostat
 Proxel GXL Industrial Microbiostat
 Pulsar Power Shock
 Pool Breeze Pool Care System
 Granular Shock Treatment
 Proxel AQ Preservative
 Pool Breeze PCS 3" Chlorinating
 Tablets
 Pool Breeze PCS Algicide
 Pool Breeze PCS Chlorinating
 Granules
 Pool Breeze PCS Chlorinating Sticks
 Pool Breeze PCS Granular 68

Pool Breeze PCS Shock Treatment
 & Superchlorinator
 DryTec Calcium Hypochlorite
 Briquettes
 Dry Tec Calcium Hypochlorite
 Granular
 HTH Liquid Chlorinator
 HTH Shock 'N Swim
 HTH Spa Brominating Tablets
 HTH Spa Non-Foaming Algaecide
 Omni Algae Terminator
 Omni Multi-Purpose Algaecide 60
 Synergy Tabs
 Omni Algae Preventative 40
 Winter Care Winter Algaecide 40
 Omni Breakout 60
 Myacide AS Plus
 Myacide AS Technical
 Myacide GA 50
 Myacide GA 25
 MasterLife AMA 100
 Admiral WSP
 Admiral Liquid
 Green-Shield II Disinfectant &
 Algicide
 Bellacide 350
 Bellacide 355
 Bellacide 325
 Bellacide 301
 Bellacide 300
 Bellacide 355W
 Bellacide 364
 Bellacide 337
 LiquiBrom 4300
 LiquiBrom 4000
 LiquiBrom 4600
 Bellacide 300W
 Bellacide 150
 Bellacide 311
 Magnacide B Microbiocide
 X-Cide 102
 X-Cide 137
 X-Cide 302

X-Cide 105 Industrial Bactericide	GreenClean Granular Algaecide	ChemTreat CL 2250	Boost 3000
X-Cide 120 Industrial Bactericide	GreenClean FX Liquid Algaecide	ChemTreat CL497	Oxxium 203
Bayer Advanced 2-in-1 Moss & Algae Killer Ready-To-Spray	GreenClean Pro	ChemTreat CL-2206	Surpass 100
Algaecure Algaecide for Ponds and Fountains	ZeroTol 2.0	ChemTreat CL-25	Tsunami 100
Algaecure	SaniDate 12.0	ChemTreat CL2155	WCS 102
Pro Guard 60% Algicide	GreenClean Liquid 5.0	ChemTreat C-2183T	Algaway 60
Pro Guard Algae Predator	ZeroTol HC	Chemtreat CL-4907	Microbe-lift Algaway 5.4
ProGuard Copper Algicide	Spa Selections Algaecide	ChemTreat CL-2030	Microbe-Lift Algaway 5.4 (For Ponds)
SoftSwim Algicide A	Spa Selections Maintenance Kit	ChemTreat C-206T	Microbe-Lift Algaway 5.4 (For Aquariums)
SpaGuard Oxidizer Enhance Shock	Bonide MossMax RTS	ChemTreat CL-2427	BromMax 7.1
BioGuard Inhibit Algae All 60	Brandt T.A.C.	Chemtreat C2063T	ENVIROBROM G
BioGuard Arctic Blue Winter Kit 12	Liquid Copper Sulfate	BioTreat 8405	BromMax
BioGuard Arctic Blue Winter Kit 24	KTND	CDB Clearon Granular Industrial	Enviro-Brom Tabs
Pro Series Algaecide	WSCP	Water Biocide	Peragreen 22
Pro Series Dual-Action Algaecide	Busan 1215	ClearGold Tablets	BCDMH Tabs
BioGuard Inhibit Back Up 2	Bulab 8861	Easy Pool Care Technology	Bromide-Plus
BioGuard Maintain Brominating Tabs	Busan 1202	Bio-Clear 1000	Peragreen 22WW
BioLab T-0041	Busan 77	Bio-Clear 2000	Perasan OG
SoftSwim A	Busan 85	Bioclear 2500 Antimicrobial	Peragreen WW
BioGuard Algae Complete	Bulab 6004	BioClear 2250 Antimicrobial	EnviroChlorite 15
BioGuard Arctic Blue Algae Protector	Coolacide	BioClear 1430 Antimicrobial	ChlorCide
Algae makes me mad! Angry Egg Algaecide	MB-1000	BioClear 2256 Antimicrobial	Peragreen 15%
BioGuard Burnout 73	MB-60B Granules	Bio Clear 5000	Essick Air Humidifier Bacterostatic Treatment
BioGuard CLC Classic	Bacticide-45B	CYPHOS 3453W Phosphonium Salt	B-Cap 35 Antimicrobial Agent
ProGuard Calcium Hypochlorite Granular	MB-1563B	Plexcide P5S	B-Cap 27 Antimicrobial Agent
BioGuard Salt Scapes Saltwater Pool Care Algae Remover	MB-215	TOLCIDE TP5	B-Cap 34 Antimicrobial Agent
BioGuard Remedy Banish	Check-Mark 40224	TOLCIDE TP50	Vigorox SP-15 Antimicrobial Agent
BioGuard Maintain Smart Shock	Copper Sulfate Crystals	Decco Ag PAA	VigorOx Oil & Gas
BioGuard Inhibit Algicide 28-40	SCI-62 Algicide/Bactericide	Formula F-30 Algae Control	VigorOx 15/23 Antimicrobial Agent
BioGuard Off Season Winter Algicide	CB-3939	B.I.O. Blast 500	VigorOx Oil & Gas 1
BioGuard Remedy Spot Kill	Chem-Aqua 42171	GAX-26	VigorOx Oil & Gas Plus 1
BioGuard Maintain Power Chlor	Chem-Aqua 40215	AquaVet Algae Control	Quimag Quimicos Aguila Copper Sulfate Crystal
BioGuard Maintain Super Soluble	Chem-Aqua 42100	AquaVet Copper Sulfate Algae Control	FQS 1.5 Microbicide
BioGuard Off Season Artic Blue Algae Protector	Chem-Aqua 40420	Ercopure 25	Spec-Aid 8Q704 (Stick)
	Chemical Treatment CL-2150	Ercocide CP	Spectrus CT1300
	ChemTreat C-2185	Ercopure 31	Spectrus NX102
	Chemical Treatment CL-206	Pristine Blue	Spectrus NX1100
	ChemTreat CL-49	Agritec	Spectrus NX1103
	Chemical Treatment CL-215	Algae Shield	Spectrus NX1104
	Chemtreat CL2490	Cleanwater Blue	
	Chemtreat CL-2062	Earthtec	
	ChemTreat CL2065	Aqua Balance Poly 60	

Spectrus OX103
 Spectrus TD1100
 iSolv Bio 2000
 iSolv BIO1010
 Spec-Aid 8Q704 (Stick)
 Spectrus NX102
 Spectrus OX101
 Spectrus OX9200
 Spectrus TD 1000
 Biomate MBC 781
 Biomate MBC 2881
 Spec-Aid 8Q5700ULS
 Spec-Aid 8Q703ULS
 Spectrus NX1107
 Spectrus OX103
 Spectrus NX 1101
 Spectrus NX 1102
 Spectrus OX 1202
 Spectrus OX101
 Spectrus OX105
 Spectrus OX1200
 Spectrus OX909
 Spectrus NX1106
 Spectrus OX1201
 SHOXIDIZER
 Algimycin Winter
 Super Charge II
 GLB Triple Tab
 Algae-X
 Sirona Spa Care Bromine Start-Up
 Kit
 GLB Dual Control Shock and
 Algaecide
 GLB Nix
 GLB Yello-Free Algaecide
 GLB Aqua Silk Algaecide
 GLB Swamp to Swim I
 GLB Swamp to Swim Shock System
 Bromine-Free Chlorine-Free Sirona
 Spa Care Simply Start-Up Kit
 Algimycin 600
 GLB 3 Part System Pool Closing kit
 Spot Gone II

Super Charge
 GLB Endura
 Sirona Spa Care Spa Minerals
 GLB Algimycin 3000
 Rendezvous Spa Specialties Deluxe
 Chlorinating Spa Care Kit
 GLB Sonic Blue Multipurpose
 Shock
 Rendezvous Spa Specialties Deluxe
 Brominating Spa Care Kit
 Algimycin 1000
 Algimycin 2000
 Formula 315
 Formula 325
 Formula 3051
 Formula 318
 Formula 3340
 Formula 3230
 BARDAC 2210
 BE-6 Industrial Bactericide
 Aldacide G
 BE-9
 BE-9W
 Biobor JF
 Sodium Hypochlorite Solution 10%
 Sodium Hypochlorite 12.5%
 Freestyle Calcium Hypochlorite 65
 ProTeam Supreme
 Proteam Mustard & Black Magic
 Proteam Quick Shock
 ProTeam Prevent
 ProTeam Severest Algae Treatment
 ProTeam Polyquat 60
 Swim Clear Black Algaecide
 Swim Clear Super Algaecide
 Swim Clear Jumbo Tabs
 ProTeam Power Magic AC+
 Superoxidizer
 Proteam Power 73
 Proteam Polyquat 30
 Aquamate Algaecide 30
 Aquamate Algae Control
 Proteam Mustard & Black Magic

Quick Shock
 Spa Pure Brominating Tabs
 Haviland Algae Kil 50
 Haviland Algae Kil CB 7
 Haviland Mustard Eliminator
 ProTeam Poly Magic
 Aqua Hawk CU
 Spectrum RX9800
 Biosperse 250
 Spectrum XD8800 Microbiocide
 Agent
 Spectrum RX3500 microbiocide
 agent
 Biosperse 271 microbiocide
 Biosperse XD9400 microbiocide
 Spectrum RX9600 Microbiocide
 Agent
 Biosperse CX1150 Microbiocide
 Spectrum RX3101 Microbiocide
 Agent
 Spectrum RX6800 Microbiocide
 Agent
 Biosperse CX9071 Microbiocide
 Biosperse 515 Microbiocide
 Biosperse CN8109-NA Microbiocide
 Spectrum RX3510 Microbiocide
 Agent
 Biosperse CX9989 Microbiocide
 Spectrum RX9500 Microbiocide
 Agent
 Biosperse CX3400 Chlorine
 Stabilizer
 Spectrum RX7845-NA Microbiocide
 Agent
 Biosperse XD9411 Microbiocide
 Spectrum RX6805 Microbiocide
 Agent
 Biosperse CN6500 Microbiocide
 Biosperse CN7539 Microbiocide
 Biosperse CX7250 Microbiocide
 Biosperse CN8450 Microbiocide
 Biosperse CX3195 Chlorine
 Stabilizer

Spectrum XD1878 Chlorine
 Stabilizer
 Biosperse CN2150 microbiocide
 Biosperse CN4200 microbiocide
 Biosperse CN5500 Microbiocide
 Biosperse CN8059 microbiocide
 Biosperse CN8109 microbiocide
 Biosperse CX9969 Microbiocide
 Biobrom C-103L
 Fuzzicide Solution
 Sodium Bromide-comp
 Biobrom C-103
 AR900 Series Algae Resistant Roof
 Granules
 Copper Color Guard Algae-Resistant
 Roofing Granules
 In The Swim Calcium Hypochlorite
 In The Swim Algaecide
 In The Swim Super Algaecide
 In The Swim Algae Clear
 In The Swim Super Pool Shock
 In The Swim Pool Shock
 In The Swim 1-Inch Tablets
 In The Swim Sticks
 In The Swim Algaecide 50
 In The Swim Black Algaecide
 In The Swim Winter Algaecide
 In the Swim Di-Zap
 Predator 5000
 Ercopure BCD-25
 Ercopure BCD-7.5
 Micron CSC (Various Colors)
 Interspeed 640 (Various Colors)
 Regatta Baltoplace Racing Finish
 VC-Offshore (Various Colors)
 Fiberglass Bottomkote Racing
 Bronze Y999
 Interspeed 340NA BQA357 Red
 Aqua-One (Various Colors)
 Micron WA (Various Colors)
 Micron Navigator (Various Colors)
 Micron Extra SPC (Various Colors)
 Ultra (Various Colors)

Inerlux Micron CSC HS (Various Colors)	Valvtet Marine Premium Diesel Additive with BioGuard Microbiocide	Leisure Time Spa Algaecide	MC B-8614A
Super ProGuard (Various Colors)	Valvtect Bioguard PLUS 6	Dantochlor RW	MC B-8625A
ProGuard Ablative (Various Colors)	Ultima SR-40 Ablative A/F Bottom Paint (various colors)	Dantobrom RW	MC B-8626A
MicronCF (Various Colors)	Pettit Hydrocoat Ablative Antifouling Paint (various colors)	Dantogard Preservatives	MC B-8642A
MICRON OPTIMA (Various Colors)	Pettit Pontoon Pro Copper-Free Antifouling Paint-Black	Dantogard XL-1000	MC B-8650A
Interspeed 5640 (Various Colors)	Pettit Hydrocoat ECO Copper Free Multi-Season Ablative (various colors)	Dantogard Plus Industrial Preservative	MC B-8910
Trilux 33 (Various Colors)	Pettit Neptune 5 Hard Hybrid Ablative Antifouling Paint (various colors)	Isocil	MC B-8901
Pacifica Plus (Various Colors)	Pettit HRT Hybrid Reactive Technology ECO Antifouling Paint - Black	Densil FZ Antimicrobial	MC B-8626
ACT with SLIME FIGHTER (Various Colors)	KR-153-SL	Triadine 20 - Lonza Industrial Microbiostat	BC-40
Fiberglass Bottomkote NT (Various Colors)	KR-148NL	Lonza Reputain D20 Bactericide	BC-118
Interspeed 6400NA (Various Colors)	Leslie's Swimming Pool Supplies Algae Control	Lonza Reputain B30 Preservative	BC-215
Micro Extra (Various Colors)	Poolfresh 3" Tablets	Isocil IG-C	NAVA Quick Dissolving Shock
Copper Powder V901	Leslie's Swimming Pool Supplies Power Powder Plus 73	Dantoin BCDMH RW Tablets	NAVA Yellow Algae Remover
Copper Powder V900	Leslie's Swimming Pool Supplies Copper Algaecide	Bardac 2250M	Member's Mark Quality Guaranteed Algaecide 40
VC17m Extra (YBA405 & 406)	Leslie's Swimming Pool Supplies Black Algae Killer	Lonza Microbiocide 50	Member's Mark Quality Guaranteed Chlorinating Granules
VC17m Extra YBA407 Red	Leslie's Swimming Pool Supplies Power Powder Granular 70	Barquat Low Foam Additive	Member's Mark Quality Guaranteed Chlorinating Tablets
Trilux 33 (Various Colors)	In the Swim 3-Inch Tablets	Bardac 2250 Microbiocide	Star Plus 3" Jumbo Tabs
Jack's Magic The Yellow Stuff	In The Swim Algaecide 60 Plus	Isocil RW	Poolbrand Quick Dissolving Shock
Jungle No More Algae Tank Buddies	In The Swim Chlorinating Granules	Dantogard Plus Liquid	Star Plus 8-Ounce Sticks
Jungle Pond Algae Relief	Leslie's Pool Supplies Service & Repair Power Powder Pro 73	Bardac LF 18-50 WT	Star Plus Dichlor Granular
Micropur MP 1	Tektamer 38 A.D.	Bardac LF 1850	Star Plus Yellow Algaecide
AMA-3725	N-2000 Antimicrobial	Barquat Low Foam Algaecide	Great Value Pool Shock
AMA-424	Antimicrobial N20	Direx 4L 24(c)	Great Value 3" Chlorinating Pool Tablets
AMA-350	Veriguard 3003	Algae Destroyer Advanced	Poolbrand 3" Chlorinating Tablets
Fennosurf 586	N-922 Antimicrobial	AlgaeFix	NALCO 60510
FennoSan Q-10	N-5033 Antimicrobial	Pond Care Algae Destroyed Advanced	Acti-Brom 1318
AMA-1750		Pond Care Algae Fix	Nalco 2838
New Water Cycler Pac		Microbial Algae Clean	Nalco 2877
Frog Bam		Top Fin AlgaeGone	EC5114A
Aqua Smarte Chamber		API Pond Algaefix	Nalco EC6110A
Frog Leap ALL-OUT		API Marine Algaefix	EC5122A
Aqua Smarte Plus Cannonball!		AquaTrol 12601	Purate DW
Oxi-King Brom Pac		MC B-8802	NALCO 73002
FROG Pool Tender Chlorine Chamber		MC B-8805	NALCO 7639S
FROG Pool Tender Algaecide		MC B-8807	NALCO 73650S
FROG Pool Tender Mineral Chamber		MC B-8520	Stabrex ST70CAN
		MC B-8501	LegionGuard LG25
		MC B-8904	NALCON 7614
		BC-2545	Nalco 2840

Solid Bionox
 H150M
 CoilClear
 NALCO 60505S
 EVAC Biocide
 HYG-25
 NALCON 60505
 NALCON 7637
 NALCO 60615
 NALCON 240
 Nalco 7634
 Nalco 77352
 B015
 Nalcon 7639
 PermaCare PC-12
 VeliGon TL-M
 Nalco 77352NA
 ControlBrom CB70
 NALCO 7341
 Nalcon 7649
 Nalco EC6110A
 NALCO 60620
 H-130 Microbiocide
 STABREX ST70
 TOWERBROM 960
 TOWERBROM 991
 PermaClean PC-11
 Nalcon 10WB
 Nalco 7320
 Nalco 7330
 Nalcon 7647
 Nalcon 7648
 Nalcon 7678
 Nalco 90005
 MBC 211-P
 MBC 215-P
 MBC 214
 MBC 175
 Spa Bromine Tablets
 One Step Brominating Concentrate
 Algae Break 90
 Seaklear 90 Day Algae Prevention &
 Remover for Pools

Seaklear Yellow Klear Algaecide
 Seaklear Problem Klear Algaecide
 SeaKlear Pool Opening &
 Winterizing Kit
 No. 85 Algaecide
 Pan Pads
 Towerbrom 60M Granules
 Towerbrom 90M Tablets
 Technical Sodium Chlorite
 Technical Sodium Chlorite 31.25
 31% Active Sodium Chlorite
 Solution
 Towerchlor 56 Granules
 Old Bridge Copper Sulfate Fine
 Olin Chlorine Liquified Gas Under
 Pressure
 Gordon's Pondmaster Copper Sulfate
 Crystals
 Gordon's PondMaster SeClear
 Algaecide & Water Quality
 Enhancer Ready-To-Use
 Mildew Check
 HP AM27
 PPG MZD 7330
 PPG MZD 7340
 PPG MZD 7360J
 PPG MZD 7340A
 PPG MZD 7330US
 X3
 EZPool PRO
 Premium 60 Algaecide
 Quash!
 Quantum Algigon 30 Algaecide
 Quantum Algigon C
 Terminator II
 Quantum Q-Shock II
 Aqua Chem keeps water clean 1"
 chlorinating tabs
 Aqua Chem keeps water clean 3"
 Chlorinating Tabs
 Aqua Chem shocks water clear
 Shock Plus

Aqua Chem keeps water clean
 Optimum Chlorinating Granules
 Pool Essentials Shock
 Aqua Chem Algae Eliminator
 Pool Time MaxBlue Algaecide
 Pool Time All-in-One MaxBlue
 Chlorinating Granules
 Pool Essentials Chlorinating Tablets
 Pool Time Shock MaxBlue2
 Pool Time MaxBlue Pre-Filled
 Chlorinating Floater
 T-0034
 Pool Time Algicide + Clarifier
 Pool Time Chlorinating Tabs
 Pool Time MaxBlue All-In-One
 Chlorinating Granules
 Pool Time Algicide 50
 Aqua Chem Algae Eliminator Max
 Pool Time Algicide 50%
 Pool Time MaxBlue 3" Tablets
 Pool Time Shock MaxBlue
 Pool Time Algicide MaxBlue
 Pool Time MaxBlue 1" Tablets
 Tolcide PS75LT
 Pool Specialties BLACK
 ROBACIDE
 Robarb Pool Specialties Power Blast
 II
 Kathon 886 MW Biocide
 Kathon 893 MW
 Kathon FP 1.5 Biocide
 Kathon WT 1.5% Biocide
 Aquacar DC 4P25 Water Treatment
 Microbicide
 Kathon CF 150 Biocide
 Kathon 725 BF Antimicrobial
 Klarix 4000 Microbicide
 Kathon Fuel 15 Biocide
 Rust-Oleum Marine Coatings Boat
 Bottom Antifouling Paint (Various
 Colors)
 Safer Brand Moss & Algae Killer &
 Surface Cleaner RTS II

Safer Brand Moss & Algae Killer &
 Surface Cleaner RTU II
 Pond Champs Algae X
 Algaecide/Herbicide
 Crystal Plex Algae Control
 Crystal Blue Copper Sulfate Smart
 Crystals
 Stock Plex Stock Tank Algae
 Control
 Decorative Fountain Algae Control
 Green X Concentrated Granular
 Algaecide
 Captain Liquid Copper Algaecide
 K-Tea Aquatic Algaecide
 Captain XTR
 SeClear Algaecide
 PAK 27
 SeClear Algaecide & Water Quality
 Enhancer Ready-to-Use
 SeClear G
 SePRO Total Pond-Clear
 SePRO Total Pond- Clear G
 Proxitane WW-12 Microbiocide
 Pak 27 Algaecide
 BIO/TEC 15
 Bio/Tec 081
 Bio/Tec 14
 Ultra-Kleen Solution 1
 Pool Mate Jumbo Tabs
 Pool Mate Black Algaecide
 Pool Mate Non-Foaming Algae Rid
 Pool Mate All-In-1 Swimming Pool
 3" Chlorinating Tabs
 Pool Mate Algaecide 50
 Pool Mate Algaecide 50
 Marineland Algae Eliminator
 Tetra Algae Control
 Tetra Pond Algae Control
 Tetra Pond Pond Block
 Tetra Pond Fountain Block
 Tetra No More Algae-Tablets
 Sump Buddy MWF Antimicrobial
 Time Release Tablets

Amical 48	AQUCAR 720 Water Treatment Microbiocide	Acticide RS	Swim Best Black Out Granular 90
Bioban BP-Plus Preservative	AQUCAR DB100 Water Treatment Microbiocide	Acticide L 30	O-ACE-sis Multishock
Bioban BP-10 Preservative	AQUCAR DB20 Water Treatment Microbiocide	ACTICIDE DBU 20	PacifiClear Multishock
Ucarcide 25 Antimicrobial	AQUCAR DB 5 Water Treatment Microbiocide	ACTICIDE IPW 40	PacifiClear Algaecide 10
Ucarcide 50 Antimicrobial	AQUCAR DB100 MUP Water Treatment Microbiocide	Acticide M10S	PacifiClear Algaecide 30
AQUCAR 7140 LT Water Treatment Microbiocide	Bioban BP-M Preservative	Acticide LA	PacifiClear Algaecide 60 Plus
Aquacar GA 50 MUP Water Treatment Microbiocide	Aquacar GA 50 Water Treatment Microbiocide	Acticide LA 1206	Swim Best Cal-Shock Cal Hypo Granules
Aquacar PS 20 Water Treatment Microbiocide	AQUCAR GA 25 Water Treatment Microbiocide	Acticide LA 1209	FreshWater Spa Care Kit
Aquacar TA 64 Water Treatment Microbiocide	AQUCAR GA 30 LT Water Treatment Microbiocide	Acticide IMS	FreshWater Spa Care Kit (Free-Oxidizer)
AQUCAR BP 40 Water Treatment Microbiocide	AQUCAR GA 45 Water Treatment Microbiocide	Acticide MBS 2550	Wet & Forget
Kathon 7G Antimicrobial	AQUCAR GA 15 Water Treatment Microbiocide	Acticide MV 14	Biocide 10
AQUCAR TN 250 LT Water Treatment Microbiocide	Algae Defense	Acticide 45	Zep Biofilm Drain Purge A
AQUCAR GA 4PO Water Treatment Microbiocide	Algae-Off	Acticide PA	Jandy TruGuard
AQUCAR PS 75 Water Treatment Microbiocide	Algae D-Solv	Acticide GA	Jandy TruGuard Cartridge
AQUCAR PS 75 MUP Water Treatment Microbiocide	Scotts 3-In-1 Moss Control Ready-Spray	Acticide OTW	Aqua Pure Algaecide
Tris Nitro	Scotts Moss EX 3-In-1 Ready-Spray	Acticide MBL	SKILL-IT Swimming Pool Algaecide
Aquacar Sump Buddy DB 40 TL Water Treatment Microbiocide	S-W Seaguard Copper Bottom AF #45-Variou Colors	Aquamate DB20	Aquamate Shock
Aquacar TN 25 Water Treatment Microbiocide	Acticide CT	Pink Treat Algicide	Divergard 42960
AQUCAR A 78 Water Treatment Microbiocide	Acticide B20	Yellow Treat Algicide	MicroClear
AQUCAR TN 50 Water Treatment Microbiocide	Acticide BW20	Green Treat Algicide	Pro-Treat 151
AQUCAR BP 10 Water Treatment Microbiocide	Acticide 14-CF	No Mor Problems Prevent Algicide	Pro-Treat-151 Pan Treatment
AQUCAR BP 30 Water Treatment Microbiocide	Acticide 45-CF	Swamp Treat	Asurity Pro-Treat-151
AQUCAR 714 Water Treatment Microbiocide	Acticide WP	Yellow Treat 2	AquaPrime NeoKlor
AQUCAR 742 Water Treatment Microbiocide	ACTICIDE OTW 45	Hydrothol 191 Aquatic	AquaPrime Peraside 15
AQUCAR BP 100 Water Treatment Microbiocide	ACTICIDE SPX	Hydrothol Granular	Algea Clean Out
	Acticide LA 1205M	Symmetry NXG	TopFin Algae Remover Algicide
	Acticide MKS 1U	Mold Armor Concrete Driveway and Sidewalk Cleaner	Clearview Quat Power
	Acticide OTW	Protech Algaecide 60 Plus	Clearview Algaecure
	Acticide LA 1016	Protech Copper Algaecide	ClearView Poly Power 60
	Acticide MKW2	Protech Maintenance Algaecide	ClearView Copper Strike
	Acticides MBS	Protech ProShock Cal Hypo Granules	ClearView Poly Power 30
		JT-1 Starch Preservative	Clearview Shimmer N'Shock
		PacifiClear 3 Month Algaecide	Clearview Insta-Chlor Super 73
		Focus Algaecide 10	Zinc Pyrion 48% Aqueous
		Focus 3 Month Algaecide	Dispersion Industrial Microbiostat
		Focus Algaecide 60 Plus	Zinc Pyrion 48% MPF
		O-ACE-sis 3 Month Algaecide	Irgarol 1051
		O-ACE-sis Algaecide 60 Plus	Irgaguard D 1071
		Swim Best Maintenance Algaecide	ConBlock MIC
		Swim Best Alagecide 60	
		Swim Best Copper Algaecide	

Smartpond Green Stop Liquid	EcoBlast Contact Granular	Americhlor Calcium Hypochlorite	Biotrol BT
Algaecide	Algaecide	Granules	Biotrol 102
Pond Boss Algaesolv	Aqueon Algae Remover	Power Pro Tabs	Biotrol 250
Pond Boss Pro	K-Bac 1020	VersaChlor System Chlorinating	Biotrol 114
RoCide IS-2	K-Brom 40	Tablets	Biotrol 150
Bell Performance-Bellicide	K-Brom-T	Clorox Pool&Spa Algaecide +	Biotrol 407
Durobrom	K-BAC 1005	Clarifier	Biotrol 509
DuroCide C100-G	K-BROM G	Clorox Pool & Spa Active 99 3"	Biotrol 515
DuroKlor 56	K-BAC 1000	Chlorinating Tablets	Super Shock- Rx Clear
KEM-TEK Pool & Spa Care Power	K-BAC 7015	Clorox Pool & Spa Algaecide Xtra	50% Algaecide- Rx Clear
99 3" Chlorinating Tablets	K-BAC 4020	Blue	Mega Shock-Rx Clear
KEM-TEK Pool & Spa Care All-In-	K-BAC 4075	Clorox Pool & Spa Green Algae	Rx Clear 7% Copper Algaecide
One Algaecide	CMB-6	Eliminator	Rx Clear Chlorinating Tablets
KEM-TEK Pool & Spa Care Spa	K-BAC 2050	Clorox Pool & Spa Shock Xtra Blue	Rx Clear 60% Poly Algaecide
Brominator Tablets	Mizzen Algaecide	Clorox Pool & Spa Xtra Blue 3"	BioRCK 2512W
KEM-TEK Pool & Spa Care 60%	Cape Furl	Long-Lasting Chlorinating Tablets	BioRCK 1036W
Algaecide Concentrate	PoolRx	Clorox Pool & Spa All-In-One Xtra	BioRCK 1036
KEM-TEK Pool & Spa Care Shock	PoolRx+	Blue Chlorinating Granules	BioRCK 1037
Quick 10	5-in-1 Multi-Purpose Tabs	XtraBlue Chlorinating Tablets	BioRCK 1038
Aqua Guard Green Algaecide	Avancid 75	Chlorinating Tablets	BioRCK 1029
Pro Side 3" Chlorinating Tablets	Avancid DB20	Clorox Pool & Spa Shock XtraBlue2	BioRCK 1032
HDX Chlorinating Liquid	Avancid DB98	Clorox Pool & Spa Awesome	BioRCK 1015
Aqua Guard 5-Step Pool Care	AVANCID GL 15	Alagecide	BioRCK 1016A
System Pool Start Up Kit	AVANCID GL 25	Clorox Pool & Spa Active 99 1"	BioRCK 1017A
Aqua Guard All-In-One Chorinating	AVANCID GL 45	Tablets	BioRCK 1018A
Granules	AVANCID GL 45M	Clorox Pool & Spa Green Algae End	BioRCK 1021
Aqua Guard Black Algae Treatment	AVANCID GL 50	for Small Pools	Tolcide 4Frac 20A
Aqua Guard Chlorinating Sticks	AVANCID GL 50M	Clorox Pool & Spa Texas Blue 3"	Plexcide T20
Aqua Guard Power 99 3"	Algaecide	Chlorinating Tablets	Tolcide PS50AS Industrial
Chlorinating Tablets	Power Powder Plus	Clorox Pool & Spa Goodbye Green	Antimicrobial
Pro Guard Chlorinating Liquid	Induclor 70	Algaecide	Plexcide 15G
Pool Essentials Chlorinating Liquid	Zappit	Clorox Pool & Spa Green Algae	Plexcide 24L
Aqua Guard Swimming Pool	Accu-Tab Blue Calcium	Eliminator2	Plexcide P5
Winterizing Kit	Hypochlorite Tablets	Clorox Pool & Spa XtraBlue	Tolcide TP5W
Aqua Guard Mustard Algaecide	Induclor	Algaecide	Plexcide P5W
Aqua Guard Algaecide 60%	Super Zappit	Borax 10 Mol FG	Plexcide G15
Concentrated	Power Powder Pro	Justeq07	Plexcide 20BR
Aqua Guard 1" Chlorinating Tablets	Incredipool	TMB-471C	Plexcide 5BR
Aqua Guard 3" Chlorinating Tablets	Zappit 73	TBM-25 - Sodium Chlorite	AS-521
Aqua Guard Algaecide & Clarifier	Accu-Tab Wastewater Tablets	Champion Pool Shock	AS-592
IonGen Probe	Indutabs Induclor Calcium	The Bug Bomb	AS-790
Algaecide	Hypochlorite Tablets	Biotrol 536	AS-521
		Biotrol 550	CWT-Cooling Water Treatment

Payzone 8102BCD
Payzone 814BCD
Payzone 815GLUT
Payzone 820THPS
Payzone 865BCD-W
Payzone 802BCD
Payzone 875THPS-A
Payzone 8102BCD
Payzone 825GLUT
Payzone 845BCD
Payzone 845BCD-W
Payzone 850THPS
Payzone 855GLUT
Payzone 865BCD
Dutrition Tablet
BIOC16779A
BIOC12031A
BIOC16388A
BIOC11139W
BIOC16779A
Aquatabs InLine
BIO-909
BIO-909
Compass THPS
Compass THPS 50
Compass THPS 35
Biocide 3725
Biocide 1410
Biocide 1400
Brom Tabs No. 2500
Br-Plus
CRBiocide 15
pHin Mineral Purifier for Pools &
Hot Tubs
Coastal Cal Jet Algaecide
Shock X-Tra
Chlorine X-Tra Stabilized
Chlorinating Granules
Coastal Long-Lasting 1"
Chlorinating Tablets
Utikem Mini Slow Dissolving
Chlorinating Tablets
Coastal Concentrate 50 Algaecide

Coastal Long-Lasting 3"
Chlorinating Tablets
Guardian Chlorinating Tablets
Algae X-Tra 90-Day Algaecide
Algae X-Tra 90-Day Liquid
Algaecide
Dry Chlorinator Granular
BioAdvanced Science-Based
Solutions 2-in-1 Moss & Algae
Killer & Cleaner Ready-To-Spray
MossBuster RTU
Imagitarium Algae Reducer
Blue Micro-B-Gone
Bromiguard Tablets
Hot Tub Serum Total Maintenance
Algae Guard
Austin's Pool Tech Algaecide
Pondmaster Algaecide
IGL 25 Antimicrobial
AlgaeBlaster
BCS 3024CF
Kuriverter IK-110
Promex CMT1.5
Promex CM14
Hydrex 7958
Hydrex 7611 MQ
Chem Copp HP III
Purple Copp
LoLo Tint
Aqua Clear Pool Products 1"
Chlorinating Tablets
Aqua Clear Pool Products 3"
Chlorinating Tablets
Aqua Clear Pool Products Pool
Algaecide
Aqua Clear Pool Products Pool
Shock
BioBrom BT
Ultimate Defense High Copper
AntiFouling Paint (Various Colors)
Yacht Shield Premium Multi Season
Ablative (Various Colors)

Ablative Plus Premium Antifouling
Paint (Various Colors)
Main Stream 635
Algaecide/Bactericide
Bionix BP10
Bionix ISO2A
30 SECONDS Spray & Walk Away
PAACT 22
MAV AquaDoc Chlorinating
Granules
Lake Guard Blue
Chlor No More Orb
Old Man Winter Orb
Grotamar 71 (CNA)

Washington

APSA-80 ALL PURPOSE SPRAY
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PHT FASTSTRIKE [15
PHT QUARK [14
CONQUER [2
DIAMULSE C EMULSIFIER [8
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INDUCE [46
R-56 SPREADER STICKER /AG
SPRAYS [39
REGULAID [1
ACTAMASTER SOLUBLE
CRYSTAL SPRAY ADJUVANT
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GUNSMOKE WATER COND
AGENT ACIDIFIER/ACTIVATOR
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BRONC PLUS DRY-EDT [56
TRI-FOL ACIDIFIER &
BUFFERING AGENT [40
POWER-LINE ACIDIFIER P [4

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POWER-LINE METHOIL [2
POWER-LINE CROP OIL [1
AD-SPRAY 90 NONIONIC
SURFACTANT [53
CLIMB ALKALINITY AGENT [91
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PRO 90 SPREADER-ACTIVATOR
[11
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SPREADER [1
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Airtech	Diligence-EA	Green To Clean	Cense Simple Rituals
Tactic	Harrells Spraymax Herbicide	Lescoflo Ultra Wetting Agent Tablet (184900)	E-z Clor pH Up
Cni Agri-oil	Activator	E-z Clor Alkalinity Up	E-z Clor O2 Shock
Pointblank Wm	Spa Ph Decreaser Pods	Voyager 90/10	Completion
Hth Pre-measured Water Soluble Pods Alkalinity Up	Jacuzzi Alkalinity Up	Nzone	Spa Selections Brom Start
Aqua Guard Muriatic Acid 1	Trapline Pro	Farmworks Defoamer	Alligare Mso 1
Maximizer	Emulate	Sustain	Fs Crop Oil Plus Surfactant
Aircover	Resilience	Phuse	Poly Film-r
90 Years Of Hth Perfect Pools Pre-measured Water Soluble Pods Ph Down	Purely Hydro	Atmos	Drexel Hot Mes
Tuff Trax	Spa Ph Increaser Pods	Kem-tek Pool & Spa Care Spa Non-chlorine Shock Oxidizer	Harrells Spraymax Defoamer
Venturi	Agrisolutions Interlock	Pool Essentials Muriatic Acid	Adigor Adjuvant
Cognitive 1	Liberate	Pro Side Muriatic Acid	Bark Oil Blue
Buckhorn Total	Activator 90	Sequel	Scoria X Dry
Oroboost	Thatch Buster	OnTarget	Drexel Pas-800
Scrimmage	Fact-or	Vixen Ac-1	Lesco Hawkeye #069404
Spa Selections Ph Decreaser	Drexel AMS-XTRA	Audible 80	GLB pH Up
Choice Weather Master (Ipi)	Accuquest Wm	Hand Off	Actamaster Spray Adjuvant
Flame	90 Years Of Hth Perfect Pools Pre-measured Water Soluble Pods	Anchor	Lesco Recade Liquid Antifoam #069386
Hth Pre-measured Water Soluble Pods Ph Up	Stabilizer	Drexel Sil-fact Surfactant	Instant Pool Water Conditioner
Wick	KINETIC	Gulfstream	Fireball
Amspread	Shake Down	Promark	Veracity Elite Ii
Equinox Stabilizer-15	Instinct HL	Spa Alkalinity Increaser Pods	90 Years Of Hth Perfect Pools Pre-measured Water Soluble Pods
Drexel Mes-100 Modified Vegetable Oil Concentrate	Herbicide Helper	Yellow Gone	Alkalinity Up
Zaar	Surfate Spray Adjuvant	Fire-zone	Ag 14039
Hydrate Plus Nf	Invade	Clear Spa 104 Spa Solutions Ph Plus	Alligare Buphr
Jacuzzi Ph Up	Drexel Fome-kil	Last Chance	Compadre
Penetron	Microsolve Activator Solution	Harrells Spraymax Crop Oil Concentrate	Soiltrate
Fast Rate	Lesco Ecosential Moisture Manager #084855	Request	E-z Mix
Oculus	Hook Zero	Verimax Ams	Envelop
Kem-tek Pool & Spa Care Stabilizer Conditioner	Audible 90	Iconic	Tyrant
Phin Yellow Striped Pods Ph Down For Hot Tubs	Mso Surfactant	Clidox-s Activator	Hydra-hume A
	W-box	Rawwar	Harrells Spraymax Activator
	Conquer Spray Adjuvant	Farmworks 80/20 Surfactant	Pentrol
	E-z Clor Ph Down	Li 700	Hel-fire
	Smoke	CIDE WINDER	Strike Zone LC
	Intact	Flame Spray Adjuvant	Axon
			Upland Mso

Hth Ph Decreaser
Mso Concentrate With Leci-tech
Nzone G1
Pristiva Liquid Rapid Action
Stabilizer
Drop Ph
Alligare Drift Control
Verifact
Protyx
Poolife Pods Stabilizer And
Conditioner
Alligare 7
Kem-tek Pool & Spa Care
Swimming Pool Muriatic Acid

Stake
Invade Rst
Plex Mate Surfactant
Lesco 90/10 Nonionic Surfactant
Clearsurf 90
Poolife Pods Alkalinity Plus
Response
Aqua Guard Stabilizer Conditioner
Leaf Life Slingshot
Back Field
Reign
Tpq89
Hth Salt Pool Care Ph Decreaser
Pool Style Pool Products Alkalinity
Inceaser
Induce Ph
Aqua Guard Alkalinity Booster
Nanoboost
Jackhammer Elite
Sms 200 Soil Surfactant
Pht Latron B-1956
Kem-tek Pool & Spa Care Ph Plus
Bark Oil Lt
Hydro-pak Command
Drexel Pinene II Extender And
Sticker
Clear Spa 104 Spa Solutions Ph
Minus

Levesol Defoamer
Ams 4xl
Pool Season Non-chlorine Shock
Gundown Max
Harrells Siloxane Surfactant
Rendur Defoamer
Amp Activator
Warraw
Fixate Pro
Poolife Pods Ph Plus
Emulsifier Blend
Green Aid
Water Conditioner + Surfactant
Blendex VHC
Hi-yield Spreader Sticker
Harrells Spraymax Nonionic
Penetrant
Microsolve Soft Metal Activator
Solution
Trio
Ag 13063
Du Pont TPQ89 Adjuvant
Cense Island Pleasure
Infuse
Offside
Cense Divine Secrets
Sure Fire Crop Oil Plus
Peradigm
Partition
Cni 80-20
Wheelhouse Pro
Drexel Haf-pynt
Alligare Mvo Plus 1

Fortify
Contain
Seaklear Shock Oxidizer Pods For
Spas
38-f Liquid Drift Control Additive
Wetcit
90 Years Of Hth Perfect Pools Pre-
measured Water Soluble Pods Ph Up
Dc-4

Clearview Chlor Free Shock &
Swim 15
Pool Season Alkalinity Up
Lesco Flo Ultra #084570
Navigator Hc
Drexel Lox
Alligare Trace
Phase Ii
Hth Stabilizer
Drexel Mix
Weather Gard Complete
Mso Ultra
Silenergy
Linkage
Boost 3201 Sm
Harrells Ph Buffer
Velomax
Exuro
Oro-rz
Spa Selections Non-chlorine Shock
Oxidizer
Jagge
Synurgize
Phin Orange Pods Ph Up For Pools
Jackhammer
Rendur Compatibility Agent
800 Plus
Alligare Forestry Oil

Pentra-bark
Ex Plus
Purge
Aqua Guard Ph Down
V-drift Control
Civitas Harmonizer
Soydex Plus
Raider Tg
Hy-stop
Wheelhouse
Clear Spa 104 Spa Solutions Crystal
Shock Oxidizer
Spa Selections Ph Increaser

Drexel Surf-ac 910 Non-ionic
Surfactant
H-45
Aqua Guard Non-chlorine Shock
Oxidizer
Spa Oxidizing Shock Pods
Airlink
Nzone Max
Sms 400 Soil Surfactant
Woodside
Mediate Plus
Combust
16098
Ad-spray 90 Nis
Permeate
Drexel Vegetoil Emulsifier
Alligare Water Conditioner 1
Lesco Spreader-sticker #019255
Gunsmoke
Drexel Ams-supreme
Aqua-king Plus
Attach Non-ionic Spreader Sticker
Vincero 90
Yellow Out
Suffusion Tablets
Alligare Coc Crop Oil Concentrate
Aqua Chem Balanced For Clean
Pools Muriatic Acid

Foliar Nutrient 3
Hth Spa Non-chlorine Shock
Oxidizer
Breeze
Triple Play
Impel Red
Fixate
Reverse
Navigator Crop Oil Concentrate
Chem-stik
Harrells Spraymax Nonionic
Spreader Sticker
Ultra Pro
Nvincible

Mystic Hc Spray Pattern Indicator
Ivc Defoamer
Sms 700 Soil Surfactant
Voyager 80/20
Succeed Ultra
Bioguard Muriatic Acid Contractor
Strength
Hyper-Active
Blastoff
Between
Lesco Wet Plus #069383
Aqua Guard Muriatic Acid
Yardage
Poolife Pods Non Chlorine Oxidizer
Choice Trio
Nvincible Plus
Bark Oil
Foambuster 10
Harrells Spraymax Nonionic
Penetrant Plus
Brewer Ta-39
Comp-aide
Trapline Pro Ii
Fbs Harmony
Hydro-pak Matador
Chemsurf 90
Brandt Indicate 5
Agri-dex
Velomax Drt
Aquicare
90/10 Surfactant
Veracity
Dyne Amic
Noble
Kem-tek Pool & Spa Care Spa Ph
Minus
Spredde 90/10
High Load Mso
Ultra Soft Metal Activator
Spread Coat
Herbimax
Aqua Guard Ph Up
Boost 3201

Hi-wett
Clasp
Citrisan
Efficax
Cynder
Persist@ Ultra
Hth Salt Pool Care Stabilizer
Cense Quiet Escape
Brilliance For Spas Oxidizing
Tablets
Traverse D
Justified
Nemasan
Bark Oil Blue Lt
Valcheck
Turbulence
Coact+
Sitka
Seaklear Balanced Shock Oxidizer
For Spas
Droplex Xtra
Jette 80/20
Green Gone
Agrisolutions Powerlock
Spreader 90
Turfvantage Nanoboost
Bark Oil Red Lt
Hook
Agrisolutions Class Act Flex
Mediate
Velocity Elite
Hypertonic
Savvy
Winfield Droplex
Agrisolutions Superb Hc
Harrells Spraymax Methylated Seed
Oil
E-z Clor Clor Save
Level Best
Liquid Ams
Freeway
Lesco Methylated Seed Oil
Aquifact

Mon-10
Drexel Bean

Appendix D Email From Washington State Registrar On Adjuvant Registration

Email excerpt from Washington state's pesticide registrar:

...You will note that the ingredients column for all the adjuvants contains “no active ingredients.” This is because adjuvants technically contain only inert ingredients. We use the phrase are functioning like an active ingredient. State law requires that the top three PFAs be listed on the label in descending order of concentration, and the TOTAL percentage of all the PFAs be listed as well. If you click on one of the red WA hyperlinks you will be able to view that product's label. If you look at a label you will see that the ingredient statement uses “constituents ineffective as spray adjuvants” (CIASAs) instead of “inert ingredients.”

Unfortunately, I cannot share information on the composition of any of the spray adjuvants. We track the PFA ingredients that are listed on the label and are publicly accessible via PICOL. The CIASAs are not tracked or recorded by us; they appear on the Confidential Statement of Formula only. And as you mention below, we cannot share confidential information.

There is, however, a kind of work-around to getting this data. We use EPA's InertFinder website when we review an adjuvant. ALL spray adjuvant ingredients must be verified as being an inert. If we cannot find them on the website, we will contact the Inerts Branch to have them verify if it is an inert (I've been told they have an internal database that contains more inerts.) The EPA InertFinder website is located here: <https://ordspub.epa.gov/ords/pesticides/f?p=INERTFINDER:1:135638543692::NO:1>. You could enter the CAS numbers on the spreadsheet you sent me into the CAS reg. No. field and see if they come up as a recognized inert....

Appendix E Lists of PFAS Definitions

Table 4. List of PFAS definitions and validated test methods for PFAS substances

Origin of Definition	Number of Chemicals	Definition	Notes on the Used Definition
Buck et al. 2011	268	Detailed in Buck et al. 2011 Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins. Integrated Environmental Assessment and Management Vol 7 Num 4pp 513-541.	This is the original modern understanding of PFAS structure.
EPA’s PFAS Master List	9,252	A List of Lists: Per- and polyfluorinated alkyl substances (PFAS) represent a growing, increasingly diverse inventory of chemicals of interest to the general public, scientific researchers, and regulatory agencies world-wide.	US EPA “PFAS Master List of PFAS Substances (Version 2)”; serves as consolidated list of substances spanning and bounded by the lists, defining a practical boundary of PFAS chemical space (within DSSTox) of current interest to researchers and regulators worldwide.
EPA Drinking Water Test Method	18	Compounds positively identified by Method 537.1. Method 537.1 is one of the standard tests used for drinking water throughout the US.	Method 537.1: Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) (2018/2020)
EPA Oily Matrix Test Method	28	Compounds positively identified by methods detailed in ‘Analysis of PFAS in Oily Matrix’. This method is a modification of 537.1.	Released Fall 2021, available at: https://www.epa.gov/system/files/documents/2021-09/epa-pfas-method-in-oil.pdf
EPA with National Toxicology Program	75	Individual chemicals prioritized for future toxicity testing based on underlying risk.	Per- and Polyfluoroalkyl Substances (PFAS) list corresponds to 75 samples (Set 1) submitted for the initial testing screens conducted by EPA researchers in collaboration with researchers at the National Toxicology Program.

Appendix E continued...

Origin of Definition	Number of Chemicals	Definition	Notes on the Used Definition
State of Maine: "Sum of 6 PFAS" / "regulated PFAS contaminants"	6	"Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means a perfluoroalkyl substance or polyfluoroalkyl substance that is detectable in drinking water using standard analytical methods established by the United States Environmental Protection Agency, including regulated PFAS contaminants.	Resolve 2021, Ch.82 - LD129: To Protect Consumers of Public Drinking Water by Establishing Maximum Contaminant Levels for Certain Substances and Contaminants
State of Maine Definition per LD 1503	Unknown	"Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means substances that include any member of the class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.	H.P. 1113 - L.D. 1503 An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution of 2021
OECD	4,730	PFASs are defined as fluorinated substances that contain at least one fully fluorinated methyl or ethylene carbon atom (without any H/Cl/Br/I atom attached to it) , i.e. with a few noted exceptions, any chemical with at least a perfluorinated methyl group (–CF ₃) or a perfluorinated methylene group (–CF ₂ –) is a PFAS.	Issued Fall 2021, OECD attempts to harmonize the chemical structures while explicitly stating that structures alone should not dictate policy.
EPA OPPT	Approximately two pesticide a.i.s	"...a structure that contains the unit R-CF ₂ -CF(R')(R''), where R, R', and R'' do not equal "H" and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included)...."	EPA Office of Pollution Prevention and Toxics "working definition" for PFAS.
Found in Pesticide Container Testing	8 (clearly not a definition but it sets a potential expectation)	Testing done at EPA's Ft Mead in 2020 using a Modified Method 537.1	PFAS compounds detected on/in the containers