

BACWA/BAPPG Outreach Workplan for On-Pet and Indoor Flea/Tick Pesticides

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Contents

Subcommittee Members	2
Purpose	2
Background	2
<i>Linkage Between On-Pet and Indoor Flea/Tick Control with Aquatic Toxicity</i>	2
<i>BAPPG Outreach to Veterinary Community To-Date</i>	3
<i>Key Findings from 2024 Vet Outreach</i>	4
Proposed Workplan	7
<i>Step 1A: Update BACWA Members and Wastewater Colleagues</i>	7
<i>Step 1B: Communicate with Regulatory Agencies and State Partners</i>	8
<i>Step 1C: Outreach and Communication with Veterinary Community and Leadership</i>	8
<i>Step 1D: Continued BAPPG Bay Area Outreach</i>	10
Possible Future Steps	10
<i>Outreach – Conferences, Videos</i>	10
<i>Publish a Review Article in a Peer-Reviewed Veterinary Publication</i>	11
<i>Outreach Piece for Veterinarians</i>	11
References	11

¹ Dall-E created image by Alessandra Moyer, SF Bay Regional Water Board

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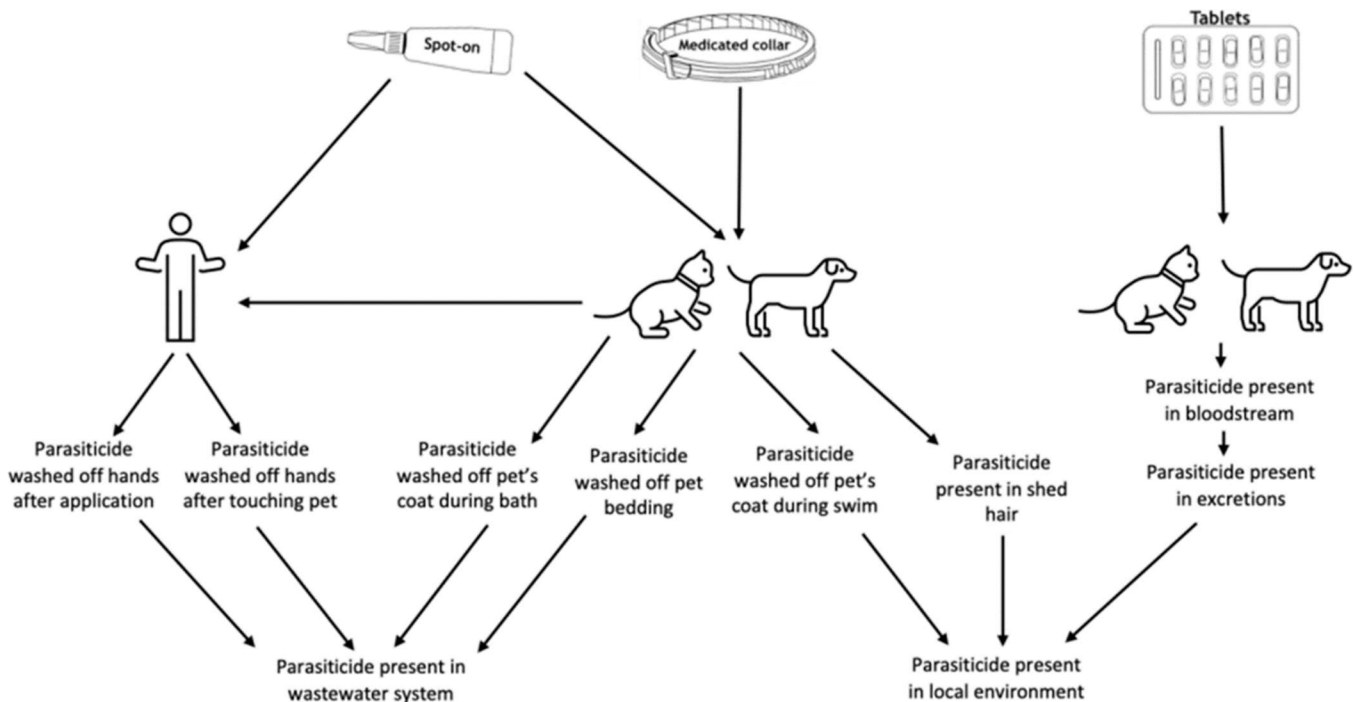
PURPOSE

The BACWA Pesticides Workgroup assesses and prioritizes individual pesticides based on (1) potential hazard and (2) potential exposure. On those bases BACWA's top priority pesticides include fipronil, imidacloprid, and several pyrethroids used as on-pet and in-home flea/tick parasiticides. While this has been an ongoing project, BAPPG's next steps are to use the insights from outreach efforts, a veterinary survey, and AVMA communications to further educate our colleagues, regulatory partners, veterinarians and consumers.

BACKGROUND

Linkage Between On-Pet and Indoor Flea/Tick Control with Aquatic Toxicity

There is increasing evidence that on-pet and indoor pesticides used for ectoparasite² control have a pathway to waterways, sometimes at concentrations above toxicity thresholds for aquatic species. Scientific studies document the transport of ingredients from spot-on treatments, collars, indoor foggers and sprays onto human hands, clothing, bedding, and other indoor surfaces. This pesticide transport exposes people to toxic pesticides and, upon washing, results in the discharge of pesticides into the sewer system (References 1-6; the figure below is from Reference 1, Wells and Tilly Collins, 2022).



² Parasiticides are used to treat both **ectoparasites** (i.e., those that live on pet's skin, like fleas and ticks) and **endoparasites** (those that live inside the pet, like tapeworms).

Wastewater treatment plants provide physical and biological treatment, and in the Bay Area most treatment plants discharge treated wastewater to local surface waters such as creeks, San Francisco Bay, or the Pacific Ocean. Because wastewater treatment plants are not designed to remove pesticides, these ingredients are entering local water bodies sometimes at concentrations that exceed the US Environmental Protection Agency's toxicity benchmarks for chronic exposure to aquatic invertebrates.

Pesticides of concern are those that exhibit aquatic toxicity and persist in the environment:

- Fipronil
- Imidacloprid
- Indoxacarb
- Many pyrethroids, including bifenthrin, cypermethrin, deltamethrin, and permethrin

A U.K. Veterinary Webinar from 2024 (Reference 7), acknowledged this is a challenging and tricky situation for vets due to the following conditions:

- Over-the-counter (OTC) availability; vets do not have control over what pet owners purchase OTC
- Years of vet advice promoting month-to-month prevention
- A move from single-ingredient, narrow-spectrum products to multi-ingredient products; pet owners end up inadvertently using more pesticides
- Incomplete science
- Balancing individual patient welfare with wider, global, generational animal and human welfare

The webinar offered the following recommendations for veterinarians:

- Use a risk-based approach
 - Assess the lifestyle, including time outside, travel locations, other types and number of pets, immunocompromised individuals, and whether the clients are effectively able to monitor for fleas or ticks
- Recommend narrow-spectrum rather than broad-spectrum products (even though that may be less convenient), which decreases the number of pesticides used.
- Ensure appropriate use (discourage pet bathing or swimming after use of topicals)
- Initiate conversations with your team and, if corporate, central management

There certainly are veterinarians who are very concerned about this issue, particularly from a One Health perspective.³ A recent U.K. veterinary publication offered the following quote (Reference 8) (emphasis added):

*"We believe that the **products used to treat endo- and ectoparasites in dogs and cats require urgent attention.** The first step we must take is to **stop the blanket prophylactic use of antiparasitic drugs.** Until recently, the veterinary profession used drugs to **treat parasites in a strategic fashion**, which would minimise environmental exposure. **The indiscriminate prophylactic use of antiparasitic drugs in companion animals... should not be condoned as good clinical practice.**"*

BAPPG Outreach to Veterinary Community To-Date

2018-2022:

³ In the veterinary community, the term One Health refers to their triple responsibility as medical professionals to animal health, human health and environmental health.

- Communication w/ Bay Area veterinary medical associations (newsletter articles and a presentation)
- Veterinary Technician student trainings at Foothill Community College
- Initiated Dialogue with the AVMA's national Committee on Environmental Issues

2023-2024:

- Veterinary survey developed with the Veterinary Information Network (VIN), an international organization
- Sought and obtained Continuing Education credit (nationally approved) for outreach presentation
 - Educated staff at Pets In Need (operates two municipal animal shelters), initiating product shift and public outreach
 - Invited to speak at VIN, February 2024
- Invited to speak at the national AVMA conference, Austin, TX, June 2024

Key Findings from 2024 Vet Outreach

In 2024, BAPPG:

1. Prepared a detailed online survey that was completed by 637 US veterinarians, including 73 California vets, via the Veterinary Information Network (VIN)
2. Attended the AVMA Conference in Austin, TX, giving a presentation and networking with veterinary specialists.

Below are some of the key findings with respect to opportunities and challenges to reducing the use of fipronil and imidacloprid topical products. This includes direct quotes out of 211 individual responses to an open-ended question at the end of the VIN survey.

OPPORTUNITIES:

- According to Dr. Susan Little (AVMA conference attendee and speaker), the pet parasiticide manufacturers are moving from on-pet topicals to the chewables, because those products manage both ecto- and endo-parasites.
- 12% of US vets (and 18% of California vets) currently do not recommend either fipronil or imidacloprid to their clients
- When presented with brief information (mid-survey) about aquatic toxicity concerns, an additional 60% of vets indicated they would be somewhat or very willing to consider changing their product recommendations. This suggests that if provided even more compelling science, veterinarians could be convinced to change their recommendations.
- When asked, if they were to reduce recommending these products, what alternative strategies they would recommend or emphasize, they listed these options in order of preference:

Flea Control

1. Orals/chewables
2. Home mechanical treatments (vacuuming, washing bedding)
3. Another on-pet topical or collar
4. Professional pest control service

5. Home pesticidal treatments (carpet sprays or foggers)
6. Flea shampoo

Tick Control

1. Orals/chewables
2. Rigorous coat inspections
3. Another on-pet topical or collar
4. Keeping the dogs on trails / avoiding woods and tall grass
5. Professional pest control service
6. Creating a tick free zone in the yard
7. Home pesticidal treatments (outdoor sprays)

Several respondents described why they don't recommend these products:

- "We **haven't used in over 15 years**, nor recommend." –DVM, OH
- "They have not been effective in my area (San Diego county) for over 5 years. I have been using oral products only in dogs since that time. Advise Revolution or Cheristin in cats." –DVM, CA
- "I stopped carrying Frontline products several years ago and have considered picketing our local Costco for selling it. Maybe once I retire. – DVM, CA

Many survey respondents were concerned that this was new information for them:

- "I am concerned... we were **taught these products were safe once dried.**" – DVM, IL
- "I would like a link to studies and more information. I have never heard about any of this. In fact, our termite treatment services uses "Fipronil" in our house as a "pet and human safe" alternative termite control." – DVM, CA

Many respondents had suggestions for more education:

- "These products are readily available - Costco, Chewy, grocery stores, and less expensive, but also less effective. **Warning labels. Information pamphlets for veterinary offices. Commercials or the equivalent**" –DVM, CA
- "Will there be **warnings** released for the general public and DVM's or updated product labels with scientific evidence/study confirming fipronil and imidacloprid in waterways and affecting human health?"
- "I would like to know a lot more about the environmental effects of all of the drugs that we use as veterinarians. **This should be demanded by our profession of all animal health companies.**" – DVM, UT
- "**Further clinician and consumer education would be beneficial.** Consider **cautions/warnings on packaging**, especially for impacts to human health (especially children, groomers)" – DVM, Ontario
- "I think that if there is an environmental risk involved, that needs to be more widely known - while they are not the products we use most commonly, we would probably use them even less if that was more known as one of the concerns with them."

- “Good to know that there's an environmental impact- most of the fipronil products are OTC though so **educating the public** will be more important than educating vets in my opinion.” – DVM, OH

CHALLENGES:

Veterinarians note numerous challenges to moving consumers from on-pet topicals.

In the survey, when asked if barriers are in place that prevent them from removing fipronil and/or imidacloprid from their recommendations altogether, 40% of US vets and 46% of California vets, said yes. When asked to identify the barriers, overwhelmingly they said cost (see side bar).

Respondents described their challenges due to the OTC nature, and more than one suggestion of a ban and manufacturer and/or EPA leadership:

- “Since these products are OTC, **the manufacturers and EPA need to lead the charge** in reducing environmental contamination and concerns.” –DVM, TX
- “I think **it needs to be banned** otherwise we will continue to use it.” –DVM, CA
- “Occasionally we reach for these products if pet has **adverse reactions to the chewables, neuro disease**, or the owner has severe **financial constraints**.” –DVM, VT
- “I **don't find them to be terribly effective** compared to the isoxazolines **but some clients are fearful of that drug class** based on internet, social media, etc.. I practice in a tick endemic region, so topical pesticides are really all we have left.” –DVM, OH
- “I do get clients that are **concerned about "internal" vs "external"** exposure of their pets to pesticides, **pet owners who have children are more likely to embrace the chewables**. I was unaware of the environmental effects of these products until this survey.” – DVM, NJ
- “Ultimately I **don't have a choice** about what clients use as some of these products are available over the counter. However, I **can change how often I recommend them** (which is already minimal) and **can emphasize** to pet owners the **risks** of using these products. Thank you!” –DVM, CA
- “When prescribing a product one must **consider owner compliance**. ...If the product is not easy to use and requiring minimum effort, clients will not use it, or will use it one time, not consistently.” –DVM, CA

Top Four Barriers Vets Identify to Removing Recommend Fipronil & Imidacloprid Topicals from their Suite of Recommendations (2024 VIN Survey)

1. Cost
2. Client compliance / Ease of administration
 - *If clients decline oral products, I would rather them use fipronil or imidacloprid over other topicals.*
 - *There are clients who love frontline as it is cheaper and easy to obtain and they are not going to use anything else. I never recommend it.*
3. Prescription vs OTC
 - *fipronil and imidacloprid are available in OTC products and vets have no control over their use. I do warn about potential toxicity of the products for clients who elect to buy OTC*
4. Adverse reactions/Suitability (seizures, food allergies to chewable flavorings, pregnant/lactating patients, puppies and kittens)
 - *I generally do not recommend either of these products, but clients are hesitant to use chewable due to "bad press" with regards to safety. These products are better than nothing, especially since I live in a high flea prevalence area.*

- “I think it will be really **hard to convince owners** about the importance of aquatic contamination. Tragedy of the commons e.g. (my pet alone won't kill fish) and **lack of trust in science.**” –DVM, AK
- “These two products are some of the most **widely available** options and **did seem to be revolutionary to options used prior to the early 1990s.**” –DVM, OR
- “One must **balance the risks of systemic illness** such as anemia, Hemotropic Mycoplasmosis (HM), borreliosis (Lyme), anaplasmosis, ehrlichiosis and tick paralysis **versus pesticide risk.**” –DVM, CA

When we provide our messaging, we need to provide context regarding agricultural and other indoor and outdoor sources, as well as context regarding other topicals and chewables:

- “I am concerned that all of our antiparasitics are going to have long-term environmental impact. I believe **even the urine excretion of the oral pills is going to be found in the water soon** and tested in the same way.” – DVM, Canada
- “The fact that environmental agencies are blaming this on pets, pet owners, and veterinarians, as opposed to looking at the agricultural industry as the main culprit is completely ridiculous. **Industrial-strength Imidacloprid is easily available through Amazon as a pest-control for various tree pests, for example. This is not an animal problem.**” –DVM, CA

PROPOSED WORKPLAN

Given the recent findings from the VIN Survey and other sources, the Subcommittee envisions four parallel sets of activities for the coming 1 to 2 years:

A. Update Colleagues	B. Regulatory Communication	C. Communicate with Veterinary Leadership	D. Continued BAPPG Outreach
Educate wastewater colleagues on our outreach efforts to date, our findings from the veterinary community, and proposed next steps	Focus on several branches of DPR and the DTSC Safer Consumer Products Program Discuss opportunities and challenges based on findings from the veterinary community Seek opportunities to collaborate and/or pilot projects	Engage with the Veterinary Leadership – Bay Area and nationally Focus on One Health, sustainability, vet toxicologists and vet parasitologists	Replicate Palo Alto’s municipal shelter outreach Reach out to local veterinary tech community colleges Media, ad, and online campaigns Reach out to Bay Area chains

Step 1A: Update BACWA Members and Wastewater Colleagues

GOAL: Educate wastewater colleagues about the hazard and exposure pathways of indoor and on-pet parasiticides, our outreach efforts to date, the vet Survey and AVMA findings, and proposed next steps.

NEXT STEPS:

1. NACWA December 4, 2024 Pretreatment Virtual Training – “Pesticides and Pets: A Practical Approach to Protecting POTWs and the Environment”
2. BAPPG January 29, 2025 meeting
3. CWEA P3S February 4, 2025 presentation
4. BACWA Exec Committee (February 2025)
5. RWQCB Region 2 Wastewater staff
6. Suggest a session for future RMP State of the Estuary meeting (SFEI, DPR, Veterinary Update)
7. WEFTEC 2028, Anaheim

Step 1B: Communicate with Regulatory Agencies and State Partners

GOAL: Communicate with regulatory agencies and state partners about the hazard and exposure pathways of indoor and on-pet parasiticides, challenges identified by the vet community, and opportunities to collaborate and/or pilot projects

NEXT STEPS:

1. DPR
 - Surface Water Protection Program (Anson Main’s group)
 - Invite Dr. Budd and other SWPP staff to the 1/29/2025 BAPPG meeting
 - Periodic invitations to the Pesticide Workgroup
 - Worker Health and Safety Branch - led by Nan Singhasemanon
 - Groomer safety issues re. fipronil identified by DPR's Human Health Assessment Branch
 - Janitor/building superintendent safety issues related to foggers in multi-family dwellings
 - Environmental Justice and Equity Office (to discuss EJ of costs vs human health risks)
 - The costs of flea control alternatives vs human health risks of fipronil products
 - Human Health Assessment Branch (to track future mitigation steps)
2. Communicate with the UC Extension staff about updating UCANR/UCIPM materials to line up with latest scientific studies and IPM alternatives
 - Seek a meeting with representatives of the Water Board, DPR, POTWs, and UCIPM staff
3. Coordination with EPA Region 9 Pesticides Program (Sasha Mizenin, Diana Hsieh, Laura Ramirez)
4. Suggest a session for future RMP State of the Estuary meeting (SFEI, DPR, Veterinary Update)

Step 1C: Communicate with Veterinary Leadership

GOALS: Engage with the Veterinary Leadership – Bay Area and nationally – particularly focused on opportunities within One Health, sustainability, vet toxicologists and vet parasitologists:

- a) Increase the understanding in the vet community about the link between specific on-pet and indoor pesticides to aquatic toxicity and human health risks
- b) Engage with the vet community regarding their perspectives, concerns, and limitations
- c) Obtain additional insights about messaging, how to collaborate, and how best to reach their peers
- d) Obtain professional standing with vet professionals, to discuss collaborating opportunities, such as:
 - Outreach materials for veterinary offices
 - A peer-reviewed paper that would reach the vet community

- Pilot an environmental justice project to support choices for lower income pet owners, perhaps via existing low-cost vaccination and routine care clinics⁴

NEXT STEPS:

1. Review our language (website and presentations) to align with the language of the One Health Community – animal health, human health and environmental health – as described by the [UC Davis One Health Institute](#), the [One Health Initiative](#), [AVMA One Health](#), and the [CDC](#).
2. Seek opportunities to engage with leaders who have been receptive to our message
 - Dr. Warren Hess, Associate Director, AVMA, whess@avma.org
 - AVMA Committee for Env Issues (CEI) – provide an update with VIN Survey findings
 - Dr. Danielle Godard (representative for Aquatic Medicine and incoming Vice Chair of CEI, Danielle.Godard@wisconsin.gov) (Dr. Camille Fischer stepped down)
 - Dr. Puttappa Dodmane, Staff Toxicologist, Risk Assessment Section, Human Health Assessment Branch, DPR, (on DPR Human Health Risk Assessment teams for fipronil and imidacloprid), Puttappa.Dodmane@cpdr.ca.gov
 - CVMA – Dr. Grant Miller (regulatory) and CVMA upcoming events
 - June 2025, Long Beach
 - CVMA [online seminars](#)
4. Reach out to Ross Kelly, Managing Editor at VIN, to seek a second VIN article about DPR’s sewershed study and other recent insights (see Ross’ 2021 VIN article, [Researchers suspect spot-on flea products pollute water](#)⁵)
5. Seek opportunities to engage with recently-identified leaders
 - [Companion Animal Parasite Council \(CAPC\)](#), with support from retiring Dr. Susan Little
 - [American Board of Veterinary Toxicology](#)
 - American Association of Veterinary Parasitologists
 - Honey Bee Veterinary Consortium
 - AVMA
 - Aquatic Veterinary Medicine Committee
 - [AVMA One Health](#)
 - UC Davis
 - [UC Davis One Health Institute](#)
 - UC Davis [Veterinary Toxicology Residency](#)

⁴ For example: SPCAs, VIP Petcare, Nine Lives, and 13th Street Cat Rescue.

⁵ The 2021 article includes quotes from DPR and Kelly Moran, ending with "I think that vets are going to have an extremely important role in solving this problem," Moran said, "... so we're looking for their help." So the next VIN article could take it from there!

Step 1D: Continued BAPPG Bay Area Outreach

GOALS: Replicate Palo Alto's municipal shelter outreach at shelters and regional chains, broaden outreach regionally, and reach out to local veterinary tech community colleges.

NEXT STEPS:

Vets and shelters:

1. Encourage other agencies to replicate Palo Alto's municipal shelter outreach using BACWA-branded outreach
 - Develop printing/distribution plan for the BACWA-branded Flea/Tick Flyers
 - Provide training/assistance as needed
2. Approach chains in the Bay Area and PA service area, such as Adobe, VCA, VIP Petcare, and Pet Food Express
3. Create a short video that highlights the veterinary presentation and CE credits
4. Reach out to local VMAs again, perhaps with the support of Dr. Hess and AVMA's CEI
5. Develop a veterinary tech college flyer with support/quotes from AVMA leadership⁶; reach out to Foothill College and 3 Carrington Colleges for presentations

Consumers:

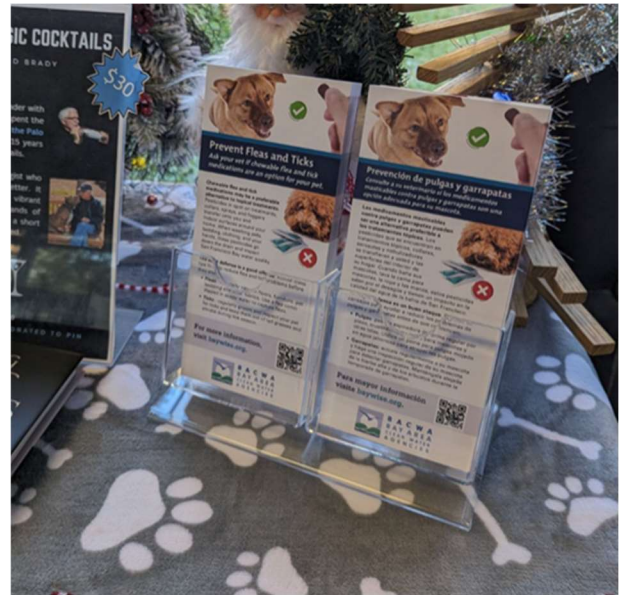
6. Consider how to reach social media outlets, like Instagram and Facebook
 - Focus on short format reels
 - Explore partnerships with science-based YouTube influencers, such as the popular Mark Rober, located in Sunnyvale⁷
7. Develop a media pitch about this topic
8. Develop a regional ad campaign (2025-26?)

POSSIBLE FUTURE STEPS

The Subcommittee brainstormed a number of possible follow up actions to Step 1D. These serve as possible talking points with veterinary leadership as we seek to understand their challenges with consumer flea/tick control and how to support them professionally.

Outreach – Conferences, Videos

- Use info from the Vet Tool Kit
- AVMA national conference is in Anaheim, July 2026
- An article in CAPC - the Companion Animal Parasite Council



⁶ Seek quotes of support from Dr. Hess (AVMA Director), Dr. Petra Volmer (Merck), and Dr. Bischoff (Bee Vet)

⁷ Tina Keegan at City of Palo Alto has offered to reach out to him via his email account. Mr. Rober is a former NASA engineer, now popular YouTuber, whose videos are used by science teachers. Here is his [video](#) about bed bug IPM.

Publish a Review Article in a Peer-Reviewed Veterinary Publication

- possible co-authors:
 - DPR:
 - Dr. Robert Budd, water quality view
 - Dr. Puttappa Dodmane, (DPR vet on AVMA CEI), human health connection
 - SFEI for additional water quality viewpoint
 - Practicing vet, Dr. Susan Little, and vet professor @ Oklahoma State and a consultant for the [Companion Animal Parasite Council \(CAPC\)](#)

Outreach Piece for Veterinarians

- One side would be the “Why”
- Other side would be a visual for the office wall
 - Would have a flowchart or such that would help vets present holistic solutions and when to prescribe medications
 - Will need insights from AVMA and/or CAPC as this is beyond water quality
- Align with ad campaign

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