June 26, 2026

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OCSPP-OPP-PRD-IO
Environmental Protection Agency
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Submitted on EPA's public comment portal:
https://www.regulations.gov/commenton/EPA-HQ-OPP-2026-2973-0004

Subject: BACWA Comments on EPA's Draft Fungicide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Fungicides, April 2026. (Docket ID No. EPA-HQ-OPP-2026-2973-0004)

Dear Natalie Bray:

On behalf of the Bay Area Clean Water Agencies (BACWA), we thank you for the opportunity to provide comments on the Environmental Protection Agency's (EPA's) Draft Fungicide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Fungicides (Draft Strategy). BACWA is a joint powers agency whose members own and operate publicly-owned treatment works (POTWs) and sanitary sewer systems that collectively provide sanitary services to over seven million people in the nine-county San Francisco Bay Area. Every day, BACWA members provide treatment for millions of gallons of pesticide-containing wastewater that is subsequently discharged to fresh or saltwater bodies, including local creeks and rivers, bays, and the Pacific Ocean. We take our responsibilities for safeguarding receiving waters seriously.

BACWA's public agency members continue to face challenges as they strive to meet increasingly stringent Clean Water Act requirements while having limited control over the toxic pollutants and other substances in the wastewater and stormwater they treat and manage. Fungicides are introduced to public wastewater systems through both interior and exterior applications. Because wastewater treatment facilities are not designed specifically to remove fungicides, these substances may interfere with the biological treatment processes, pass through the treatment process, or affect receiving waters, recycled water quality, and the quality of biosolids for beneficial reuse.

BACWA requests an ESA timeline for addressing urban uses consistent with prior EPA commitments.

The Draft Strategy is focused on conventional agricultural fungicides, with no indication of when and how urban sources will be assessed. For seven years, BACWA and other urban stakeholders[1] have communicated to EPA about the importance of assessing impacts of urban pesticide use to endangered and threatened species. As presented in the timeline below, this has resulted in assurances from EPA that non-agricultural pesticide use and potential exposure to listed species would be included in Endangered Species Act (ESA) strategies and evaluations.

Timeline of BACWA Communications to EPA and Subsequent Outcomes

Date	Communication	BACWA Comment and Outcomes
August 15, 2019	Public comment letter [a]	**BACWA Comment:** Requested that EPA consider indoor pesticide uses when evaluating the risk to endangered species. **EPA Response:** "EPA will consider potential exposures of listed species to pesticides applied via indoor uses if the use is reasonably expected to result in exposures to listed species." [b]
January 27, 2022	Public testimony at the ESA-FIFRA Interagency Working Group	**BACWA Comment:** Described that although half of all pesticides are used in urban areas, none of the ESA Consultations to date have meaningfully addressed urban pesticides.
June 23, 2022	Public testimony at the Environmental Modeling Public Meeting	**BACWA Comment:** Provided maps to demonstrate that endangered species habitat often overlaps urban discharge areas. The example provided was that of salmon habitat in Washington, Oregon, Idaho, and California, which overlaps significantly with urban and suburban populations.
November 17, 2022	EPA presented the ESA Workplan Update via webinar	**EPA:** EPA announced that they will be doing a special focused analysis on Residential Pesticide Use. Residential use analysis is also part of EPA's ESA Workplan Update. [c] However, we have not heard any follow-up on this analysis or if it is still planned.
June 16, 2023	Public comment letter [d]	**BACWA Comment:** Noted that the latest ESA guidance document neglected to address the indoor use of pesticides.
July 6, 2023	Meeting with EPA leadership in the Office of Chemical Safety and Pollution Prevention (OCSPP) and the Office of Pesticide Programs (OPP)	**BACWA Comment:** BACWA requested that EPA include non-agricultural pesticide use in all of the upcoming ESA draft strategies. BACWA noted that EPA already has relevant down-the-drain models to model indoor uses of pesticides and that the California Department of Pesticide Regulation has also published indoor pesticide models. **EPA Response:** EPA staff assured BACWA that non-agricultural pesticide use impacts on endangered and threatened species would be considered as part of the restructuring of the ESA process at EPA.
December 2025	EPA Guidance Document	**EPA:** EPA released a Final Guidance for Antimicrobial Pesticides that included a detailed strategy for the large industrial use of antimicrobials. The document did not consider any other indoor uses of antimicrobial pesticides.

a. Method for National Level Endangered Species Risk Assessment Process for Biological Evaluations of Pesticides (EPA–HQ–OPP–2019–0185).
b. Response to Public Comments Received on Proposed Revised Method for National Level Endangered Species Risk Assessments for Biological Evaluations of Conventional Pesticides, March 13, 2020
c. ESA WORKPLAN UPDATE: Nontarget Species Mitigation for Registration Review and Other FIFRA Actions (November 2022)
d. Draft Guidance to Registrants on Activities to Improve the Efficiency of Endangered Species Act Considerations for New Active Ingredient Registrations and Registration Review (Docket No. EPA-HQ-OPP-2023-0281).

[1] California Stormwater Quality Association (CASQA) and the National Association of Clean Water Agencies (NACWA)

Rather than consider urban fungicide uses, the Draft Strategy only states that "uses outside the scope of this effort … will be addressed in future efforts and in chemical-specific biological evaluations." We ask that EPA provide a specific timeline for the development of ESA approach strategies addressing urban pesticide uses, consistent with EPA's prior commitments to do so, including the November 2022 announcement of a focused residential pesticide use analysis and the July 2023 assurance that non-agricultural uses would be incorporated into the restructured ESA process.

BACWA requests that EPA consider fungicide uses that are transported to POTWs and subsequently discharged directly to endangered and threatened species habitats.

The Draft Strategy focuses on agricultural fungicides; however, urban fungicides represent a significant percentage of the national use. BACWA's Pesticide Watchlist (attached to this letter) includes more than 50 fungicides used in the indoor environment in cooling towers, cleaners and disinfectants, laundry additives, impregnated materials, paintings/coatings, and numerous consumer products. A 2014 POTW study detected a range of fungicides both in wet weather and dry weather, and found that POTW sources include outdoor urban fungicide-treated wood (for combined sewer systems) as well as indoor uses with down-the-drain pathways.[2] Another study included a literature review of fungicide toxicity and found that the fungicides with highest risk for adverse impacts to aquatic ecosystems included those with known urban uses, including carbendazim, chlorothalonil, and propiconazole.[3]

Because wastewater treatment facilities are not designed specifically to remove fungicides, fungicides may pass through the treatment process into waterways that contain endangered and threatened species such as coho salmon, the salt marsh harvest mouse, and the California clapper rail. If upstream POTW uses are omitted, no subsequent mitigation will be identified, which could result in downstream aquatic toxicity. Therefore, BACWA asks that EPA consider pesticide use—both urban and agricultural—when developing ESA approach strategies.

Thank you for this opportunity to provide feedback regarding the Draft Strategy.

If you have any questions, please contact BACWA's Project Managers:

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Respectfully Submitted,

[2] Bollmann, U. E.; Tang, C.; Eriksson, E.; K.; Vollertsen, J.; Bester, K. Biocides in urban wastewater treatment plant influent at dry and wet weather: concentrations, mass flows and possible sources. Water Res. 2014, 60, 64-74.
[3] Zubrod, J. P., et al., Fungicides: An Overlooked Pesticide Class? Environ. Sci. Technol. 2019, 53, 3347−3365.

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Attachment: BACWA Wastewater Pesticide Watchlist

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BAPPG/BACWA Wastewater Pesticides Watch List

Currently registered pesticides that may occur in wastewater

Priority	Basis for Priority Assignment	Pesticides
1 – High Concern	a) POTW effluent monitoring data[1] exceeding benchmarks b) Known cause of process interference c) Present in recycled water or biosolids at concentrations that limit use d) SF Bay area receiving water 303(d) listing for the pesticide or degradate e) Identified by Regional Monitoring Program (RMP) as a High or Very High Concern	Pyrethroids# (21 chemicals[2]) Fipronil# * Imidacloprid# Chlorpyrifos
2 – Moderate Concern	a) Pesticide contains a Clean Water Act Priority Pollutant b) Possible cause of process interference c) SF Bay area receiving water 303(d) listing for the pesticide, degradate or contaminant that also has non-pesticide sources d) Identified by RMP as a Moderate Concern	Carbendazim Copper pesticides+ Silver pesticides+ Zinc pesticides+ Quaternary Ammonium Compounds (QACs)+[3]
3 – Possible Concern	Monitoring data[1] approaching or wastewater discharge modeling predicting: a) effluent or receiving water benchmark exceedances b) process interference c) limitations on use of recycled water or biosolids d) Potential for aquatic toxicity with significant down-the-drain pathways	Ammonium bromide Bronopol (Bioban) Cetylpyridinium Chloride Chlorhexidine Chlorinated isocyanurates+ Clothianidin 2,2-Dibromo-3-Nitrilopropionamide (DBNPA) Dichlobenil^ Dinotefuran# Diquat dibromide^ Folpet Halohydantoins+ Indoxacarb* IPBC Isothiazolinones[6] Malathion (lice) Metam sodium^ Methoprene# Nanopesticides (all) 10,10 oxybisphenoxarsine (OBPA) o-Benzyl-p-chlorophenol (OBPC) Octhilinone Organic Esters of Phosphoric Acid (OEPA) *o*-Phenyl phenol Polyhexamethylenebiguanidine (PHMB)+ Potassium Peroxymonosulfate+[4] Pyriproxyfen#+ Spinetoram# Tetrachlorvinphos# (TCVP) Triclosan Tri-n Butyl Tetradecyl Phosphonium Chloride (TTPC)
Pending	New pesticides that could threaten wastewater depending on uses approved and market volumes for existing minor indoor uses	Abamectin Broflanilide* Chlorfenapyr* Chlorantraniliprole Cyantraniliprole Cyclaniliprole Isocycloseram* Neonicotinoids not listed above[5] Novaluron* Propiconazole SI–183 (1R-Phenothrin)
No Concern	No tracking trigger	Most of the 1,000 existing pesticides
Unknown	Lack of information. No systematic screening has ever been completed for urban pesticides.	Unknown. EPA will be reviewing many antimicrobials and fungicides, so more data will be forthcoming.

[1]Based on SF Bay Area POTW monitoring data or California Department of Pesticides Regulation statewide wastewater data (which is anonymized and not restricted to the SF Bay Area)

[2]Pyrethroids = Allethrins, Bifenthrin*, Cyfluthrin*, Cyhalothrin*, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Etofenprox, Flumethrin*, Imiprothrin, Metofluthrin*, Momfluorothrin*, Permethrin, Prallethrin, Resmethrin, Sumethrin [d-Phenothrin], Tau-Fluvalinate*, Tefluthrin*, Tetramethrin, Tralomethrin

[3] QACs used indoors include ADBAC, BAC, ATMAC, DADMAC, DDAC, EBAC, APyrC, and others. Additional QACs are listed on the pool/spa pesticide table below.

[4] Included under EPA registration review name for Hypochlorous Acid; EPA may determine that it is an adjuvant subject only to CA registration.

[5] Neonicotinoids = Acetamiprid, Clothianidin, Dinotefuran, Imidacloprid, Nitenpyram, Thiacloprid, Thiamethoxam

[6] Isothiazolinones include 2-methyl-4-isothiazolin-3-one (MIT), 5- chloro-2-methyl-4-isothiasolin-3-one (CMIT), 1,2 Benzisothiazolin-3-one (BIT), 4,5-dichloro-2-octyl-3(2H)-isothiazolone (DCOIT), 1,2-Benzisothiazol-3(2H)-one,2-butyl (BBIT), and 2-n-Octyl-4-isothiazoline-3-one (OIT).

#Has pet flea/tick use (Full table of pet parasite control chemicals below)

Prepared by Tammy Qualls, P.E. and Stephanie Hughes, P.E, Reviewed by SFEI May 2026

+Has pool and/or hot tub use in California (Full table of pool and hot tub pesticides below)
^Has root control use in California
*Contains Perfluoroalkyl and polyfluoroalkyl substances or "PFAS", a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom. (Based on the definition set by the Organisation for Economic Co-operation and Development (OECD). The state of Minnesota compiled a list of PFAS pesticides here: https://www.mda.state.mn.us/environment-sustainability/pfas-pesticide-active-inert-ingredients Full OECD PFAS definition here: https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/07/reconciling-terminology-of-the-universe-of-per-and-polyfluoroalkyl-substances_a7fbcba8/e458e796-en.pdf

BAPPG/BACWA Watch List of Parasite Control Chemicals for Pets

Priority	Active Ingredient		# Registered Products in California[1]
1 - High Concern	Fipronil		52 spots; 2 sprays
	Imidacloprid		4 collars; 44 spots (plus FDA oral & spot)
	Pyrethroids	Bifenthrin	1 shampoo
		Cyphenothrin	1 spot
		Deltamethrin	17 collars
		Etofenprox	17 spots, 4 sprays
		Flumethrin	4 collars
		Permethrin	1 dip; 9 shampoos; 40 spots; 3 sprays
		Phenothrin	3 shampoos
3 - Possible Concern	Dinotefuran		12 spots
	Fluralaner[3]		Not Applicable[2] (FDA oral, spot, inject)
	Moxidectin[3]		Not Applicable[2] (FDA oral)
	Pyriproxyfen (Nylar)		5 collars; 9 shampoos; 68 spots; 5 sprays
	Selamectin[3]		Not Applicable[2] (FDA spot)
	S-Methoprene		15 collars; 7 shampoos; 55 spots; 9 sprays
	Spinatoram		3 spots
	Tetrachlorvinphos		22 collars; 4 sprays
Low Concern	Pyrethrins		2 dips; 14 ear drops; 21 shampoos; 9 sprays; 1 wipe
No concern	Limonene		1 shampoo
	N-Octyl bicycloheptene dicarboximide		1 dip; 8 shampoos; 5 spots; 8 sprays; 1 wipe; 1 ear drop
	Piperonyl butoxide		3 dips; 15 ear drops; 28 shampoos; 5 spots; 8 sprays; 1 wipe
	Sodium diisooctyl sulfosuccinate		1 shampoo
	Undecylenic acid		1 shampoo
Unknown	Afoxolaner		Not Applicable[2] (FDA oral)
	Lotilaner		Not Applicable[2] (FDA oral)
	Lufenuron		Not Applicable[2] (FDA oral & inject)
	Nitenpyram		Not Applicable[2] (FDA oral)
	Pyrantel		Not Applicable[2] (FDA oral)
	Sarolaner		Not Applicable[2] (FDA oral & spot)
	Spinosad		Not Applicable[2] (FDA oral)

[1] Email communication from A. Main to S. Hughes, California Department of Pesticide Regulation, December 16, 2025.
[2] Veterinary drugs regulated by the US Food and Drug Administration (FDA) are outside the jurisdiction of the California Department of Pesticide Regulation.
[3]The University of York completed predictive modeling in 2023 that suggested possible aquatic toxicity to receiving waters for three FDA-regulated pharmaceuticals. Monitoring data to assess the accuracy of predictive modeling was not available.

BAPPG/BACWA Watch List of Pool and Hot Tub Pesticides

Priority	Pool Pesticide Group	Pool Pesticide	
1 - High Concern	none		
2 – Moderate Concern	Copper	Copper Sulfate (Pentahydrate) Copper Ethanolamine Complexes Mixed Copper Triethanolamine Complex	Copper Citrate Copper
	Silver	Metallic Silver Silver Chloride	Silver Iodide, Colloidal
	Zinc	Zinc Sulfate Monohydrate	
	Quaternary Ammonium Compounds (QACs; also called Quats/ADBAC, DDAC, and EBAC family chemicals)	-Alkyl (50%C14, 40%C12, 10%C16) Dimethylbenzyl Ammonium Chloride -Alkyl (60%C14, 30%C16, 5%C12, 5%C18) Dimethylbenzyl Ammonium -N-Dialkyl (60%C14, 30%C16, 5%C12, 5%C18) Methyl Benzyl Ammonium Chloride -Alkyl (68%C12, 32%C14) Dimethylethylbenzyl Ammonium Chloride -Didecyl Dimethyl Ammonium Chloride Alkyl (58%C14, 28%C16, 14%C12) Dimethylbenzyl Ammonium Chloride -Alkyl (67%C12, 25%C14, 7%C16, 1%C8,C10,C18) Dimethylbenzyl Ammonium Chloride	-Alkyl (95%C14, 3%C12, 2%C16) Dimethyl Benzyl Ammonium Chloride -Alkyl (50%C14, 40%C12, 10%C16) Dimethylbenzyl Ammonium Saccharinate -Alkyl (61%C12,23%C14,11%C16,2.5%C8 & C10,2.5%C18) Dimethyl Benzyl Ammonium Chloride -Alkyl (67%C12, 25%C14, 7%C16, 1%C18) Dimethylbenzyl Ammonium Chloride
3 - Possible Concern	Chlorinated isocyanurates	Sodium Dichloro-S-Triazinetrione	Sodium Dichloro-S-Triazinetrione Dihydrate
	Halohydantoins	Trichloro-S-Triazinetrione 1-Bromo-3-Chloro-5,5-Dimethyl Hydantoin 1,3-Dichloro-5,5-Dimethylhydantoin	1,3-Dichloro-5-Ethyl-5-Methylhydantoin 1,3-Dibromo-5,5-Dimethylhydantoin Imidazolidinedione
	Potassium Peroxymonosulfate	Potassium Peroxymonosulfate	Potassium Peroxymonosulfate Sulfate
	Polyhexamethylene Biguanidine (PHMB)		
	Pyriproxyfen		
Unknown	Hypochlorites	Calcium Hypochlorite Sodium Hypochlorite	Potassium Hypochlorite Lithium Hypochlorite
	Busan-77 [a polyquat also known as Polixetonium Chloride or Poly(Oxyethylene) (Dimethylimino) Ethylene (Dimethylimino) Ethylene Dichloride]		
	Sodium Bromide (EPA "Inorganic halides")		
	Chlorine		
	Sodium Tetraborate (Pentahydrate) (EPA "Boric Acid/Sodium Salts")		
	10,10 oxybisphenoxarsine (OBPA): used in coating interiors of pools and hot tubs		