Household Flea Management

Latest Messages, Outreach Efforts, and Next Steps

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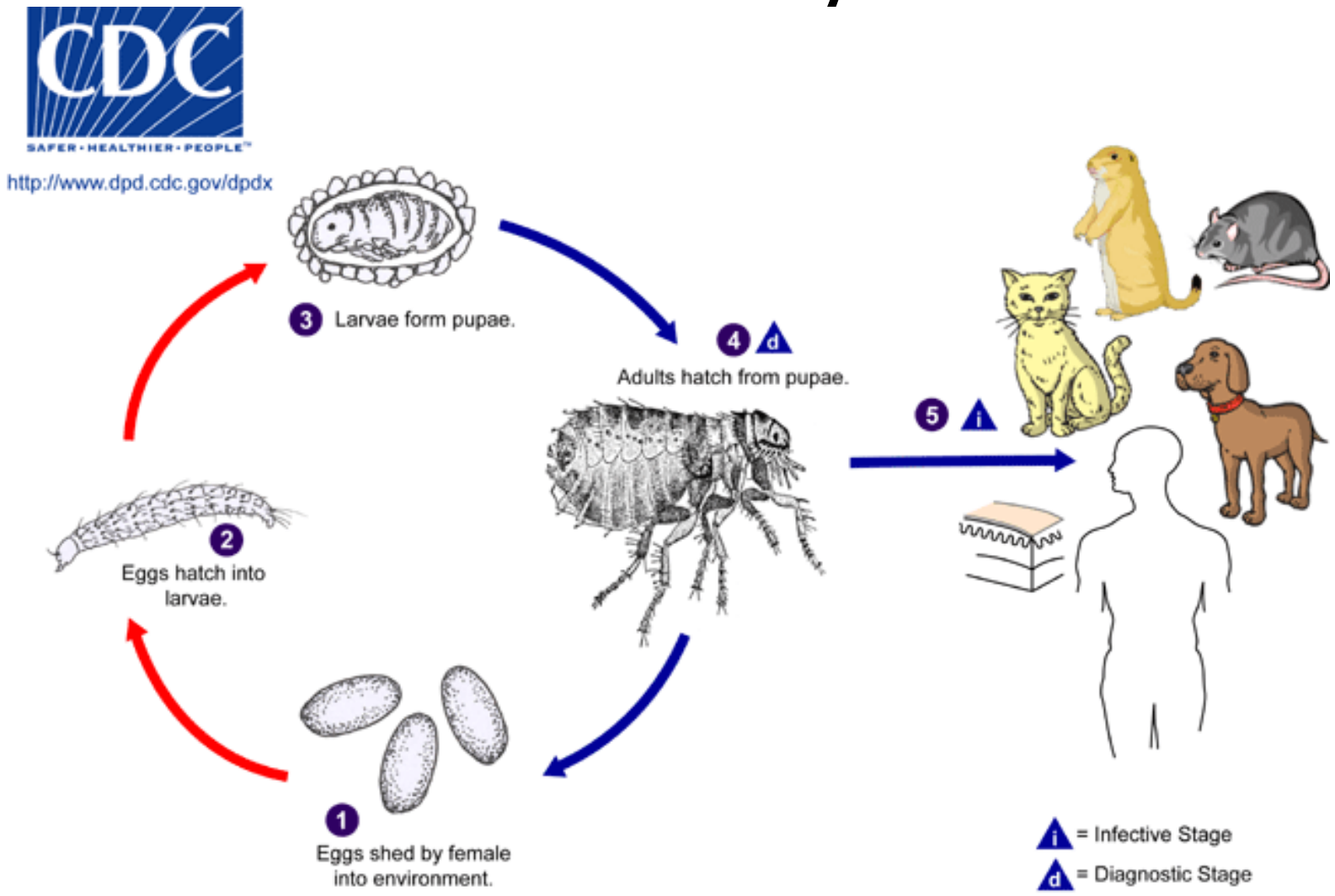
BAPPG
October 2018

Today's Outline

- The Flea Cycle
- Management Options
- Messages
- Latest Outreach
- Next Steps

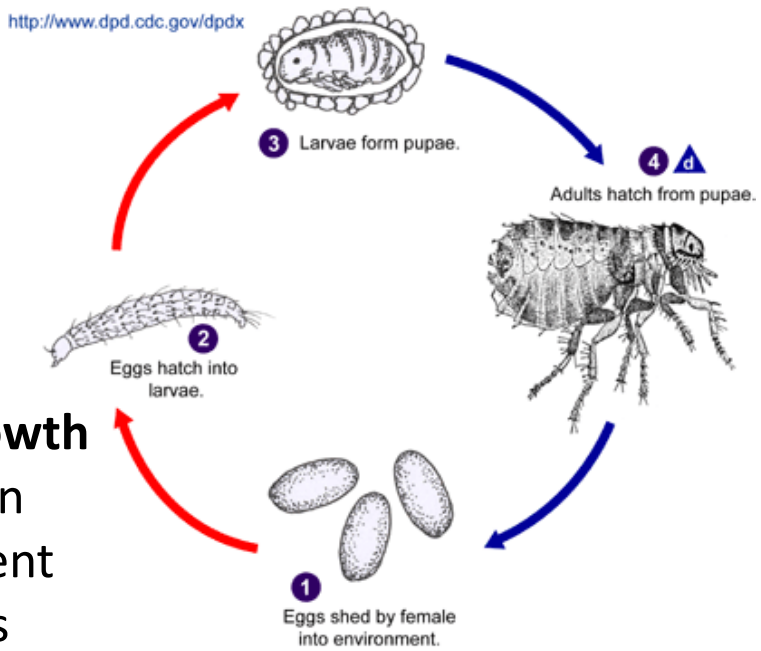
The Flea Cycle



https://www.pesticideresearch.com/site/?page_id=2933

So if you were looking to kill the fleas in this cycle, you might seek…

To my knowledge, **no** active ingredients penetrate the shell and kill the pupae



An "adulticide" - an active ingredient that kills the adults

An "insect growth regulator" – an active ingredient that minimizes number or viability of eggs or larvae

What products in the marketplace contain those active ingredients?

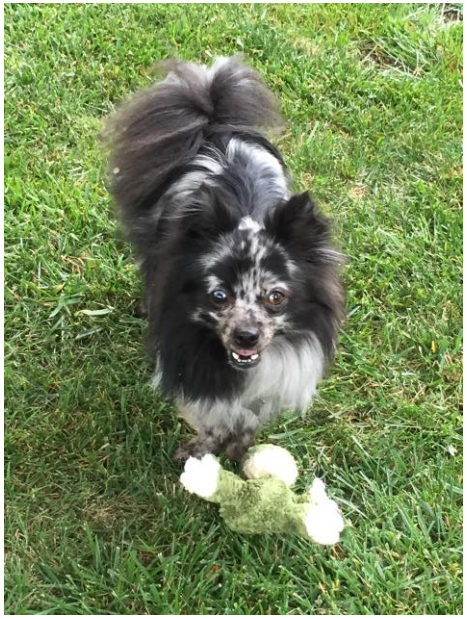
- Topicals
  - Collars
  - Spot treatments
- Oral medications
- Shampoos or dusts
- House/ yard sprays

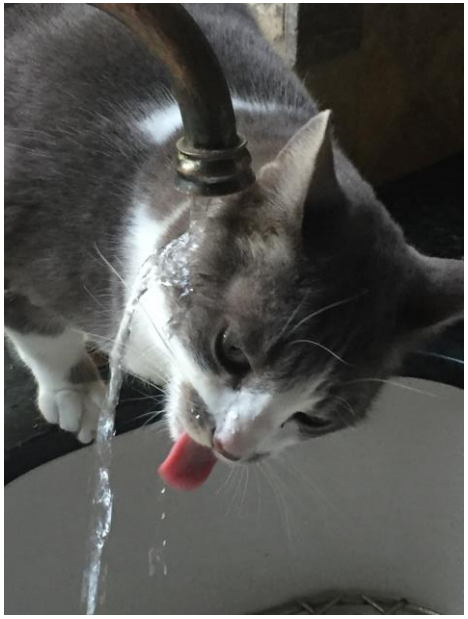
I created an Excel database of pet treatments, to track:

- Active ingredient(s)
- Example products
- Uses
  - Dogs, cats, or both?
  - Fleas, ticks, or both?
- Dosage and the duration between doses
- How it works
  - Adulticides and/or insect growth regulators?
  - Topically or systemically?
- Fed regulating body
  - EPA if over the counter (OTC)
  - FDA if prescription
- Literature findings
  - Efficacy
  - Water quality issues
  - Fate and transport
  - Pollinator impact

Let’s briefly look at each:

- Collars
- Spot treatments
- Oral medications





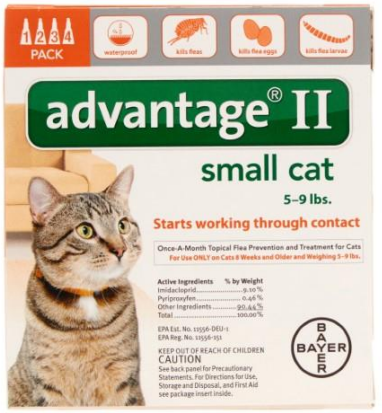
How Collars Work

- Work topically on the fur/skin
  - Requires direct contact with the adult flea, eggs or larvae
- Majority only include an “adulticide” as the active ingredient
  - Though some studies indicate that the pet dander is larvecidal
- Typically last 6-8 months
- The active ingredient permeates slowly out of the collar over time
  - Collars may release the active ingredient during storage so that when it is first applied to the pet, it initially exposes the pet to a large initial dose of the active ingredient.

"Long-Acting Control of Ectoparasites: A Review of Collar Technologies for Companion Animals," Witchey-Lakshmanan, L., Advanced Drug Delivery Reviews, 1999, Vol 38, pp 113–122.

How (Most) Topicals Work

- Work topically on the fur/skin (with one exception)
  - Requires direct contact with the adult flea, eggs or larvae
- All include an adulticide
  - Many blend 2 or 3 active ingredients so as to also act as an insect growth regulator
- According to manufacturers (and OWOW factsheets), they “don’t wash off”



Revolution is the one topical treatment that works systemically

- It is a product that is **applied topically** but breaks the skin/blood barrier and **works as a systemic (akin to the oral medications)**

- Some % of the active ingredient remains on the skin/ fur (and has topical / contact impact)

- It is a prescription rather than OTC (and is regulated by FDA, not EPA)

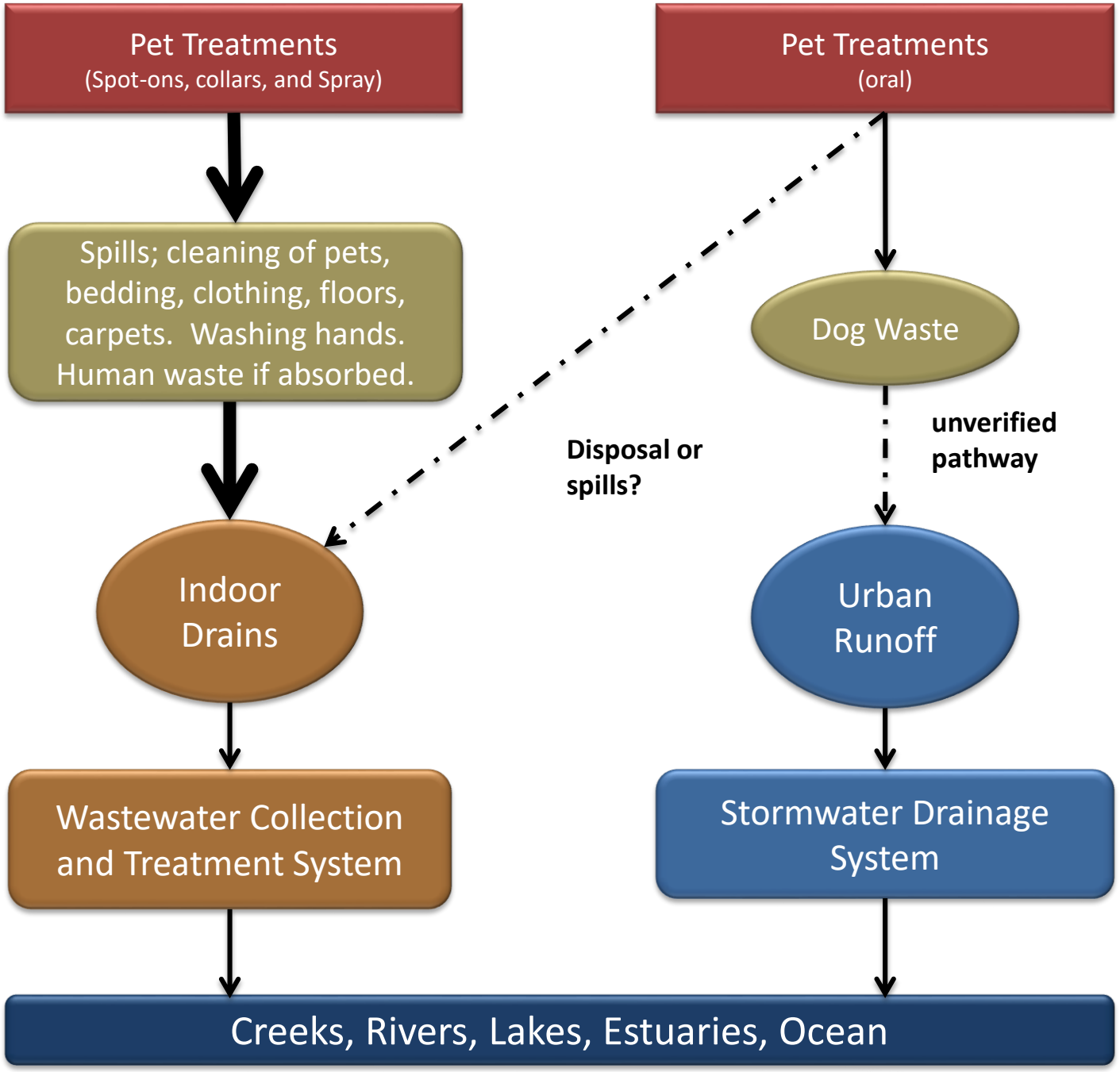
There is evidence that topical treatments (spot and collar) transport through a home

- Active ingredients DO wash off
- Active ingredients are transported around the home

Fig. 3. Handling of a dog treated with Frontline® containing 1% Tinopal® CBS-X fluorescent tracer revealed contamination of hands during routine application and handling of a treated dog (color figure available online).

REFERENCES

1. DPR dog washing study
2. "Fate and Distribution of Fipronil on Companion Animals and in Their Indoor Residences Following **Spot-On** Flea Treatments," Bigelow Dyk, M., et al., J. of Env Science and Health, Part B, 2012, Vol 47, pp 913-924.
3. "Assessing Intermittent Pesticide Exposure From Flea Control **Collars** Containing the Organophosphorus Insecticide Tetrachlorvinphos," Davis, M., et al., J. of Exposure Science and Environ. Epidemiology, 2008, Vol. 18, pp 564-570.



Thank you, Dr. Moran, for this graphic.

How Oral Medications Work

- Systemic
  - Requires adult flea to bite the animal
- Active ingredient in most are adulticides
  - The active ingredient in Program is an insect growth regulator
- Typically monthly or quarterly doses
- Adverse reactions include vomiting, lethargy
- Prescription rather than OTC (therefore regulated by FDA, not EPA)

A family of new oral medications began in 2013

- New family of chemicals
  - Isoxazolines
- These are for dogs only
- In September 2018, the FDA sent out a press release about possible negative impacts such as muscle tremors, ataxia, and seizures.

Animal Health Literacy

CVM Kid's Page

Fact Sheet for Pet Owners and Veterinarians about Potential Adverse Events Associated with Isoxazoline Flea and Tick Products

Fast Facts

- The FDA is alerting pet owners and veterinarians of the potential for neurologic adverse events in dogs and cats when treated with drugs that are in the isoxazoline class.
- The FDA-approved drugs in this class are Bravecto, Credelio, Nexgard and Simparica. These products are approved for the treatment and prevention of flea infestations, and the treatment and control of tick infestations.
- Although these products can and have been safely used in the majority of dogs and cats, pet owners should consult with their veterinarian to review their patients' medical histories and determine whether a product in the isoxazoline class is appropriate for their pet.

What should I know?

- The FDA considers products in the isoxazoline class to be safe and effective for dogs and cats but is providing this information so that pet owners and veterinarians can take it into consideration when choosing flea and tick products for their pets.
- Isoxazoline products have been associated with neurologic adverse reactions, including muscle tremors, ataxia, and seizures in some dogs and cats;
- Although most dogs and cats haven't had neurologic adverse reactions, seizures may occur in animals without a prior history;
- Many products are available for prevention and control of flea and tick infestations. You can discuss all options with your veterinarian to choose the right product for your pet.

https://www.fda.gov/AnimalVeterinary/ResourcesforYou/AnimalHealthLiteracy/ucm620940.htm

What about effectiveness of systemics versus topicals?

- Systemics appear to be more effective
  - More accurate application method?
  - More direct approach (flea bites animal rather than happens upon the topical application)?
  - The active ingredient is within the pet's bloodstream rather than being licked off or diluted around the home

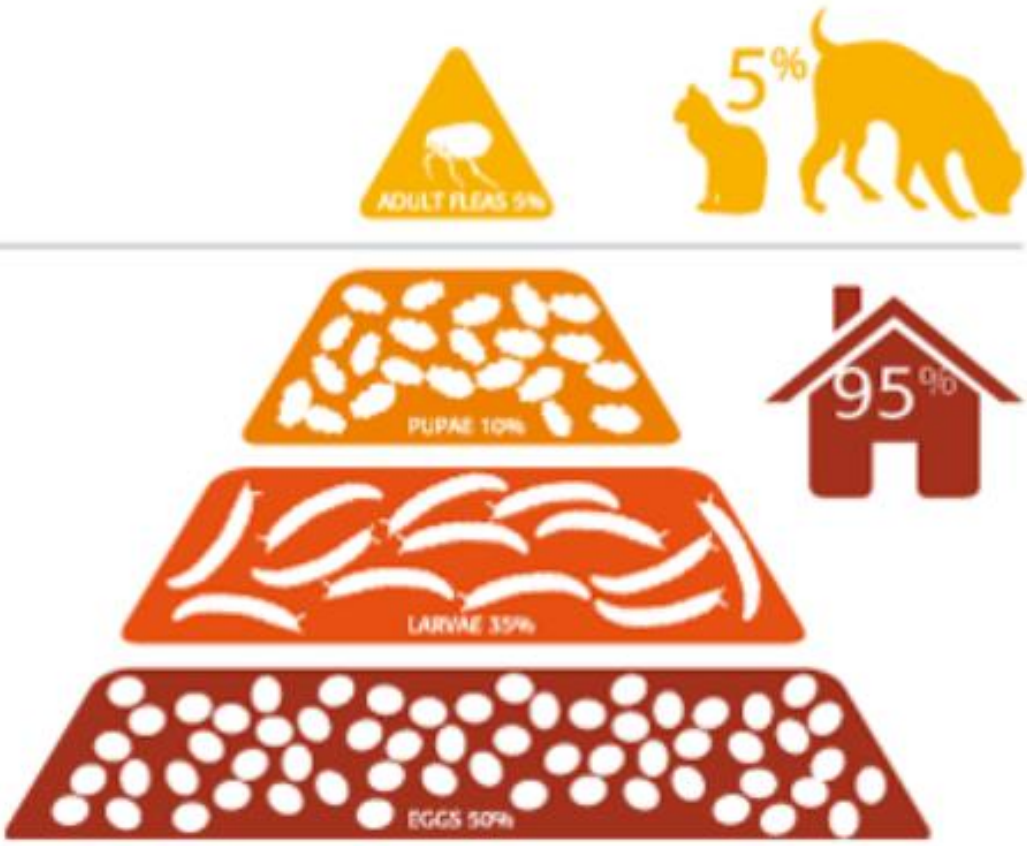
*"In this study systemically acting insecticides such as nitenpyram, and the topically applied but systemically active insecticide selamectin, were **more effective** in interfering with flea blood feeding **than were imidacloprid and fipronil**."*

REF: "Flea blood feeding patterns in cats treated with oral nitenpyram and the topical insecticides imidacloprid, fipronil and selamectin," McCoy, c., et al., Veterinary Parasitology, Vol. 156, pp 293-301, 2008.

Let's look at the flea cycle another way… The Flea Pyramid

- Adult fleas only account for **5%** of the total flea population.

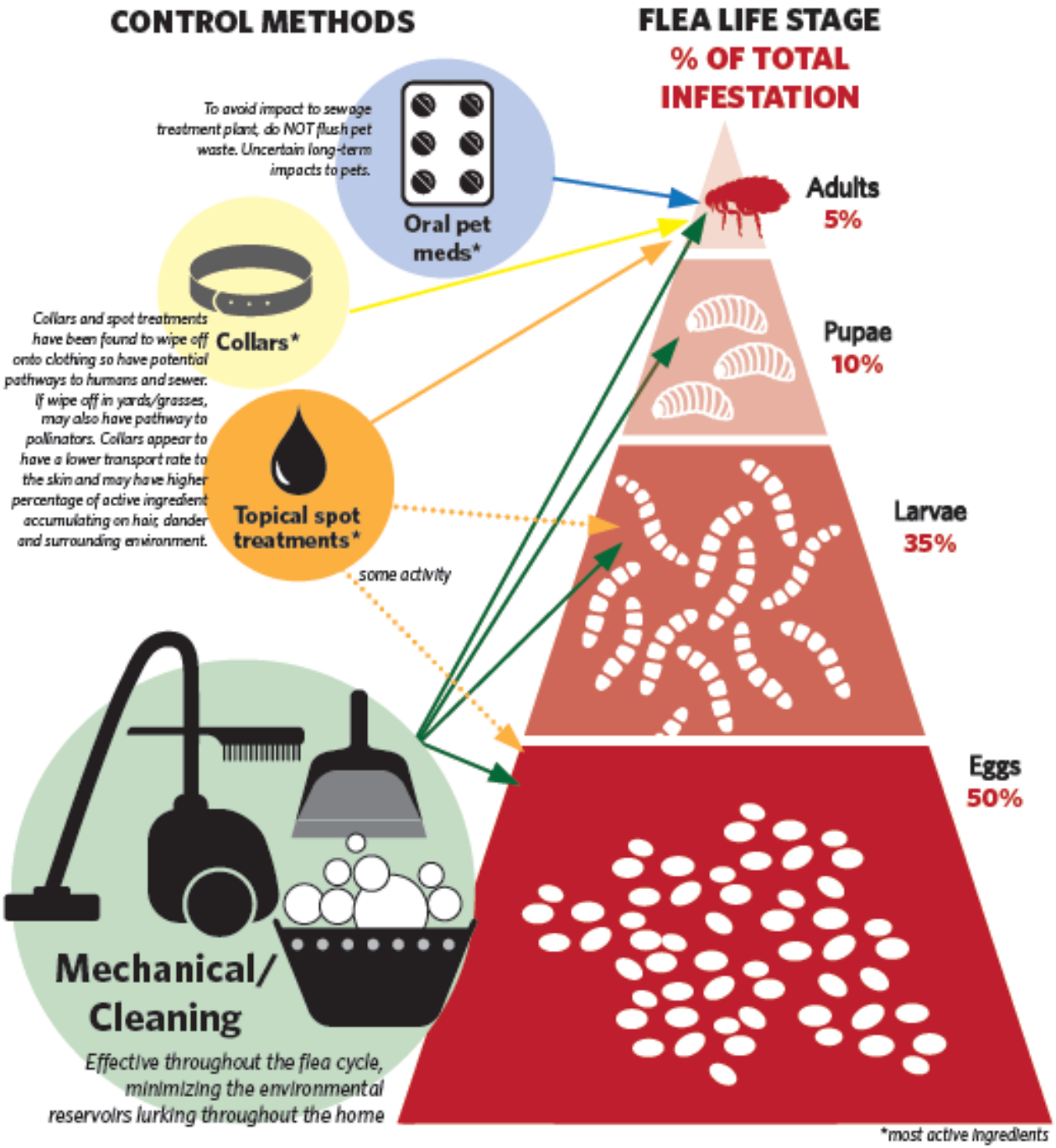
- The other **95%** are the **eggs, larvae and pupae** that remain hidden in carpets, furniture, dog bedding and the garden, waiting to develop and jump onto the dog.



The majority of the flea cycle is the "environmental reservoir" within and throughout your home.

http://www.allcreaturesvet.biz/fleas.html

Integrated Pest Management is the Key



Draft graphic by
Jamie Hartshorn

American Veterinary Medical Association Brochure: Key Excerpts

- *treating only your pet will not eliminate the problem*
- *reduce the flea population in your house by thoroughly cleaning your pet's sleeping quarters and vacuuming floors and furniture*
- *careful and regular vacuuming/cleaning of the pet's living area helps to remove and kill flea eggs, larvae, and pupae*

American Veterinary Medical Association, "External Parasites" brochure from AVMA web site, lasted updated December 2009.

Your Companion Animal is a Lucrative Market for Pharma and Box Stores

- "many similarities between the human health and animal health industries."
- "The global companion animal market is an important segment of the animal health market. It has higher profitability, less price sensitivity and a higher growth rate than livestock."
- As of 2015, this is a $7 billion industry, growing at 6-7% a year
- **The single MOST common companion animal pharmaceuticals are for fleas/ticks.**

Sources: Pharmaceutical challenges in veterinary product development, Imran Ahmed and Kasra Kasraian (Pfizer), Advanced Drug Delivery Reviews 54 (2002) 871–882.
And http://www.prnewswire.com/news-releases/packaged-facts-pet-medications-market-returns-to-form-with-sales-forecast-to-reach-7-billion-in-2015-300163409.html

Public Outreach Challenges

- Flea products change every year
  - Some products are pulled from the marketplace
  - New products emerge
- Our understanding improves regarding their toxicity and transport indoors
- It is far simpler for consumers to buy topicals at the box-stores rather than seek a prescription (for orals) from their vet

What we have been up to:

- Identified professional associations
  - California Veterinary Medical Association
  - Local VMAs
- Prepared messages with help from O'Rorke
  - Created VMA presentation
  - Created article for insert into VMA newsletters
  - Created web pages on www.baywise.org

Messages (to vets)

- Scientific evidence shows that ingredients from indoor flea treatments are transported around the home (and wash off)
- Topical ingredients such as fipronil and imidacloprid are seen throughout a POTW service area, as well as effluent, and waterways; they are toxic to aquatic organisms
- As they are aware, these chemicals only target about 5% of the flea cycle
- Water agencies are seeking your partnership
  - Help us focus these messages
  - Support an IPM message that is easy for clients to understand
  - Consider encouraging oral meds in place of topicals

Veterinary Outreach

- California Veterinary Medical Association
  - Conference call, email updates
- Local VMAs
  - Alameda County
  - **Contra Costa County (July newsletter)**
  - Marin County
  - Peninsula VMA
  - **Santa Clara Valley (July newletter)**
  - **San Francisco (March prez)**
- Other VMAs to consider
  - CA Holistic VMA
  - CA Shelter VMA
  - Delta VMA
  - Napa-Solano VMA
  - Registered Veterinary Technician VMA
- Individual vets
  - Keeping a list of those who may champion the cause

SANTA CLARA VALLEY VETERINARY MEDICAL ASSOCIATION

NEWSLETTER
JULY 2018

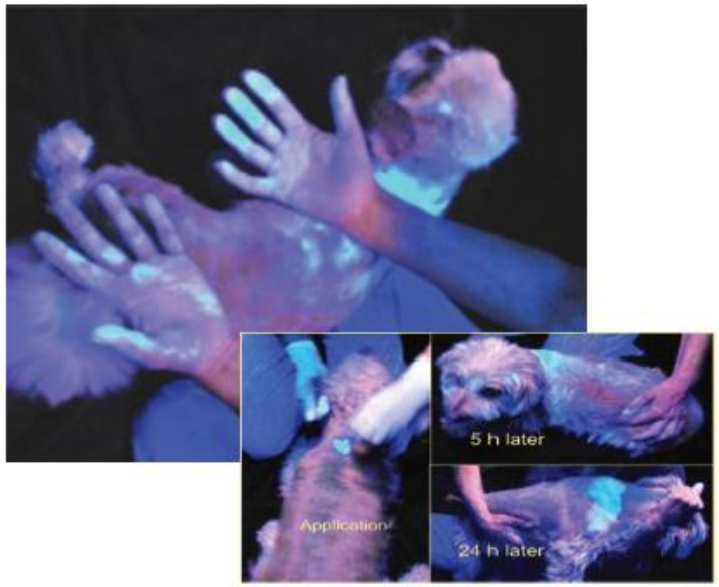
Stephanie Hughes, Consulting Water Quality Engineer and Lecturer of Environmental Science, Santa Clara University, submitted the following article.

Help Pet Owners Avoid Exposure to the Toxic Chemicals in Topical Flea & Tick Control Products

Indoor Flea and Tick Treatments Leading to Environmental and Public Health Concerns

To avoid exposing pets, their owners, and Bay Area waterways to toxic pesticides, members of the Bay Area Clean Water Agencies (BACWA) are urging veterinarians and other animal care professionals to recommend their clients to use oral medications for fleas and tick control, and to discourage the use of topical treatments.

There is increasing evidence that pesticides from flea and tick control products such as spot-on treatments, collars, indoor foggers and sprays are finding their way into our local waterways, sometimes at concentrations above toxicity thresholds for aquatic species. The California Department of Pesticide Regulation (DPR) is also currently reviewing uses of fipronil and imidacloprid, the active ingredient in many common spot-on topicals, due to possible human health risks.



Cont'd:

Helpful tips:

- **Oral medications may be more effective than topical spot treatments while reducing the pet owner's exposure to toxic chemicals.** According to some scientific studies, oral flea and tick medications appear to be more effective than topical treatments and collars possibly because they are easier to use as directed. Some oral flea control products *also* control ticks and other parasites, such as hookworms, roundworms, and/or heartworms.

- **The best way for pet owners to avoid flea problems may be to use oral medications *and* vacuum at home regularly to thoroughly remove larvae and eggs.** It is estimated that adult fleas only account for five percent of the total flea population. The other 95 percent are eggs, larvae and pupae laying around the home.

- **Vets are a trusted source for flea and tick control information.** Please help us educate Bay Area pet owners about the efficacy of oral medications and the toxicity of pesticides in spot-on treatments.

In response to this emerging concern, BACWA has compiled relevant information on our website to help veterinarians and other animal care professionals better understand human health and environmental concerns with topical indoor flea and tick control. For scientific insights, links to ongoing studies, and recommendations for your clients, visit: baywise.org/business/veterinary. Information for pet owners can be found at: baywise.org/residential/pets.

BACWA welcomes your feedback on messages and materials as we educate the public about both the potential human health and environmental impacts of flea and tick control products. Please direct feedback or questions to Stephanie Hughes, the BACWA outreach representative, who can be reached at sehughes@scu.edu or (408) 499-9271.

NOTES:

BACWA represents 55 publicly owned wastewater treatment facilities and collection system agencies serving nearly 7.2 million San Francisco Bay Area residents. BACWA is concerned with pesticides that have transport pathways to the sanitary sewer; even the most sophisticated wastewater treatment plants cannot fully remove complex chemicals like pesticides.

Web site resources for vets:

VETERINARY RESOURCES

Help Pet Owners Avoid Exposure to Toxic Chemicals in Topical Flea & Tick Control Products

Indoor Pet Flea and Tick Treatments Leading to Environmental and Public Health Concerns

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There is increasing evidence that pesticides from external flea and tick control products including spot-on treatments, collars, indoor foggers and sprays are finding their way into our local waterways, sometimes at concentrations above toxicity thresholds for aquatic species. The California Department of Pesticide Regulation (DPR) is also currently reviewing uses of fipronil and imidacloprid, the active ingredients in most spot-on topical treatments, due to possible human health risks.

"Dog and cat flea treatments

BUSINESS ARTICLES

- Dental Office Resources
- Plumbing Resources
- Restaurant Resources
- Marina & Boatyard Resources
- Veterinary Resources

Web site resources for pet owners:

https://baywise.org/residential/pets/

Search

New Tab

YOUR PETS

Flea and Tick Control

Products commonly used to treat fleas and ticks, including spot-on treatments, collars, sprays, and foggers, contain toxic pesticides that can easily spread around your home. Toxic pesticides from these treatments can also end up in our local waterways when you: wash your pet; wash bedding, clothing, floors, carpets or upholstery that comes into contact with your pet; and neglect to dispose of pet waste in the trash.

To avoid exposing your pets, family and Bay Area waterways to toxic pesticides, **please speak to your vet about using oral medications to control fleas and ticks**, and review our recommendations for keeping your pets safe.

- **How to Keep Your Pets Free of Fleas and Ticks**
- **Important Facts about Toxic Chemicals in Certain Flea and Tick Control Products**

"Dog and cat flea treatments suspected of polluting San Francisco Bay" by Paul Rogers, San Jose Mercury News, published November 7, 2017"

RESIDENTIAL ARTICLES

- Around Your Home
- In Your Home
- Your Toilet
- Your Garden
- Your Car
- Out and About
- Ten Easy Tips
- Your Pool, Spa & Fountain
- Pest Control
- En Su Hogar

Next Steps

- Continue outreach to VMAs and individual vets
  - Continue to seek feedback re messages and alternatives
- Our peers
  - Start the dialogue at your office
  - P3S in Monterey
    - Messages and outreach mechanisms
    - Challenges and opportunities
- Spring outreach plan for consumers
  - Bring VMA and P3S feedback to O'Rorke
- Continue discussion with OWOW representatives re. the messages in the OWOW flea documents

Thank you for your attention!

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