

Pesticides and POTWs

Opportunities and Challenges

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(credit to Preeti Ghuman, Kelly Moran,
Greg Kester, Linda Dorn)

NACWA Meeting
July 20, 2010

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POTWs care about pesticides

- Our NPDES permits call for measuring the effect on Most Sensitive Species
- Pesticides can cause upsets in our plants
 - so can nanosilver
- Pesticides affect our biosolids as well

California Urban Pesticide Facts

- >900 registered pesticide active ingredients
- >11,000 registered pesticide products
- At least 50% of pesticide use is in urban areas
- Often flushed down sewers

Source: Urban Pesticides Use Trends Annual Report
2008, TDC Environmental.



Pesticide compliance - Toxicity & TMDLs

- Toxicity is the compliance key for most pesticides
 - Clean Water Act (CWA) narrative discharge standard “no toxics in toxic amounts”
 - Numerical water quality standards exist for only about 20 of the 900 pesticides
- Total Maximum Daily Loads (TMDLs) are setting tough standards
 - Many in progress for pesticides or toxicity
 - More anticipated (pyrethroids)



POTWs and Control of Pesticides

- Cannot regulate sales or use
- Can regulate discharge
 - homeowners?
- Can use voluntary programs
 - Even expensive programs usually can't obtain reductions needed for compliance



What Is Tri-TAC?

- Represents POTWs from 3 sponsoring organizations:
 - League of California Cities (480 cities)
 - California Association of Sanitation Agencies (216 member agencies)
 - California Water Environment Association (~9,000 members)
- Includes representatives from most of the State's sewer population
- Goal:
 - Improve “the overall effectiveness and accountability of environmental programs that impact POTWs in California.”
- Monthly Meetings – Water, Land, and Air Committees

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Tri-TAC Major Pesticide Projects

- California DPR Pyrethroid Reevaluation
- Comment Letters to USEPA dockets
- Catch all the important items

Key US EPA Activities

- Pesticide Registration & Registration Review
 - Conducted by pesticide “active ingredient”
 - 15 year review cycle
 - Perform environmental risk assessments
 - Don’t use water quality criteria
 - Often don’t consider sewer discharges
 - Don’t address cumulative risks
 - Don’t fully assess degradates, “inerts” & synergists
 - Allow public comments

Key California Department of Pesticide Regulation (DPR) Activities

- **Pesticide Product Registration**

- Each product individually (by name, not a.i.)
- No evaluation of aquatic toxicity for urban products
- No environmental risk assessment
- No assessment of sewer discharges
- Almost no public information—hard to comment

- **Reevaluation**

- Can address environmental problems
- Want proof of harm prior to action
- Decide breadth of requirements without public involvement

Pesticide/Water Quality Regulatory Gaps

- CWA and pesticide registration not coordinated
 - Pesticides registered - will cause CWA violations & POTW compliance problems
 - Pesticide registration rarely considers sewer discharges
 - Looking at “harmonization”
- Water regulators and pesticide regulators work independently (most of the time)
- US Food and Drug Administration (FDA) evaluates impacts of pesticides with pharmaceutical uses

Tri-TAC Pesticide Activities

- Identify pesticides of concern
- Review environmental risk assessments
- Prepare comment letters
- Participate in meetings, conference calls & stakeholder groups
- Work with Urban Pesticide Pollution Prevention Project (UP3 Project)
 - Cost effective
 - Coordinate with existing regulatory processes
 - Request special action to address current problems
 - Utilize UP3 Project scientific and regulatory support

Tri-TAC Comment Letters

- Pyrethroids/Pyrethrins
 - 14 letters have been sent since 12/02
- Head lice treatments
- Synergists
- Impregnated fabrics
- Samsung “Silver Wash” washing machines
- Inert ingredient disclosure
- Data requirements
- Procedural rules

DPR Pyrethroid Reevaluation

- Begun in August 2006
- Requires registrants submit additional data for 20 pyrethroids
- Requires registrants to conduct POTW effluent monitoring for permethrin (at their cost)
 - Pathways: pet shampoos, products in or on fabrics & products used to treat sewers

Pyrethroid Monitoring

- Low detection limits needed
 - Water— less than 0.001 ppb
 - Sediment— less than 1 ng/g (dry weight)
 - Few labs can achieve
 - Research:
 - California Department of Fish and Game
 - Southern Illinois University
 - Commercial:
 - CRG Marine Laboratories, Torrance, CA
 - Caltest Analytical Laboratory, Napa, CA
 - AXYS Analytical Services, BC, Canada



Photo courtesy USGS

Tri-TAC Response

- Supportive of reevaluation
- Requested influent, effluent & biosolids monitoring for 8 pyrethroids
- Requested influent, effluent & biosolids analytical and sampling methods be developed by registrants

Weston and Lydy Study

Environ. Sci. Technol., 2010, 44 (5), pp 1833–1840

- Evaluated pyrethroid pesticide toxicity in the Sacramento/San Joaquin Delta
- Collected dry and wet weather whole water samples in 2008 & 2009 for:
 - toxicity testing with *Hyalella azteca*
 - analysis of pyrethroids (and chlorpyrifos)
- Evaluated effluent from 3 POTWs
 - Tertiary oxidation ponds – Stockton
 - Secondary activated sludge – Sacramento
 - Tertiary activated sludge – Vacaville

Weston and Lydy POTW Study Results

- Pyrethroids often found in POTW effluent, usually right around the EC_{50}
- Frequency of toxicity highly variable among facilities (100% Sac., 0% Stockton)
- Further study will be necessary

Contact Information

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Acknowledgement:

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