Retail Store Survey of Consumer Indoor Pesticide Products

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Surface Water Protection Program

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Abstract:

The Department of Pesticide Regulation's Surface Water Protection Program (SWPP) staff conducted a store survey to provide a snapshot accounting of pesticides currently available to the general public for indoor use. Unlike pesticide use by professional applicators, pesticide use by residential users is not reported or tracked. A store survey of available pesticide products for indoor use and associated active ingredients (AIs) was completed in ten retail stores. There were 62 AIs identified in 194 products. These AI's were then grouped as high, intermediate, and low priority based on the aquatic toxicity and number of products containing each AI. Thirty of the 62 AIs are prioritized for developing and validating analytical methods in a wastewater matrix for future monitoring efforts.

Introduction:

Many indoor-use pesticide products are available to consumers through retail channels. Use information on these products cannot be easily assessed due to the lack of use reporting. Moreover, new products are constantly introduced and changes to formulation and type of AI in existing products are difficult to track. Furthermore, product registration information may not clearly indicate indoor versus outdoor use.

Indoor pesticide use patterns have the potential to enter the wastewater collection system and potentially impact wastewater treatment plants and the receiving waters to which the plants discharge into. Potential pathways to wastewater collection systems (Figure 1) include:

- Pet bathing (grooming, collar, spot on)
- Cleaning (fogger, spray, granules, dust, gel)
- Washing clothing (fogger, spray, outdoor)

Spot on treatments for pets

Home fogger

Sprays

Objectives:

1. Identify AIs currently found in products labelled for indoor use.
2. Categorize number of products by AI, use type, product type, and percent AI.
3. Evaluate primary pesticide groups of identified AIs.
4. Identify priority AIs for development of analytical methods in untreated wastewater.

Materials and Methods:

Retail store surveys are a means for identifying pesticides currently available to the general public for indoor pest control. A shelf survey at 10 retail stores was conducted to evaluate the products available to the public for indoor use. The types of retail stores surveyed were home supply, pet supply, garden supply, hardware and big box. Store surveys were completed on two separate events in the Sacramento region.

The following information was recorded for each individual product:

- Product manufacturer
- Product name
- Product type
- AI
- Percent AI

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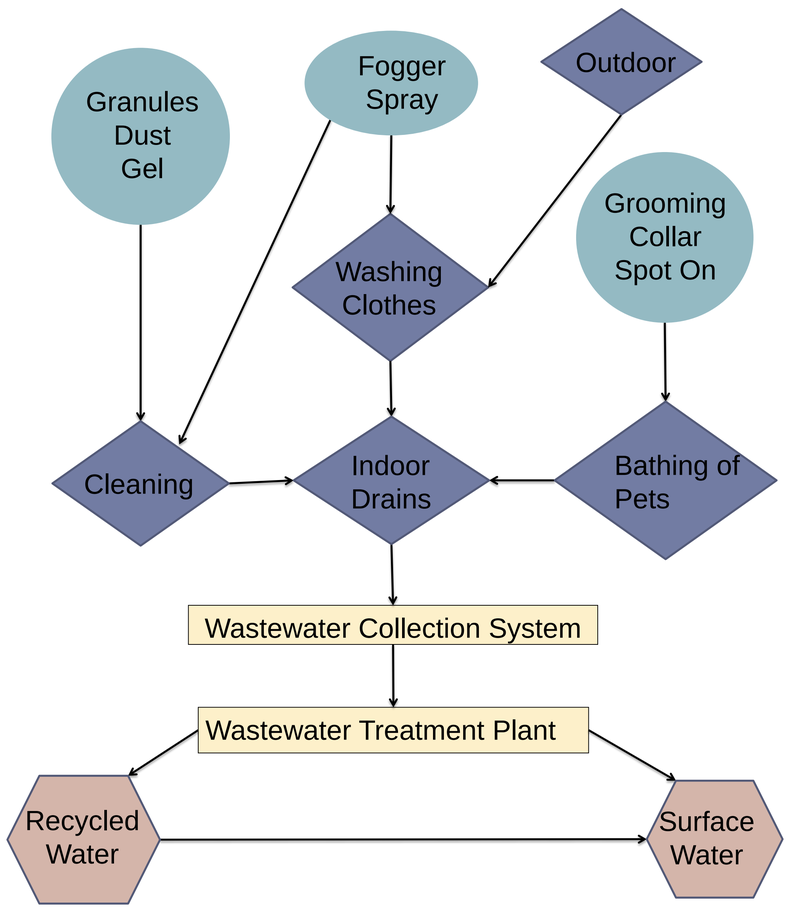

Figure 1- Conceptual model of potential pathways for pesticide products to wastewater collection system (adapted from Moran 2011).

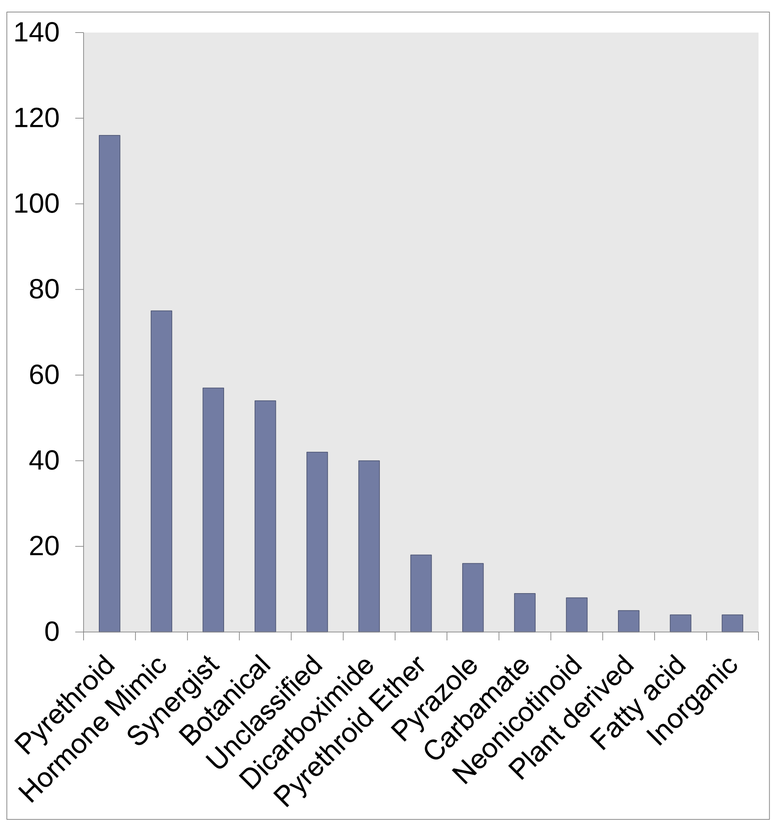

Figure 2 - Number of products grouped by chemical class. Many products contain more than one AI. Chemical classes with less than 2 products not shown.

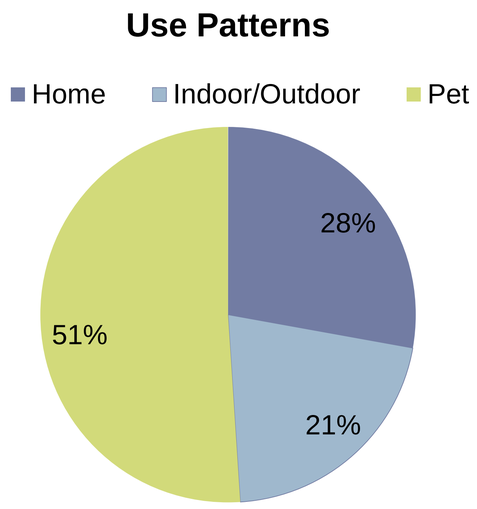

Figure 3 - Percent distribution of product use patterns.

Results & Discussion:

- A total of 194 individual indoor use products were identified with 62 different AIs and 16 chemical classes (Figure 2).
- The five most frequently identified AIs are: piperonyl butoxide (57 products), pyrethrin (54 products), (S)-methoprene (42 products), pyriproxyfen (33 products), and permethrin (25 products).
- Product labels indicate three general use categories: pet, indoor/outdoor, and home (Figure 3 and Figure 4). Both indoor/outdoor and home use products are registered for use in residential settings both inside and outside the home.

The AIs were organized into three groups based on aquatic toxicity levels (EPA aquatic benchmark and the IUPAC minimum aquatic toxicity levels) and the number of products.

- High priority:
  fipronil, pyrethroids, pyriproxyfen and etofenprox
- Intermediate priority:
  piperonyl butoxide, imidacloprid, propoxur, chlorothalonil, tetrachlorvinphos, (S)-methoprene and novaluron
- Low priority:
  ethyl alcohol, indoxacarb, pyrethrins, sulfur and d-limonene

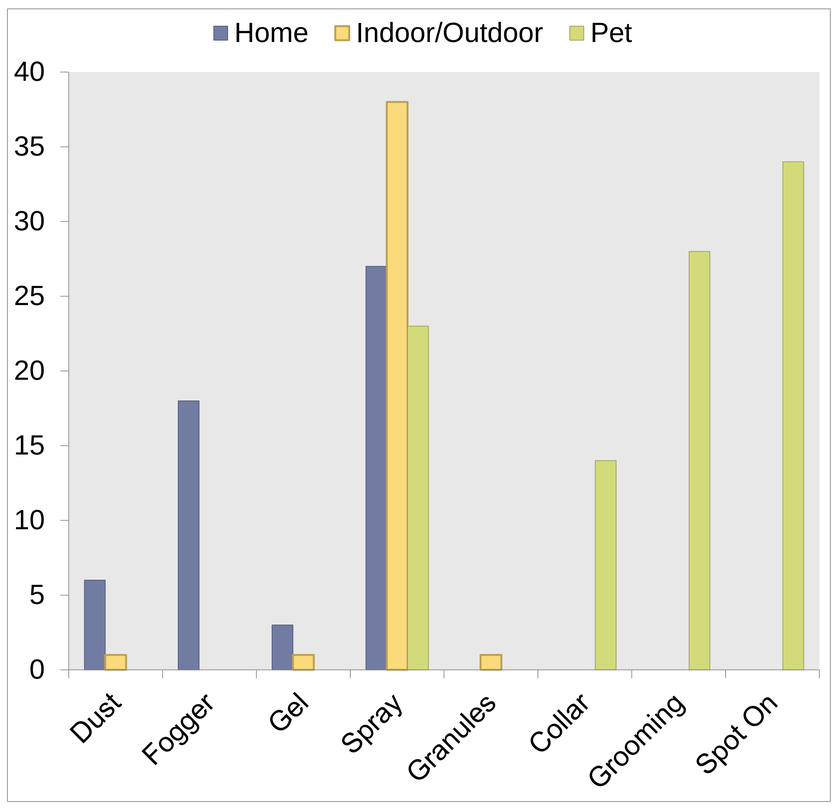

Figure 4 -Total number of products by product type and usage group.

Findings:

Shelf surveys conducted at 10 retail stores identified 194 products with 62 AIs representing 16 chemical classes. Nearly half the products identified are designated for use on pets. The AIs have been classified as either high, intermediate, or low priority for future wastewater monitoring efforts. There may be additional pathways for pesticides to enter the wastewater collection system; however, the shelf survey does provide a reasonable starting point to understand which AIs should be included in efforts to develop and validate analytical methods in a wastewater matrix.

References:

Moran, K.D., and P.L. TenBrook (2011). "Sources of Pyrethroid Insecticides in California's Urban Watersheds: A Conceptual Model." In *Pesticide Mitigation Strategies for Surface Water Quality*; Goh, K.S., J. Gan, and B. Bret, Eds. ACS Symposium Series; American Chemical Society: Washington, DC.

Pictures from:

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http://www.epa.gov/kidshometour/products/fogger.htm