April 21, 2018

Thomas Harty
Office of Pesticide Programs (OPP)
Regulatory Public Docket Center (28221T)
U.S. Environmental Protection Agency (EPA)
1200 Pennsylvania Ave., NW.
Washington, DC 20460–0001

Subject: Clothianidin – Preliminary Aquatic and Non-Pollinator Terrestrial Risk Assessment (EPA–HQ–OPP–2011–0865)

Dear Mr. Harty:

On behalf of the Bay Area Clean Water Agencies (BACWA), we thank you for the opportunity to comment on the Preliminary Aquatic and Non-Pollinator Terrestrial Risk Assessment (RA) for clothianidin. BACWA's members include 55 publicly owned wastewater treatment facilities ("POTWs") and collection system agencies serving 7.1 million San Francisco Bay Area residents. We take our responsibilities for safeguarding receiving waters seriously. BACWA is especially interested in pesticides that are used in manners that have transport pathways to the sanitary sewer, as even the most sophisticated wastewater treatment plants cannot fully remove complex chemicals like pesticides.

Every day, BACWA members treat millions of gallons of wastewater that is then discharged to fresh or salt water bodies, including local creeks and rivers, bays, and the Pacific Ocean. These waterways provide crucial habitat to a wide array of aquatic species and waterfowl. In some cases, waters receiving POTW discharges ("receiving waters") may be effluent-dominated in that there is little to no dilution, either because the receiving water is small or there is a lack of mixing at certain times due to thermal or saline stratification.

BACWA has a strong interest in clothianidin (a neonicotinoid insecticide) due to its toxicity to aquatic invertebrates and proven ability to pass through POTWs and appear in our effluent. Clothianidin is found in multiple types of consumer products – including bed bug products and cockroach products– that have transport pathways to the sanitary sewer. Even the most sophisticated wastewater treatment plants cannot fully remove neonicotinoids. The primary purposes of this letter are to request that the RA be expanded to include an evaluation of sewer discharges from indoor clothianidin uses and to share POTW monitoring data and aquatic toxicity data recently published in the scientific literature.

BACWA appreciates that OPP has started to conduct evaluation of risks associated with pesticide discharges to the sewer system ("down the drain" risk assessments). OPP's clothianidin risk assessment did not include a down-the-drain assessment. Omitting evaluation of the sewer discharge environmental exposure pathway can be harmful to the environment and prove costly for POTWs, as detailed below.

In almost every US state – including California – state law precludes any local regulation of pesticide sales or use. As we have no local option to control use of pesticides consumer products, it is essential to us that OPP's Registration Review adequately evaluates potential impacts to wastewater quality, and results in mitigation measures ensuring that impacts to the beneficial uses of the receiving water are *prevented*.

For these reasons, it is of utmost importance to BACWA that all clothianidin-containing products with pathways to the sewer be carefully and thoroughly evaluated.

In addition to commenting on the RA, we are also taking this opportunity to provide input on possible mitigation strategies for EPA to discuss with clothianidin registrants. We are providing this input at this time because mitigation measures may be necessary and we understand that the next opportunity for public comment will be after such discussions and after EPA has prepared its proposed decision.

Thank you for this opportunity to present our input on each of these topics.

Background – Pesticide discharges to the sewer can harm the environment and be costly

Pesticide discharges to the sewer system can prove costly for POTWs, due to the potential for pesticides to cause or contribute to wastewater treatment process interference, NPDES permit compliance issues, adverse impacts to receiving waters, degradation of recycled water quality and/or ability to reuse biosolids, in addition to exposing POTWs to the potential for third party lawsuits under the Federal Clean Water Act (CWA).

Of particular concern is the ability of a specific pesticide to cause exceedance of a POTW's effluent toxicity limits. One universal water quality standard in the U.S., which stems directly from the CWA, is that surface waters cannot be toxic to aquatic life. NPDES permits require POTWs to demonstrate that they meet this standard by evaluating acute and chronic toxicity using EPA standard methods (set forth in 40 CFR Part 136). To evaluate toxicity, every POTW must (1) conduct toxicity screening tests with a range of species, (2) select the most sensitive species, and (3) perform routine monitoring (typically monthly or quarterly). These monitoring data are used to determine whether the discharger has a *reasonable potential* to cause or contribute to toxicity in the receiving water. If it does, the CWA requires that numeric effluent limits be imposed, otherwise POTWs may be given numeric effluent triggers for further action. In the event that routine monitoring *does exceed* a toxicity limit or trigger, the POTW must perform accelerated monitoring (e.g., monthly); and if there is still evidence of consistent toxicity, the discharger must do a Toxicity Reduction Evaluation (TRE) to get back into compliance. The TRE requires dischargers to evaluate options to optimize their treatment plants and conduct a Toxicity Identification Evaluation (TIE), the cost of which can vary from $10,000 to well over $100,000 depending on complexity and persistence of the toxicant. The goal of the TIE is to identify the substance or combination of substances causing the observed toxicity. If a POTW's effluent is toxic because of a pesticide, it may not have any practical means to comply with CWA-mandated toxicity permit limits.

Once identified, the cost to treat or remove the toxicity causing compound(s) can vary dramatically. Often, there are few ways for a discharger to mitigate the problem other than extremely costly treatment plant upgrades. Upgrading treatment plants is often ineffective for organic chemicals like pesticides that appear at sub microgram per liter concentrations, largely

because sewage is a complex mixture of natural organic compounds. Regardless of this, the discharger must comply with its CWA permit limits. If a discharger violates a toxicity limit, it can be subject to significant penalties (in California up to $10/gallon or $10,000 per day).

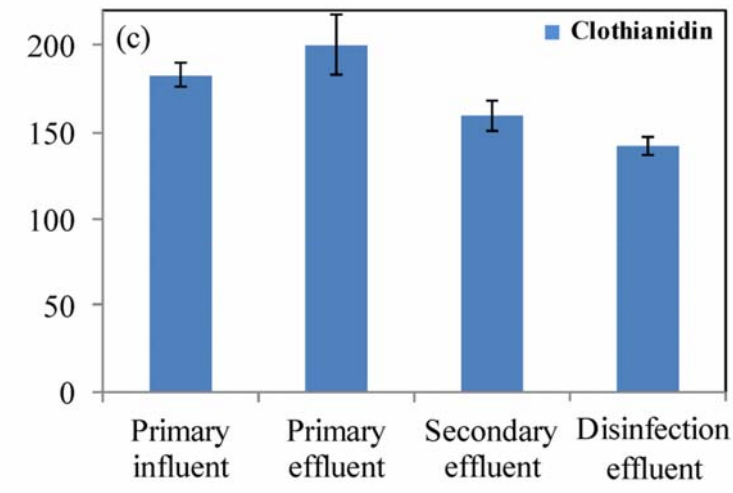
In addition, when surface water bodies become impaired by pesticides, wastewater facilities may be subject to additional requirements established as part of Total Maximum Daily Loads (TMDLs) set for the water bodies by EPA and state water quality regulatory agencies. A number of pesticide-related TMDLs have been adopted or are in preparation in California. The cost to wastewater facilities and other dischargers to comply with TMDLs can be up to millions of dollars per water body per pollutant. This process will continue as long as pesticides are approved for uses that result in water quality impacts; it is therefore imperative that EPA conducts a Registration Review focusing on water quality impacts and for EPA to take action to ensure that any impacts are prevented or fully mitigated.

Clothianidin in POTW Influent and Effluent

As it is still a relatively new insecticide, clothianidin is not commonly measured by POTWs. The sole published monitoring study, by Sadaria et al (2016; enclosed) reported that clothianidin was detected in 33% of influent and effluent samples from 13 US POTWs. At one POTW that was examined in detail over multiple days, effluent concentrations (70.2 ± 121.8 ng/L) were highly variable but often exceeded the chronic toxicity reference value (50 ng/L, LOAEC for *Chironomus dilutus*) used in the RA.

Sadaria et. al. noted that secondary treatment did not remove clothianidin, that there was "no discernible removal by processes including microbial degradation, hydrolysis, and oxidation in the aeration basin". Figure 1 shows the mass balance of clothianidin over five days occurring at one of the tested wastewater treatment plants. The study also noted that clothianidin was not oxidized (removed) during the chlorine disinfection treatment process and an insignificant amount (less than one percent by mass) accumulates in biosolids ("sludge").

Figure 1. (from Sadaria et. al. 2016) Total mass of clothianidin in wastewater unit operation flows over a 5-day period.



Note: Whiskers represent maximum and minimum values from two experimental replicates.

While this single study is too limited to characterize clothianidin concentrations in POTW effluent, it demonstrates the presence of clothianidin in wastewater, its capacity to pass through treatment processes and to occur in effluent at concentrations of interest from the ecological perspective.

BACWA requests that the RA be expanded to include an evaluation of sewer discharges from indoor use of clothianidin

BACWA is concerned that risks associated with indoor clothianidin use were not examined in the RA and respectfully asks the EPA to include this analysis (a "down-the-drain" risk assessment) in the revised assessment. We request that U.S. EPA specifically analyze sewer discharges associated with indoor treatments (such as bedbug treatments, cockroach treatments, etc.) and specifically evaluate direct use of clothianidin inside sewers and floor drains. EPA has POTW predictive modeling tools to suitable for conducting this assessment and has conducted similar assessments for many other pesticides.

BACWA requests that EPA include the latest aquatic toxicity data, particularly that for chronic toxicity

The EPA noted that there are significant data gaps with regards to acute and chronic toxicity data on clothianidin's effect on invertebrates. BACWA would like to respectfully submit the following recently published studies that were not included in the RA, which report acute aquatic toxicity at concentrations lower than the data used in the RA:

- Maloney, et. al. (2017) measured acute toxicity of clothianidin to *C. dilutus*..
- Raby, et.al. (2018) measured acute toxicity of clothianidin to 21 different aquatic invertebrates.
- Miles, et.al. (2017) measured the acute toxicity of clothianidin on eight aquatic species.

While these papers provide additional acute toxicity data, BACWA requests that EPA seek to obtain chronic toxicity data to incorporate into the findings in the proposed decision in order to ensure that any associated mitigation measures are sufficient to prevent POTW effluent toxicity. Chronic toxicity data are recommended for two reasons:

1) POTWs continuously discharge to surface waters.
2) Use of acute toxicity data and the common default assumption that the acute-to-chronic toxicity ratio is 10 might significantly underestimate chronic toxicity given that some neonicotinoids are known to have chronic toxicity values that are more than 300-fold lower than the lowest acute toxicity value.[1]

BACWA requests that EPA consider risk mitigation for clothianidin

Because clothianidin concentrations reported in undiluted POTW effluents sometimes exceeded the aquatic freshwater invertebrates chronic toxicity endpoint used in the RA, we expect that the "down-the-drain" risk assessment may conclude that risk mitigation is warranted to reduce POTW clothianidin discharges. Because 100% of POTWs must comply with the Federal Clean

[1] Roessink, I et al. (2013). *Environmental Toxicology and Chemistry* V.32, No. 5, pp. 1096–1100.

Water Act 100% of the time, whenever EPA identifies significant risks from pesticides discharged to POTWs, BACWA believes that a robust exploration of risk mitigation is imperative.

BACWA suggests that EPA consider the following risk mitigation strategies for indoor clothianidin products:

- Determine the minimum application rate necessary to achieve pest control for indoor uses. This would eliminate unnecessary overuse and minimize POTW discharge quantities.
- Eliminate the usage of clothianidin in floor drains and sewers. It is currently allowed in the following labels: 432-1531 and 1021-2796.
- Prohibit the use of clothianidin on anything that is washable. Currently, bed linens are the only washable item that it is prohibited to be used on: (1021-2793, 1021-2780, 1021- 2788, 1021-2776, 1021- 2780). Expand to explicitly prohibit use on any washable item, by adding the bolded text to the labels: "Infested bed linens ***and washable items*** should not be treated." The current labels actually encourage use on washable items such as pet bedding and curtains. It is possible that this is causing pulses of clothianidin to enter the sewer collection system when these washable items are laundered, given the relatively high water solubility of clothianidin.

Thank you for the opportunity to provide this feedback regarding both the risk assessment and subsequent mitigation strategies. We ask that OPP evaluate clothianidin discharges to POTWs and the subsequent potential impacts to effluent quality and explore mitigation options. BACWA requests that EPA coordinate with the California Department of Pesticide Regulation (CDPR) (which has extensive relevant information and expertise), and registrants; and bring in the latest scientific information – including CDPR scientific studies and modeling that are currently underway.

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

Karin North
City of Palo Alto
(650) 329-2104
Karin.north@cityofpaloaloalto.org

Autumn Cleave
Wastewater Enterprise, San Francisco
(415) 695-7336
ACleave@sfwater.org

Respectfully Submitted,

David R. Williams

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Executive Director
Bay Area Clean Water Agencies

Enclosures:

1. Sadaria A.M., Supowit SD, Halden RU. 2016. Mass balance assessment for six neonicotinoid insecticides during conventional wastewater and wetland treatment: Nationwide reconnaissance in United States wastewater. Environ Sci Technol 50:6199–6206.

2. Miles, J.C., et.al. 2017. Effects of clothianidin on aquatic communities: Evaluating the impacts of lethal and sublethal exposure to neonicotinoids. PLoS ONE 12(3): e0174171. https://doi.org/10.1371/journal.pone.0174171
3. Maloney, E.M. et.al. 2017. Cumulative Toxicity of Neonicotnoid Insecticide Mixtures to Chironomus Dilutus under Acute Exposure Scenarios. Environmental Toxicology and Chemistry. 36 (11), 3091–3101.
4. Raby, M., Nowierski, M., Perlov, D., Zhao, X., Hao, C., Poirier, D.G., Sibley, P.K., 2018. Acute Toxicity of Six Neonicotinoid Insecticides to Freshwater Invertebrates. Environ. Toxicol. Chem.

cc: Yu-Ting Guilaran, Director, Pesticide Re-Evaluation Division
Tracy Perry, EPA OPP Pesticide Re-Evaluation Division
Rick P. Keigwin, Jr., Director, EPA OPP
Neil Anderson, Branch Chief, Risk Management and Implementation Branch 1 Pesticide Re-evaluation Division
Marietta Echeverria, Director, Environmental Fate and Effects Division (EFED), EPA OPP
Melissa Grable, Team Leader, Risk Management and Implementation Branch I, Pesticide Re-evaluation Division
Amy Blankinship, Senior Effects Scientist, Environmental Risk Branch 6, EFED
Michael Wagman, Biologist, Environmental Risk Branch 6, EFED
Chuck Peck, Senior Environmental Fate Scientist, Environmental Risk Branch 6, EFED
Mark Corbin, Branch Chief, Environmental Risk Branch 6, EFED
Monica Wait, Risk Assessment Process Leader, EFED
Andrew Sawyers, Director, EPA Office of Water, Office of Wastewater Management
Deborah Nagle, Acting Director, EPA Office of Water, Office of Science and Technology
Tomas Torres, Director, Water Division, EPA Region 9
Debra Denton, EPA Region 9
Patti TenBrook, EPA Region 9
Karen Larsen, Deputy Director, California State Water Resources Control Board
Philip Crader, Assistant Deputy Director, California State Water Resources Control Board
Paul Hann, California State Water Resources Control Board
Dawit Tadesse, California State Water Resources Control Board
Matthew Freese, California State Water Resources Control Board
Tom Mumley, California Regional Water Quality Control Board, San Francisco Bay Region
Janet O'Hara, California Regional Water Quality Control Board, San Francisco Bay Region
James Parrish, California Regional Water Quality Control Board, SF Bay Region
Jennifer Teerlink, California Department of Pesticide Regulation
Jesse Cuevas, Assistant Director, California Department of Pesticide Regulation
Chris Hornback, Chief Technical Officer, National Association of Clean Water Agencies
Cynthia Finley, Director, Regulatory Affairs, National Association of Clean Water Agencies
Kelly D. Moran, Urban Pesticides Pollution Prevention Partnership
BACWA Executive Board
BACWA Pesticides Workgroup