

# UP3 Project



## Estimated Urban Use of UP3 Project Priority Pesticides

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Urban Pesticides Pollution Prevention Project



# Acknowledgements

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# Acknowledgements

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## ■ Peer Review Team

- Linda Dorn, Sacramento Regional County Sanitation District
- Preeti Ghuman, Sanitation Districts of Los Angeles County
- Janet O'Hara, San Francisco Bay Regional Water Quality Control Board
- Nan Singhasemanon, California Department of Pesticide Regulation
- Dave Tamayo, Sacramento County Stormwater Quality Program
- Patti TenBrook, U.S. EPA Region 9

## ■ Project Management & Editing

- Athena Honore, SFEP



# Methodology

## Same as Previous UP3 Reports

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- Pesticides selected by via literature review
  - All Pesticides on UP3 Priority Pesticides List
- Urban use estimates for California
- Focus on pyrethroids
  - Urban High-Use Pyrethroids
    - Broadcast outdoor use / used indoors
    - Bifenthrin, cyfluthrin, beta-cyfluthrin, cypermethrin, deltamethrin, esfenvalerate, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, tralomethrin
  - Other Urban Pyrethroids
    - Limited outdoor use / used indoors
    - Cyphenothrin, etofenprox, resmethrin, sumithrin, tetramethrin



# Quantitative Estimates Based on DPR Data

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- Professional Use
  - California Pesticide Use Reporting (PUR)
- Sales
  - DPR Pounds of Pesticides Sold Reports  
<http://www.cdpr.ca.gov/dprdatabase.htm>

Most recent data from 2008

DPR data have significant uncertainties



# Approach to Estimating Urban Pesticide Use with DPR Data

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$$\text{Urban Use} = \text{Reported Urban Use} + \text{Over-the-Counter (OTC) Sales}$$

*Assumption:*

- *OTC Sales = Urban use that does not require reporting (i.e., residential) (overestimate)*



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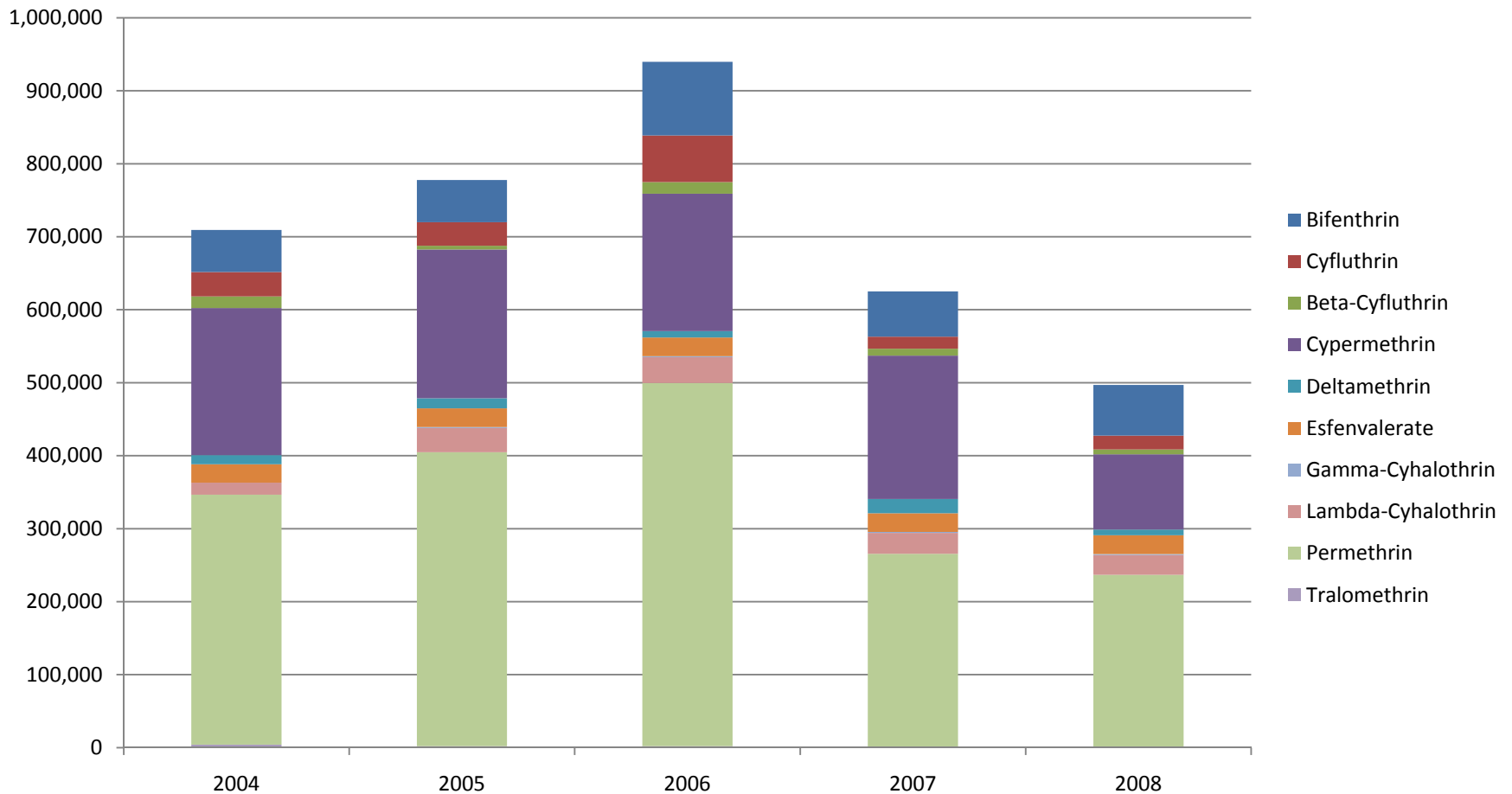
*Reality check:*

- *Estimated OTC sales of bifenthrin 2004/05 = 13,000 lb ai*
- *Scotts actual OTC sales of bifenthrin 04/05 = 11,000 lb ai*



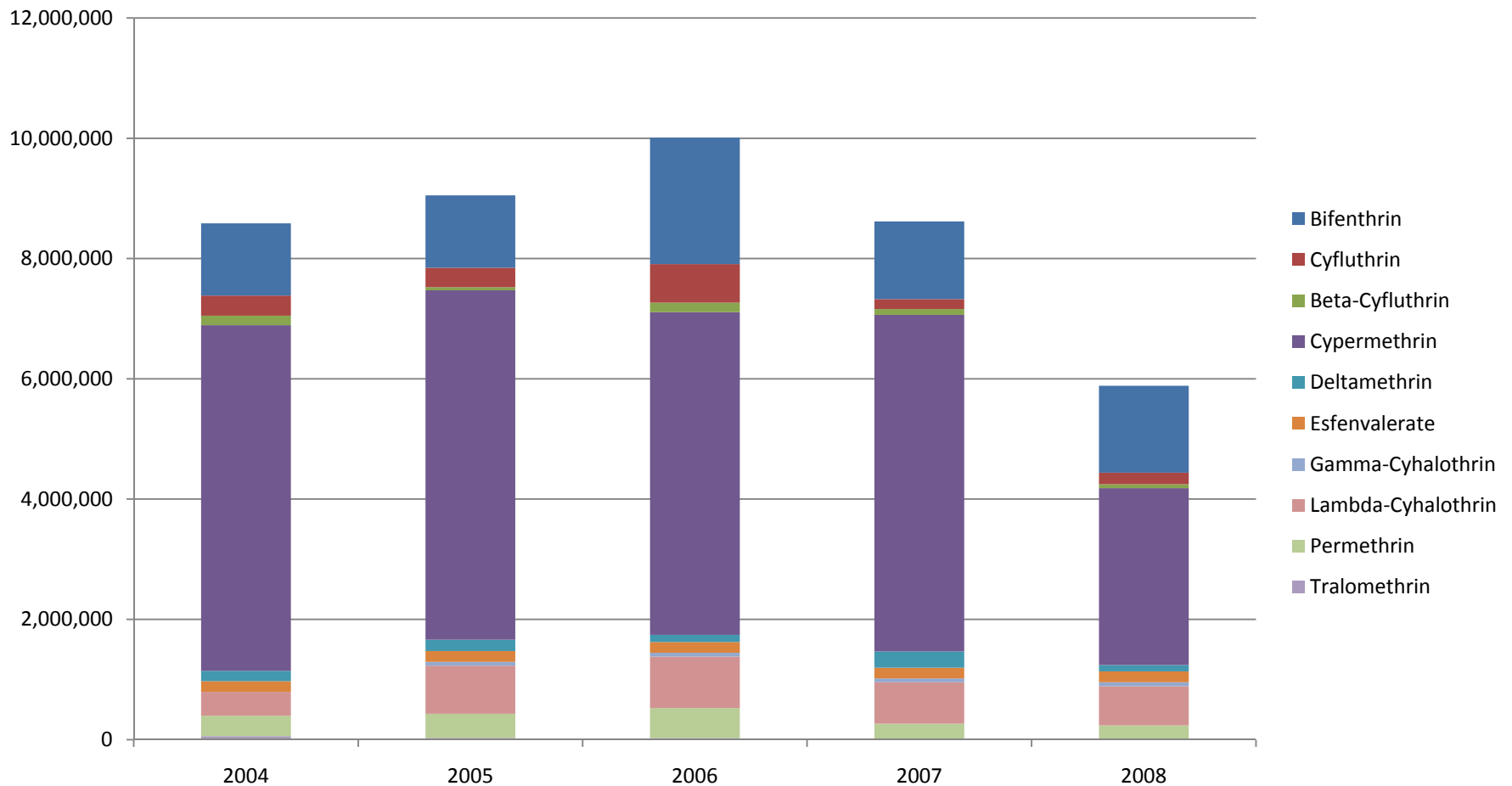
# Urban Pyrethroid Use on the Decline?

California Urban High-Use Pyrethroids Estimated Urban Use 2004-2008  
(Pounds of Pesticide Active Ingredient)



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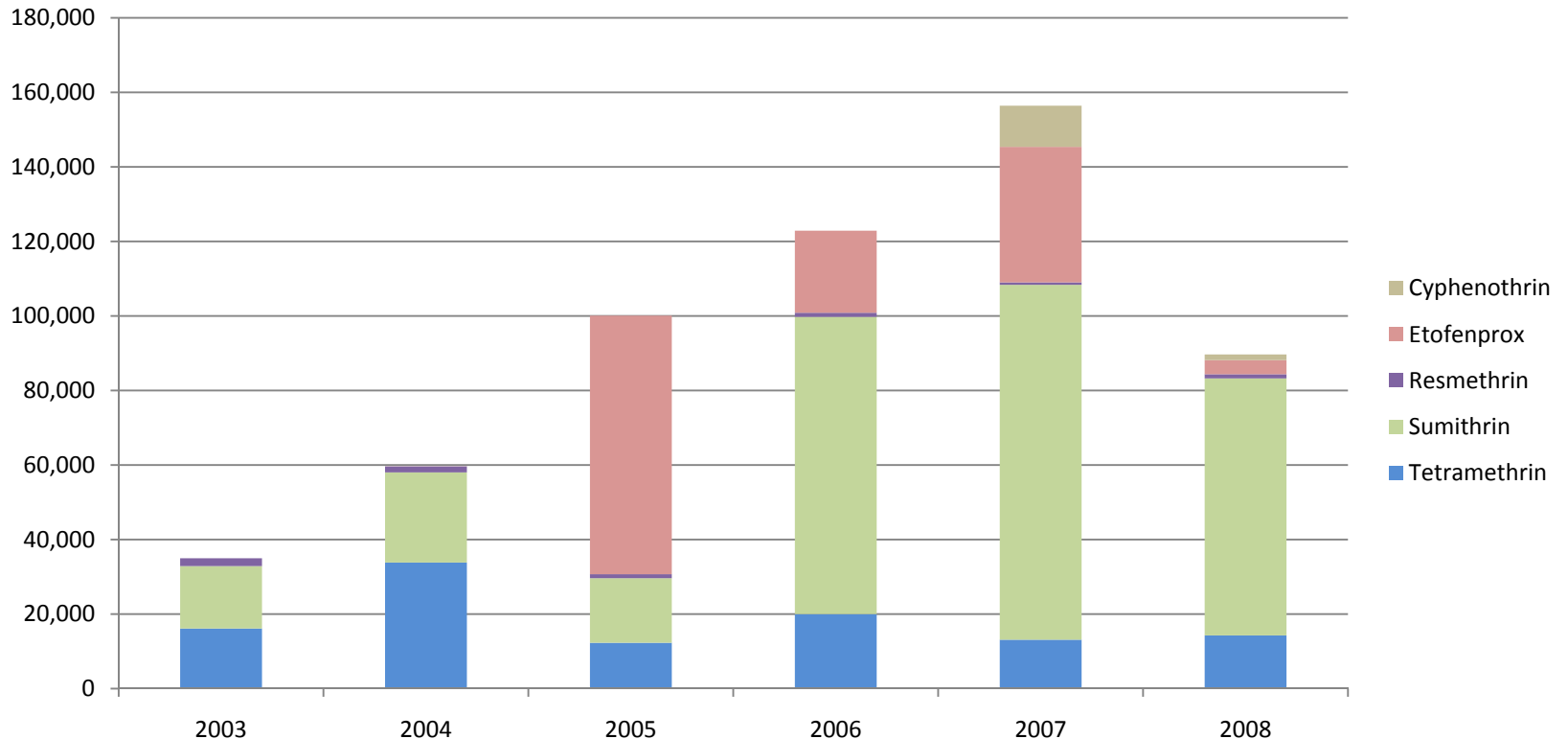
California Urban High-Use Pyrethroids Estimated Urban Use 2004-2008  
(Expressed in Terms of Toxicity Using *Permethrin Equivalents*)



Source: California DPR Pesticide sales data, DPR pesticide use reports, and mathematical calculations conversion to permethrin equivalents based on aquatic toxicity (see report).

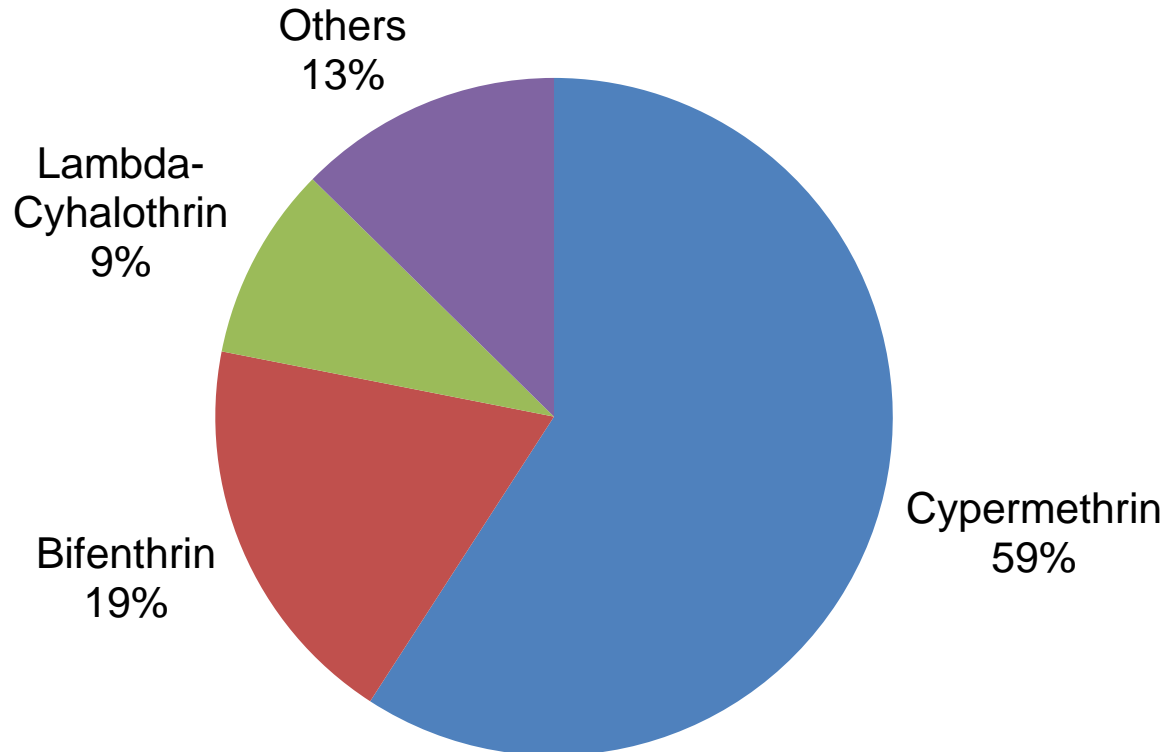
# Sumithrin Most Used of Other Urban Pyrethroids

California Other Urban Pyrethroids Sales 2003-2008 – Very Little Ag. Use  
(Pounds of Pesticide Active Ingredient)



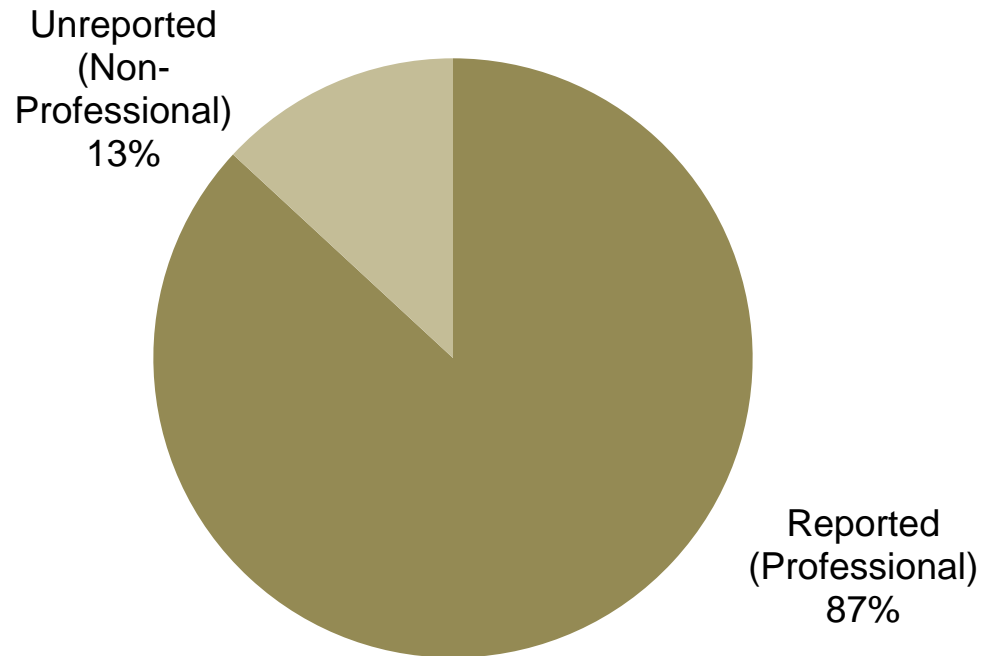
# Top 2 Pyrethroids Used in Terms of Toxicity: Bifenthrin & Cypermethrin

California Urban High-Use Pyrethroids Estimated Urban Use  
2007-2008 2-Year Average (*Permethrin Equivalents*)



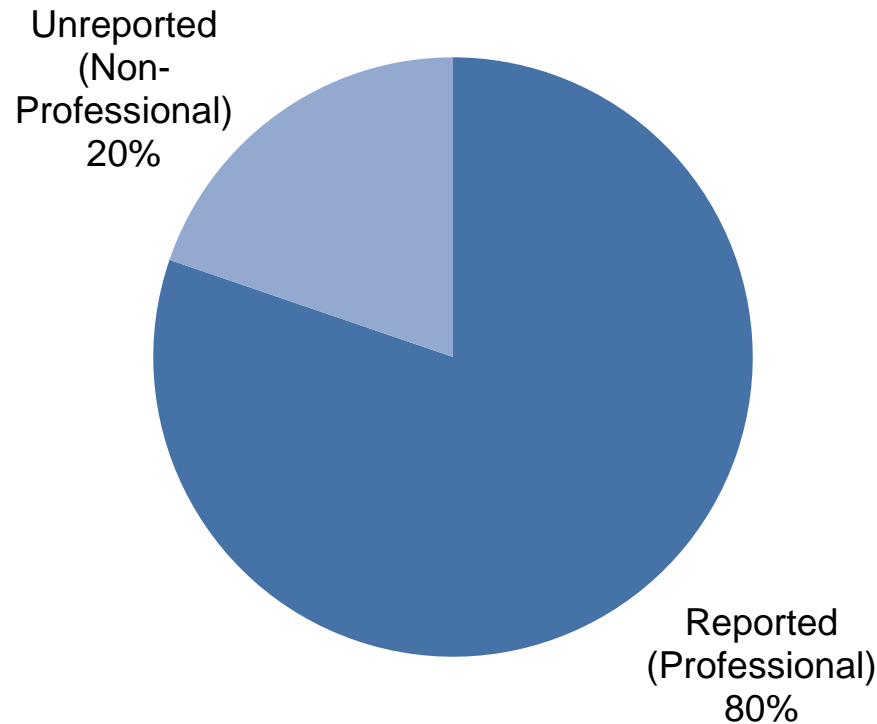
# Most Urban Pyrethroid Use is by Professional Applicators

California Urban High-Use Pyrethroids Estimated Urban Use  
2007-2008 2-Year Average (*Permethrin Equivalents*)



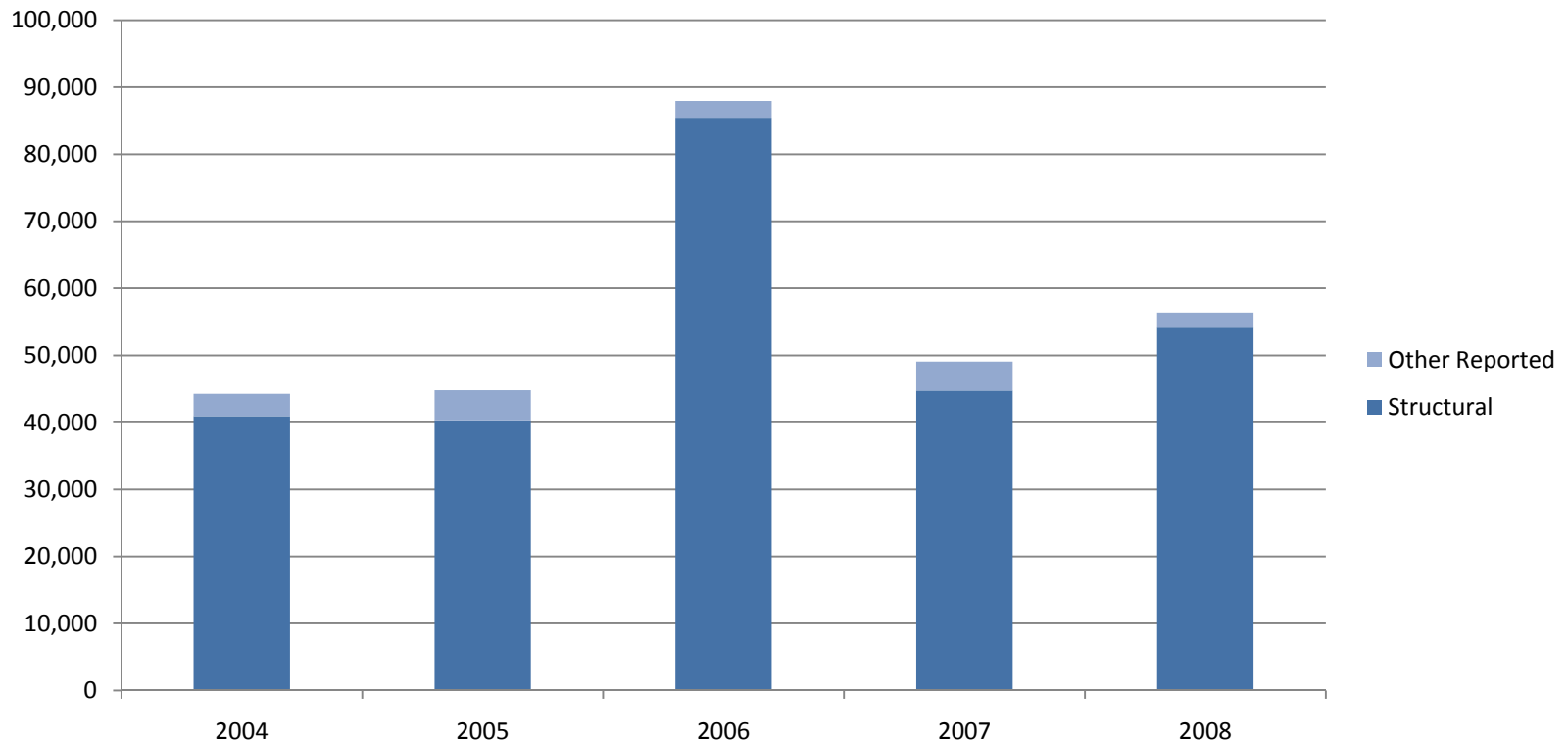
# Most Urban Bifenthrin Use is by Professional Applicators

California Bifenthrin Estimated Urban Use, 2007-2008 2-Year Average  
(Pounds of Active Ingredient)



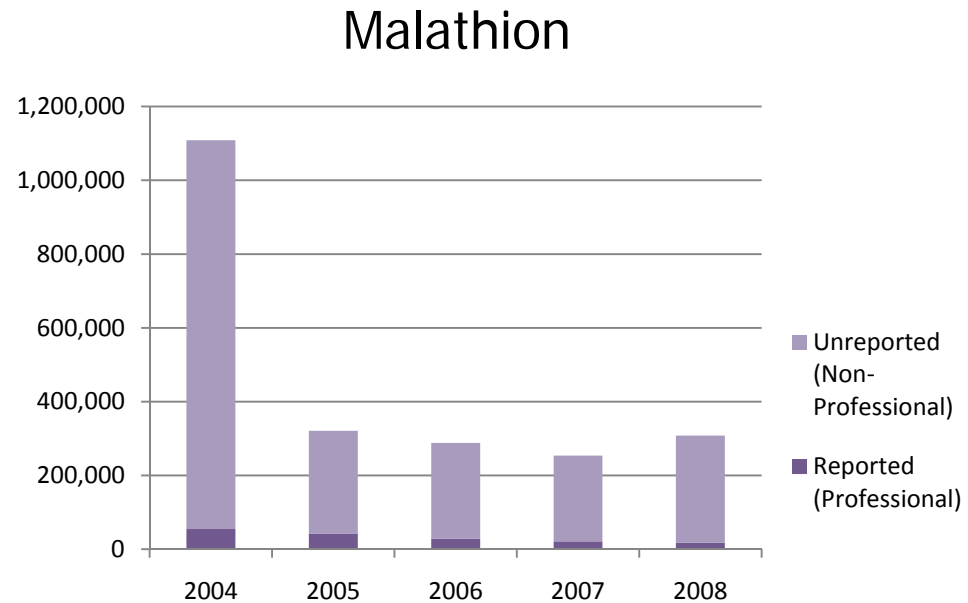
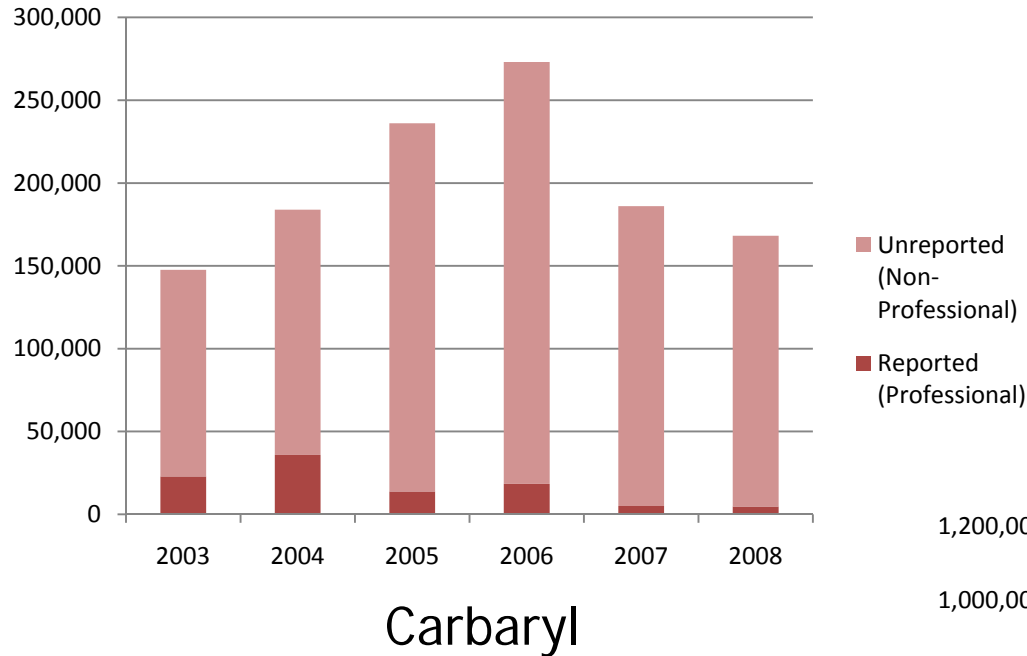
# >90% of Professional Urban Bifenthrin Use is for Structural Pest Control

California Bifenthrin Reported (Professional) Urban Use, 2004-2008  
(Pounds of Active Ingredient)



# Carbaryl and Malathion Use Decreasing

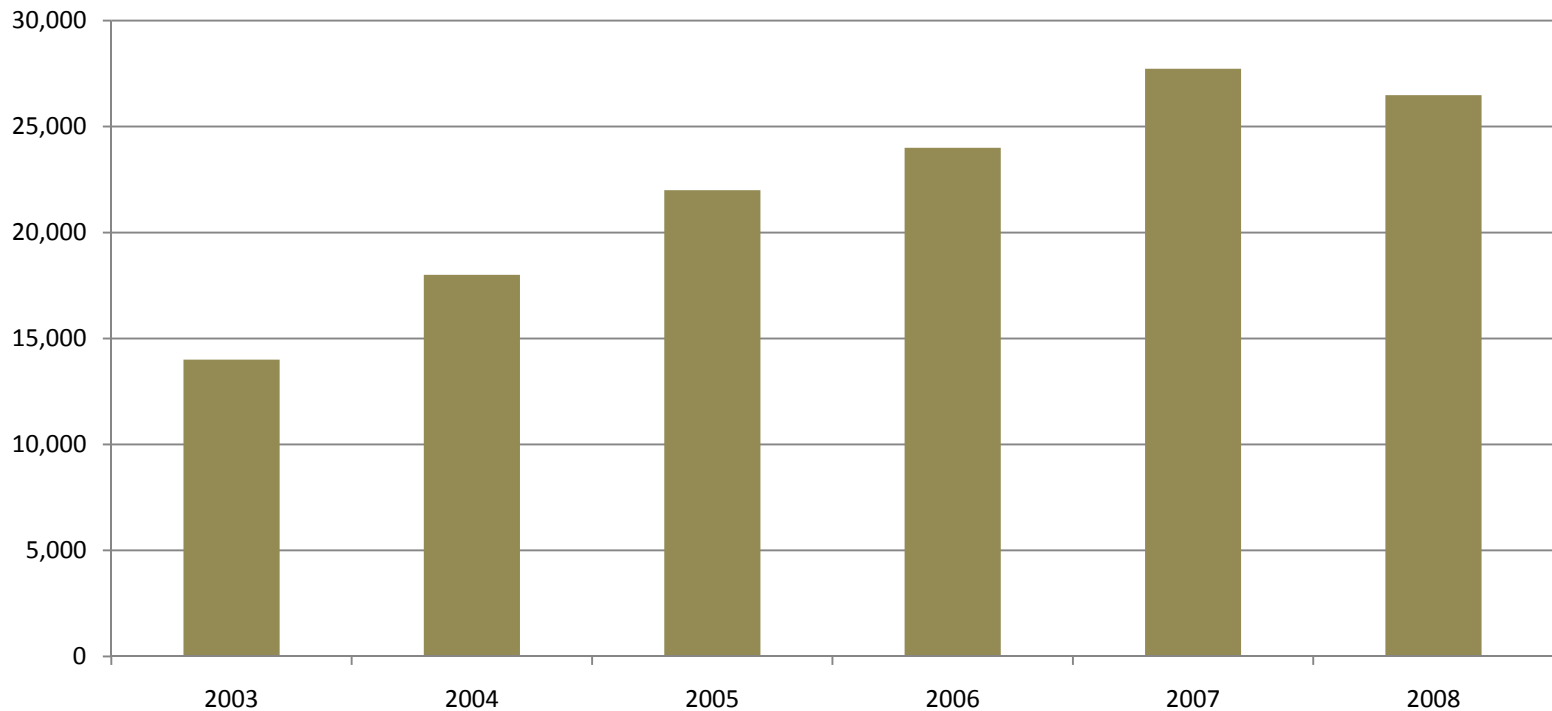
California Estimated Urban Use 2003-2008  
(Pounds of Pesticide Active Ingredient)





# Urban Fipronil Use Doubled Between 2003 and 2008

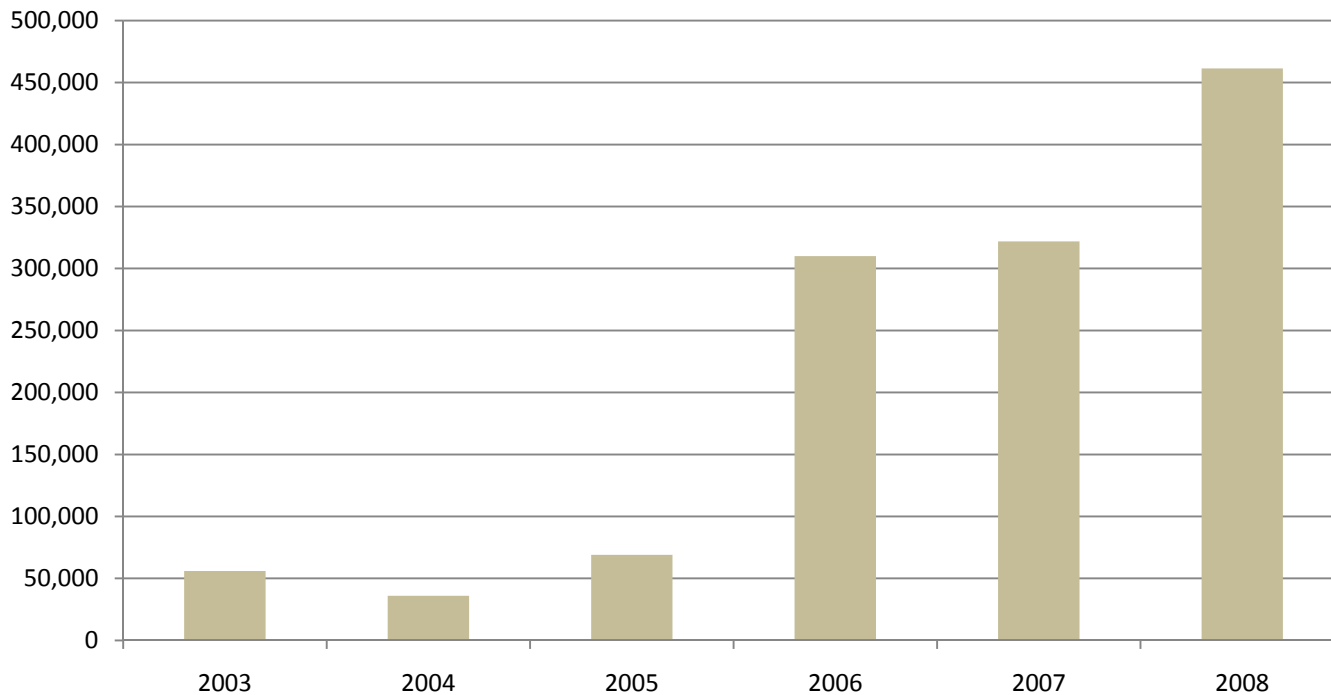
California Fipronil Sales 2003-2008 – Only Urban Products  
(Pounds of Pesticide Active Ingredient)



# Urban PHMB Use Grew 8-Fold Between 2003 and 2008

Swimming Pool Biocide

California PHMB Sales 2003-2008 – Very Little Ag. Use  
(Pounds of Pesticide Active Ingredient)





# Conclusions - Pyrethroids

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- Pyrethroids the most commonly applied insecticides in California urban areas
- Is pyrethroid use on the decline? Maybe
- Cypermethrin and bifenthrin account for almost 80% of the pyrethroid-related aquatic “toxicity equivalents” estimated used in California urban areas



# Conclusions - Pyrethroids

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- Reported professional use nearly 90% of urban pyrethroid use
- Structural pest control >95% professional urban pyrethroid use
- Urban professionals apply nearly all cyfluthrin, beta-cyfluthrin, cypermethrin, deltamethrin, and permethrin and 80% of bifenthrin used in urban areas
  - These pyrethroids most often found at toxic levels in California urban creek sediments



# Conclusions – Pyrethroids Indoors

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- Other urban pyrethroids that have not been monitored—particularly Sumithrin—are used indoors and could potentially contribute to POTWs
- Insufficient data to identify whether professional applications indoors could significantly contribute to POTWs



# Conclusions – Other Pesticides

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- Fipronil use almost doubled from 2003-2008
- Carbaryl and malathion on the decline
  - Reported urban use of carbaryl dropped nearly 80% between 2004 and 2008
- PHMB sales grew 8 times from 2003-2008
  - Chlorine alternative
- Major sales increases for two marine antifouling biocides—Irgarol 1051 and zinc pyrithione

# UP3 Project



**For all the details see the full report**

[http://www.up3project.org/documents/  
UP3Use2010\\_Final.pdf](http://www.up3project.org/documents/UP3Use2010_Final.pdf)