Reducing Pesticide Detections in Urban Creeks through Outreach to Pest Management Professionals

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Goals of Project

• Identify the most effective training methods for PMPs on topics relevant to reducing the potential runoff of pesticides detected in urban water monitoring programs.

• Provide educational opportunities for PMPs to receive hands-on training on pesticide management practices developed by UC Riverside for control of pests around the home and in the landscape.

• Track adoption of these alternative pesticide management practices by PMPs.
Salt Creek Watershed Research Site
WHY SALT CREEK?

UC ANR URBAN RUNOFF RESEARCH

Characterizing Residential Runoff
Urban Landscape Runoff Characterization Study

- **Project Scope**
  - Controlled experiments
  - Residential development landscape studies
  - Data collected:
    - Flows (depth, velocity)
    - Temperature
    - pH
    - Electrical Conductivity
    - Rainfall
• Data collected includes:
  • Nutrients
    • NO₃, Total N, PO₄, Total P
  • Pesticides
    • diazinon, chlorpyrifos, pyrethroids, fipronil
  • Drinking Water Constituents of Concern (COCs)
Residential Drainshed in Southern California

Site Selection Criteria

- 150-450 parcels per site
- Similar age and parcel size
- Accessible outfall location
Example Site Selection Report
Measuring Flow

Velocity Flow Sensor with bubbler for depth

pH and EC sensors
Unanticipated Partners in Monitoring Project
Water Sample Collection Schedule

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<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<td>2010</td>
<td>----</td>
<td>----</td>
<td>Monthly</td>
<td>Monthly</td>
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-3 to 5 early storms of each season
Pesticide Detection Frequency

Orange County

n=44

n=52

n=53

n=49
Bifenthrin Concentration - S Cal

1,032.3 ng/L  
n_n = 60  
n_s = 9

495.0 ng/L

n_n = 70  
n_s = 9

6,121.4 ng/L  
n_n = 69  
n_s = 9

537.9 ng/L

688.5 ng/L  
n = 69  
n = 9
**Fipronil Concentration - S Cal**

- **non-storm 10,004.5 ng/L**
- **storm 804.4 ng/L**
- **1,108.2 ng/L**
- **823.1 ng/L**
- **2,481.1 ng/L**

- **n = 60**
- **n = 70**
- **n = 69**

- **96 hr LC50 Americamysis bahia**

- **nn = 60**
- **ns = 9**
- **nn = 69**
- **ns = 9**
Intensive sampling

• Single-family residential sub-watershed
  – 225-300 homes
  – Orange County – June 2008
  – Common areas irrigated with reclaimed water.
  – Common areas dominated by tall fescue.

• 7 days sampling period
  – 3-hr composite samples
  – Each 3-hr composite consisted of three 300 mL samples.
  – 300 mL samples were taken each hour
Synthetic Pyrethroids

Bifenthrin

Southern California Neighborhood Site

Geomean = 13
Fipronil
Southern California Neighborhood Site

Fipronil Concentration (ng/L)

Geomean = 97

2884.5 ppt
California Department of Pesticide Regulation’s Surface Water Protection Program

• Urban monitoring program in S. California
  – Pyrethroids (bifenthrin, cyfluthrin, cypermethrin, dletamethrin, lambda-cyhalothrin, permethrin)
  – Fipronil plus metabolites
  – Herbicides (2,4-D, dicamba, MCPA, triclopyr, etc…)
  – Neonics (imidaclloprid)

• Selected monitoring during dry and wet weather events
Evaluating Best Management Practices (BMPs)
Effectiveness to Reduce Volumes of Runoff and
Improve the Quality of Runoff from Urban Environments

Laguna Niguel Study Site #9
October 17, 2006
PMP Participants

• Attend and participate in one to two hands-on workshops held by UC Cooperative Extension and UC Riverside in 2015.

• Participate in pre- and post-surveys to verify increases in knowledge and adoption of management practices.

• Record pesticide use at customers located within the study area.

• Participate in concept focus groups
**Active Ingredient 2,4-D**

- The herbicide 2,4-D is often used in agricultural and landscape settings.
- Low application rates are recommended to prevent overuse.

**Garden Chemicals: Safe Use & Disposal**

- Pesticides such as herbicides, fungicides, and insecticides need to be handled with care.
- Always read and follow the instructions on the labels.

**Less Toxic Insecticides**

- Insecticides are substances applied to protect plants.
- Pesticide use can lead to environmental damage.

**Tips for Keeping Ants Out of Your Home**

- Identify the ants and their entry points.
- Use traps or barriers to prevent ants from entering.

**Contact Information**

For more pest and garden information, visit the UC IPM website at www.ipm.uc.davis.edu or the California Department of Pesticide Regulation website at www.cdpr.ca.gov.
Please contact Tammy Majcherek or Darren Haver if you are interested in participating in this educational study.

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