

UP3 Project



Brief Look at Bifenthrin

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Bifenthrin is the Leading Contributor to Pyrethroid Toxicity in Urban Sediments Statewide

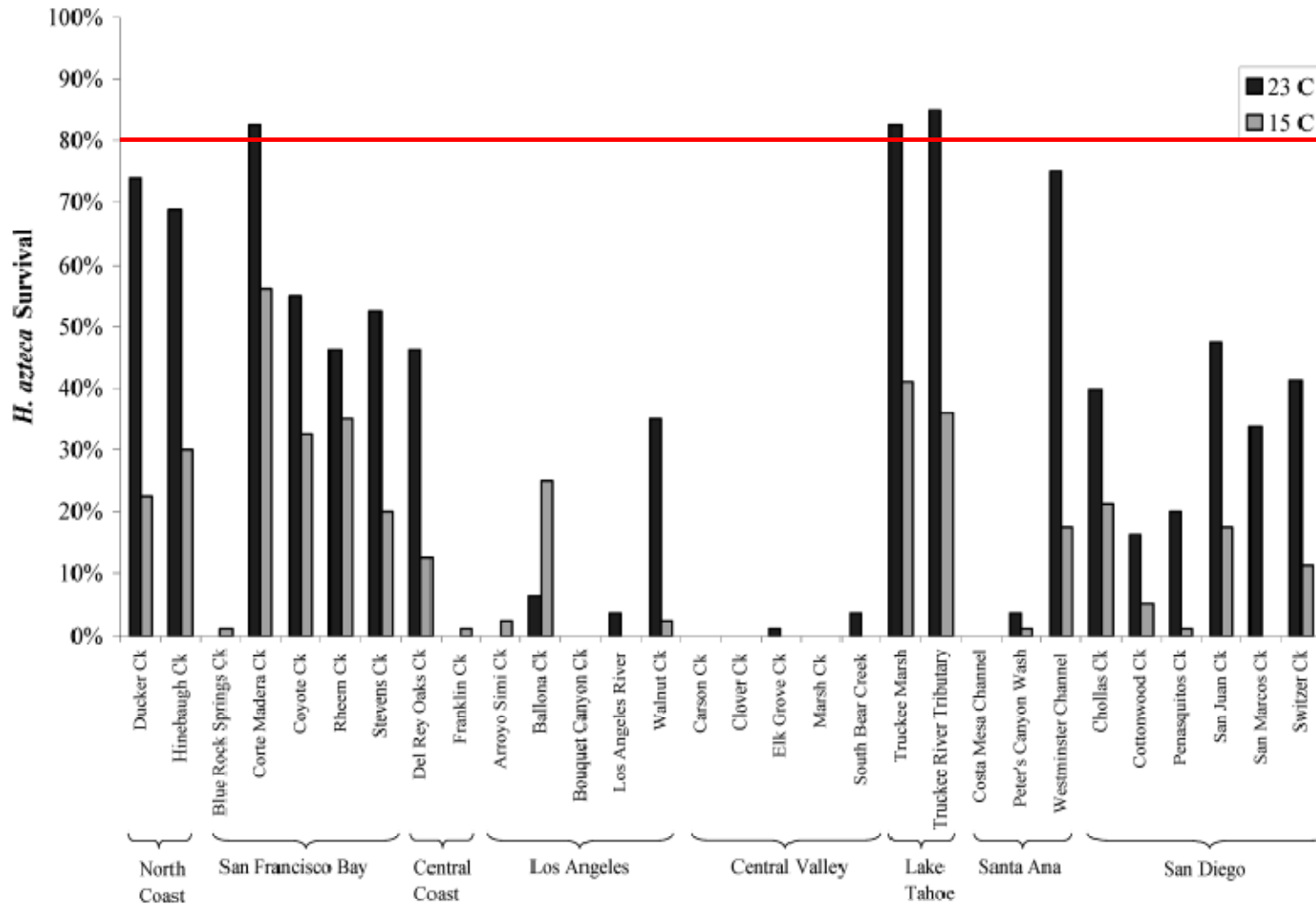


FIGURE 2. *H. azteca* percent survival from sediment toxicity tests conducted at 23C and 15C with sediments from each urban creek.

Source:
Holmes et
al, ES&T,
2008

Bifenthrin Toxicity Overview

Test organism - *Hyalella azteca*

- Standard aquatic toxicity test methods
- Test organism resides in California



Hyalella azteca (amphipod)

■ Sediments

- Urban creeks, ag drains, a few rivers
- Bifenthrin detected in most samples, TU > others

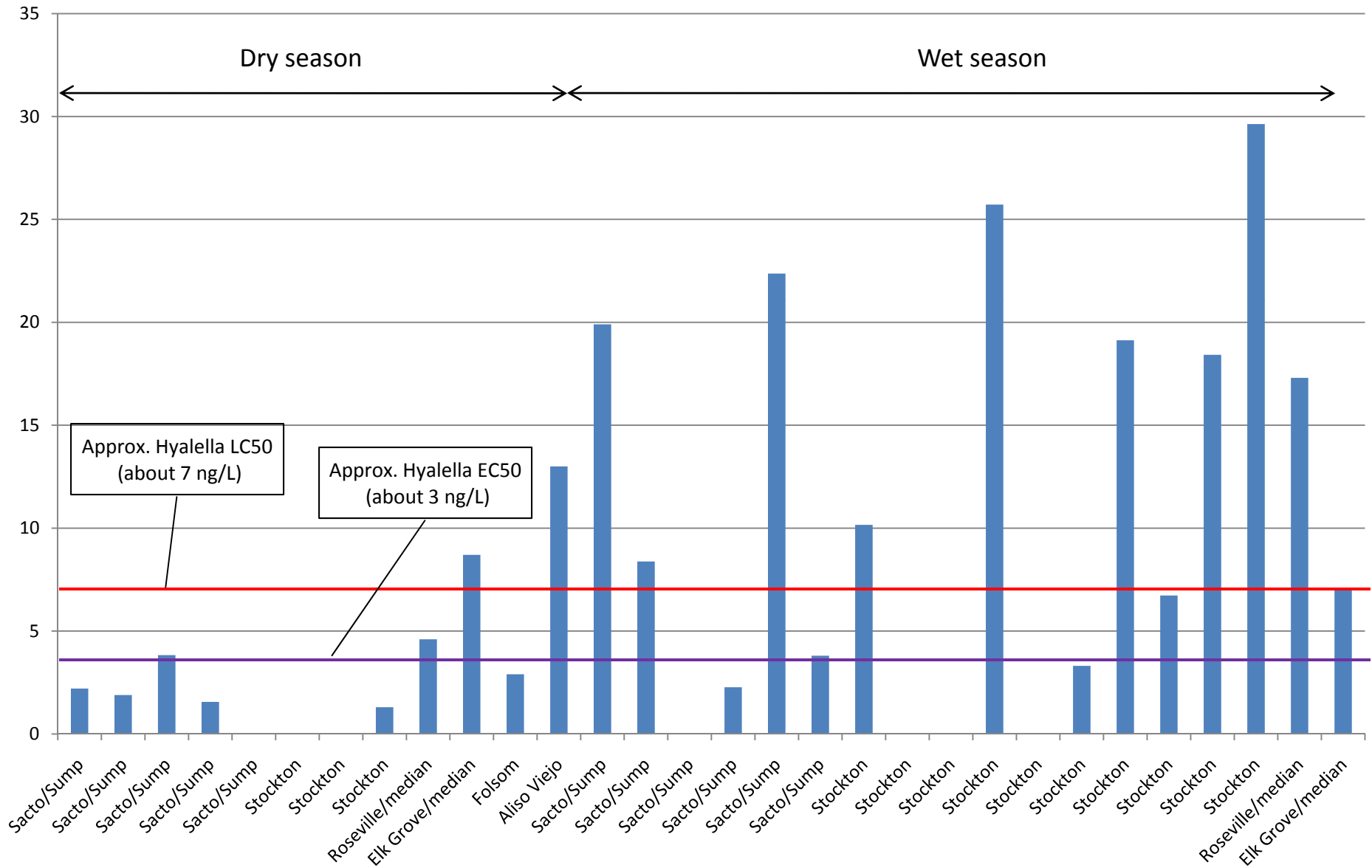
■ Water

- Both storm events & dry weather
- Urbanized areas
- Bifenthrin detected in most samples, TU > others

■ POTW Effluent

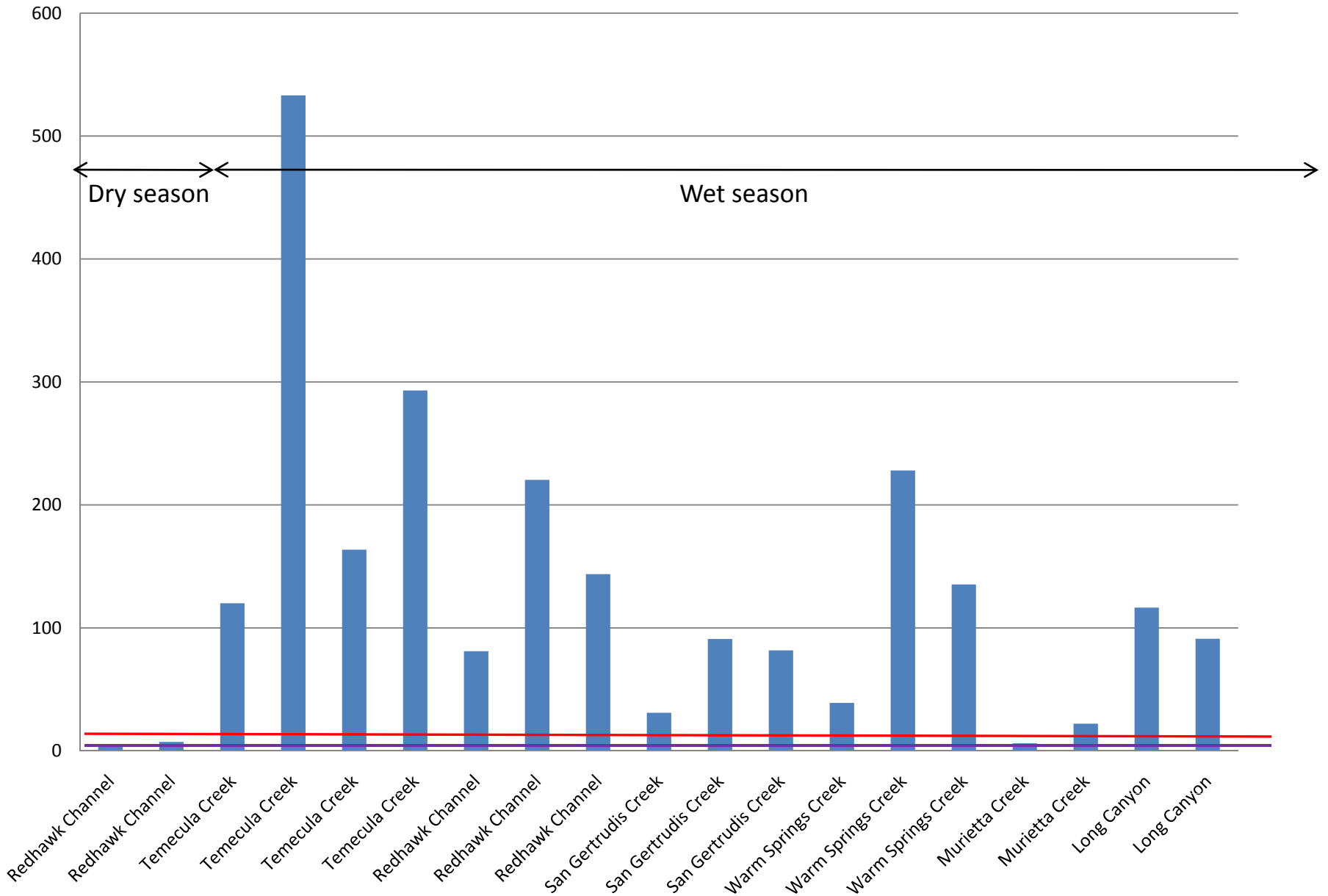
- Weston delta POTW study
- Bifenthrin detected in about 25% of samples

Bifenthrin Concentrations in Storm Drain Samples, 2004-2008 Samples



Source: UP3 Project compilation of largely unpublished data from various monitoring programs and research studies.

Bifenthrin in Santa Margarita (Riverside County) Watershed Urban Creek Water Samples 2007-2009



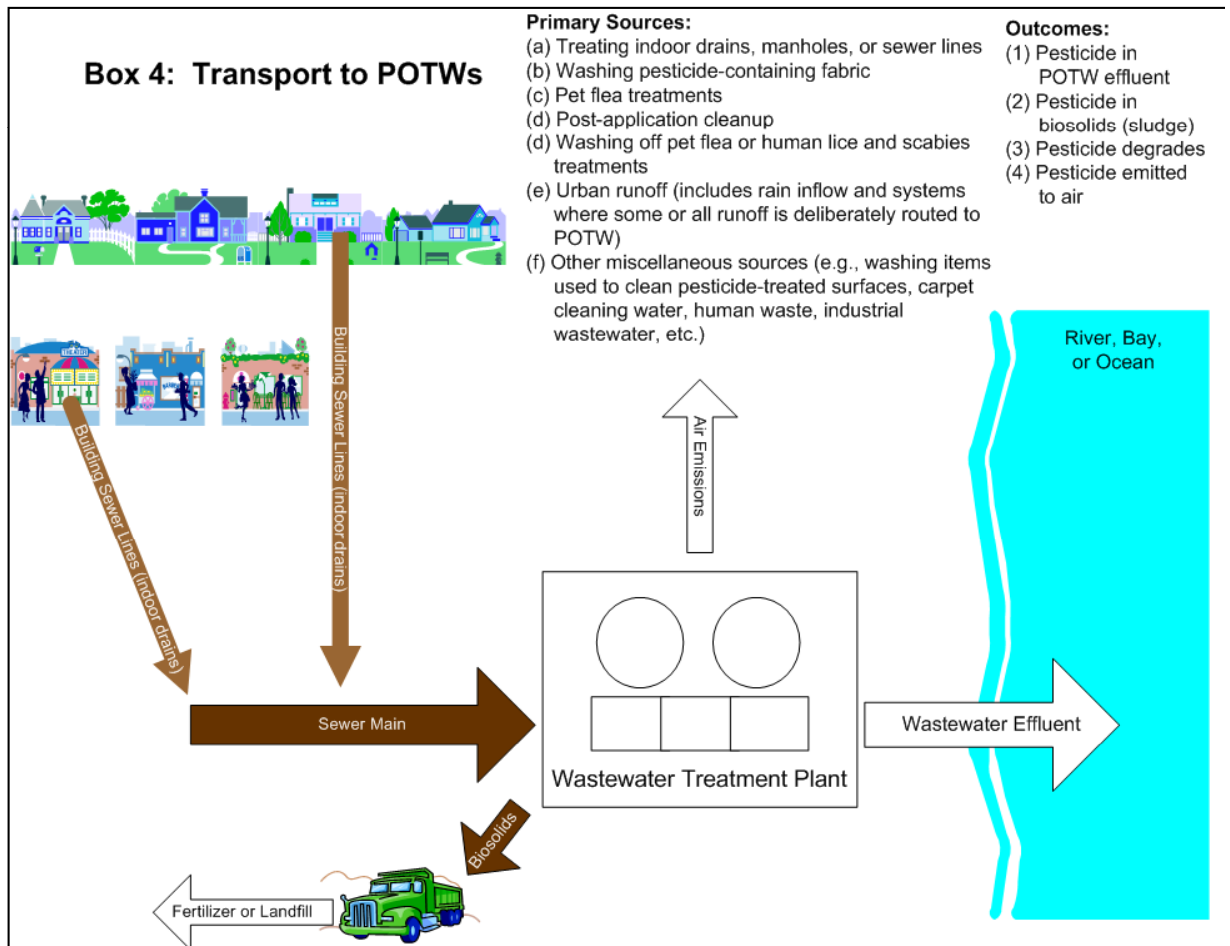
Source: Riverside County Flood Control and Water Conservation District Monitoring Reports.

Not a Small Problem



POTW Effluent

- Are data representative?
- Source?
 - Cleanup?
 - Indoor use?
 - Kennels?
 - Other?

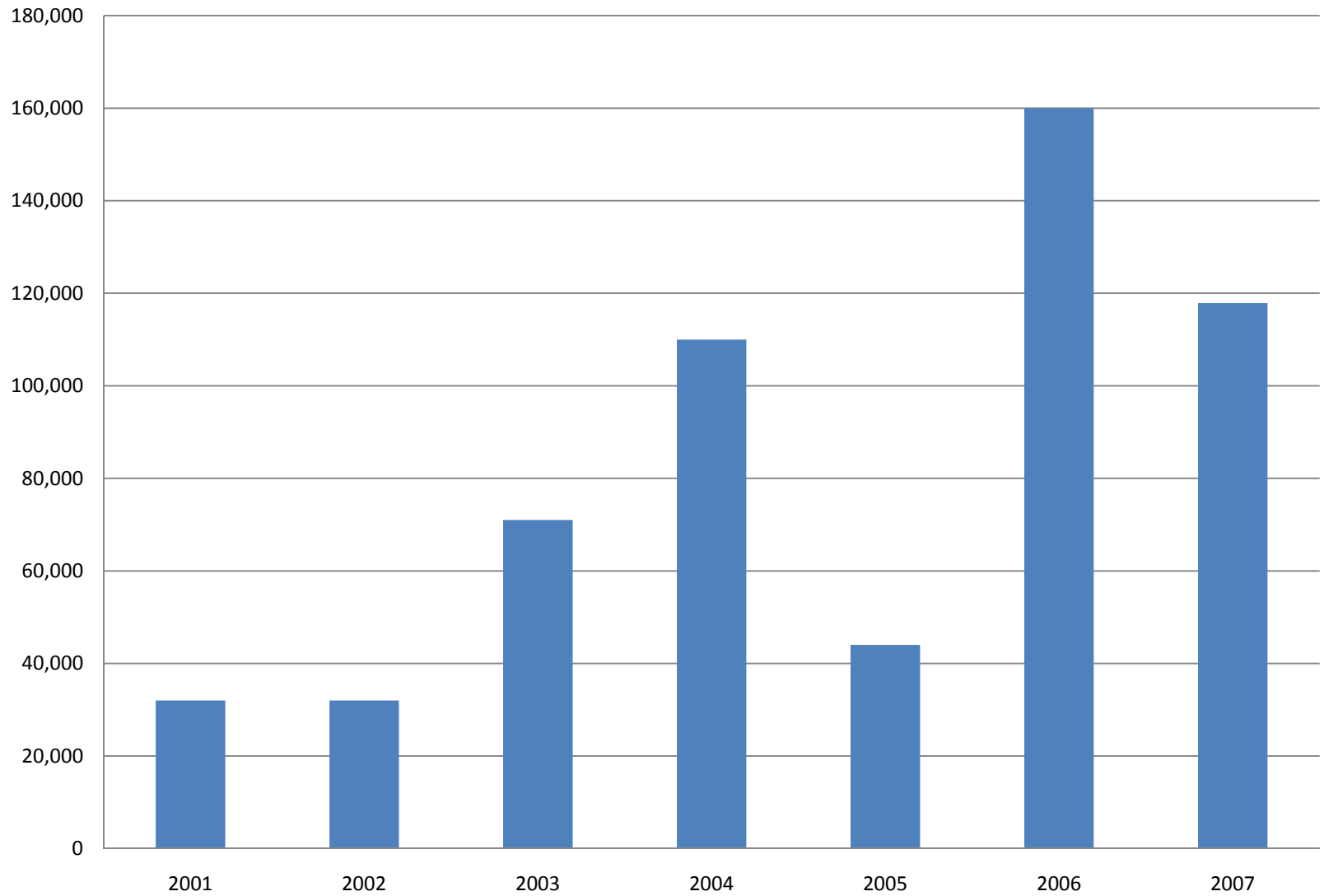


Bifenthrin Overview

- Pyrethroid Insecticide
- Trade names
 - Talstar, Crosscheck EZ, Transport, Wisdom, Bisect L, Up-Star Gold, Maxxthor, Brigade, Menace, Allectus
 - Various consumer brands (Ortho, Scotts, others)
- Lead Registrant: FMC Corporation

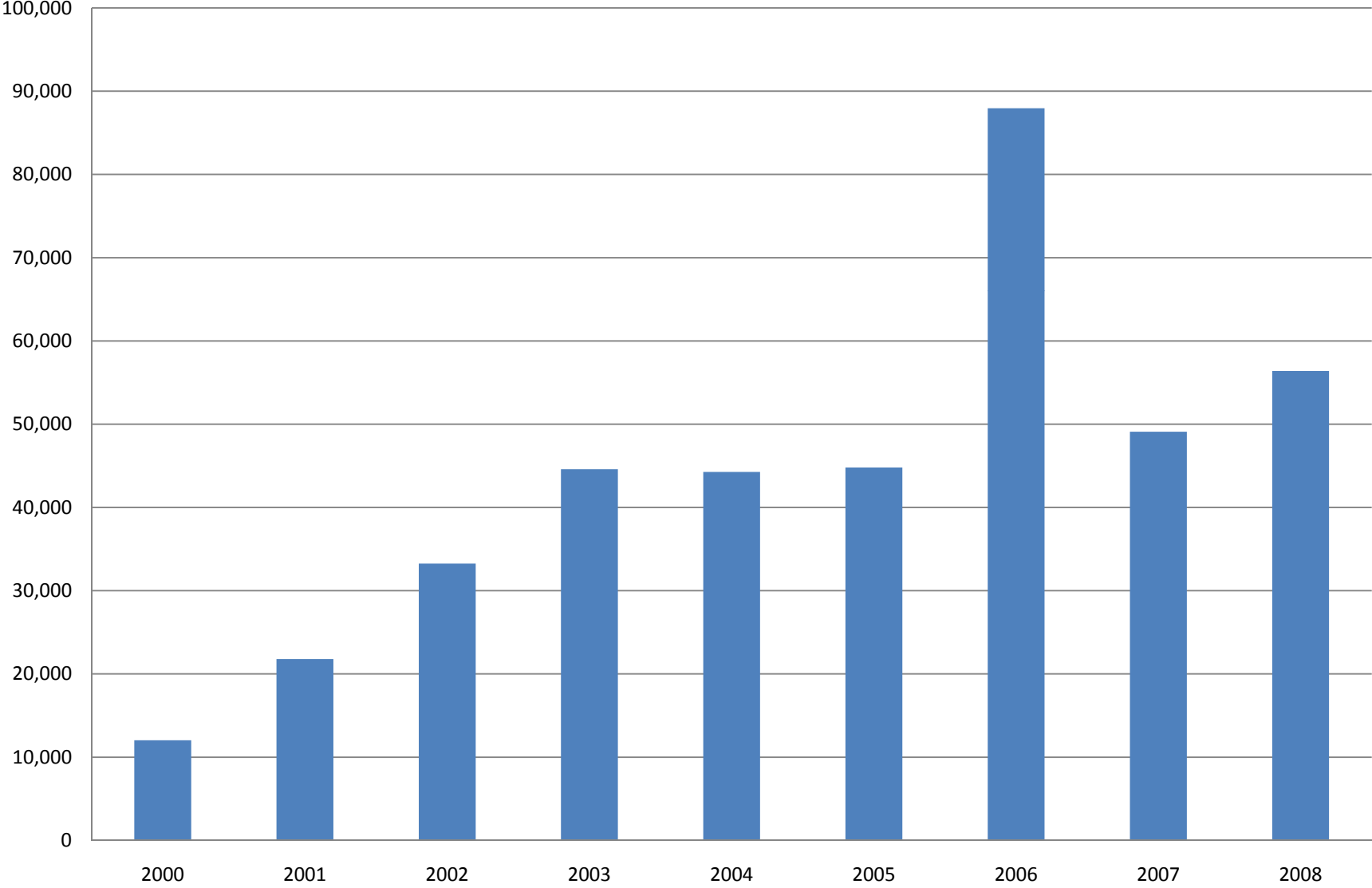


California Bifenthrin Sales 2001-2007



Source: California DPR Pesticide Sales Reports.

California Bifenthrin Professional Urban Use 2000-2008



Source: California DPR Pesticide Use Reports.

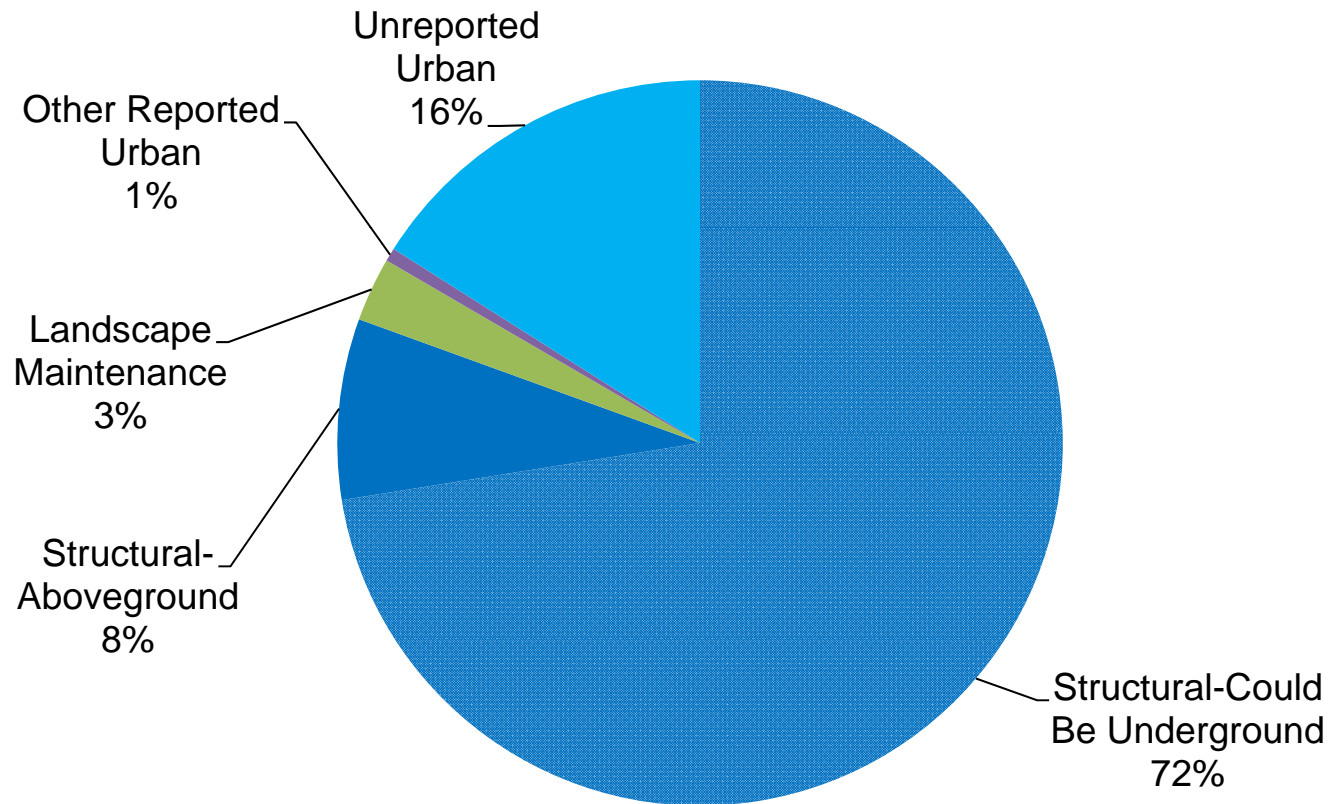
Bifenthrin Usage Quantities Are Relatively Small

California Bifenthrin professional use per capita 2008:

- Structural – 0.00143 lbs/person
- Landscaping – 5.4×10^{-5} lbs/person
 - Landscaping & all other professional urban applications comprise <5% of total use



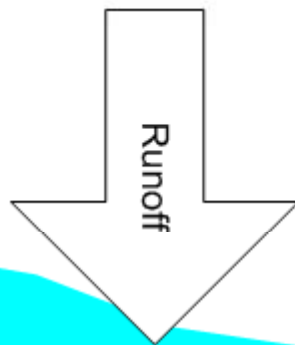
Most Bifenthrin Used for Professional Structural Pest Control



Urban Bifenthrin Use in California 2005-2006
(Pounds of Pesticide Active Ingredient, 2-Year Average)

Source: California DPR Pesticide use reporting data, conversion to permethrin equivalents based on aquatic toxicity (see TDC Environmental reports).
Note: Data accuracy warrants only one significant figure.

Box 2: Watershed - Transport to Creeks



Urban Creek

Sources:

- (a) Pesticide on impervious surfaces
- (b) Pesticide on lawns/grass
- (c) Pesticide on other pervious surfaces
- (d) Pesticide dumped in storm drain

Outcomes:

- (1) Washed to storm drain/creek
- (2) Remains on land
- (3) Degrades prior to transport (degradates may need consideration)
- (4) Evaporates into air
- (5) Taken up by organisms

Bifenthrin is Routinely Applied to Impervious Surfaces

- Structural pest control above ground, outdoors
 - “Band around structure” ant applications
 - Condos, offices, restaurants – even homes – have impervious surface within the typical 6-10 foot “band around the structure” label instruction
- Professionals—not residents—most commonly apply pesticides to outdoor impervious surfaces



Bifenthrin Urban Runoff

Scientific Literature Insights

- Impervious surface washoff important
 - Washoff rates higher
 - Known for pyrethroids (UCD & PWG studies)
 - Much impervious area directly connected to storm drains ("DCIA" or "EIA")
- Storm events dominate loads
 - Known for pyrethroids (Weston, 2009 & Riverside County 2008 & 2009)
 - Flows are higher
 - Intensity increases washoff
- Dry Weather (Non-Storm) Runoff Toxic

Bifenthrin – Where do we go from here?

■ Urban runoff

- Action needed on impervious surface applications (structural pest control)
- Examine need for action on pervious surface applications



■ POTW

- Are available data representative?
- What are the POTW discharge sources?

