



# Strengths and Limitations of California Pesticide Use Report Data

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## Funders

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- California Department of Pesticide Regulation
- Regional Water Quality Control Boards
  - San Francisco Bay Region
  - Central Valley Region
- Clean Estuary Partnership
  - San Francisco Bay area urban runoff programs
  - San Francisco Bay area wastewater treatment plants
- Palo Alto Regional Water Quality Control Plant
- California Association of Stormwater Quality Agencies



## Urban Pesticide Use Estimates

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- Tools used
  - DPR Pesticide Use Reports (PUR)
  - DPR Product/Label database
  - U.S. EPA PPIS Labels
  - PAN Pesticides Database
  - CalPIP
- Primary pesticides explored
  - Copper-containing pesticides
  - Diazinon/Chlorpyrifos
  - Pyrethroids
  - Tributyltin



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Strengths



## Using PUR for Urban Areas

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- Typical questions that PUR can help answer
  - How much is used in urban areas?
  - How much is used for specific urban uses?
  - What is the trend in use?
  - What fraction of urban use is by PCOs?



## Typical Approach

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**Unreported Use** = Statewide sales – Reported use

**Urban Use** = Reported urban use + unreported use

- *City or County use unreported use is typically estimated on a per capita basis*
- *City urban reported use is typically estimated from County reported use on a per capita basis*

### San Francisco Bay Area Copper-Containing Pesticide Use Estimate, 2002

Pesticide	2002 Statewide Sales (lb A.I.)	2002 Statewide Reported Use (lb A.I.)	Estimated Statewide Urban Use (lb A.I.)	Copper in Statewide Estimated Use (lb Cu/yr)	Estimated Bay Area Copper Use (lb Cu/yr)
Copper	326,000	45,857	286,805	286,805	56,501
Copper 8-quinolinoleate	?	10	10	2	0
Copper Ammonia Complex	14,277	5,543	9,697	9,697	1,910
Copper Ammonium Carbonate	?	42	12	4	1
Copper Bronze Powder	?	25	0	0	0
Copper Carbonate	14,274	7,878	6,228	3,550	699
Copper Ethanolamine Complexes, Mixed	171,230	17,721	166,318	166,318	32,765
Copper Ethylenediamine Complex	?	2,557	1,456	1,456	287
Copper Hydroxide	3,940,156	2,592,460	1,355,936	881,358	173,628
Copper Naphthenate	380,620	84,476	380,605	38,061	7,498
Copper Oxide (Cupric)	?	127,523	126,210	100,968	19,891
Copper Oxide (Cuprous)	1,146,625	229,214	918,075	817,087	160,966
Copper Oxychloride	84,997	58,934	26,489	15,364	3,027
Copper Oxychloride Sulfate	?	174,700	0	0	0
Copper Resinate	?	18,612	35	3	1
Copper Soap (Copper Octanoate)	250	0.007	250	45	9
Copper Sulfate (Basic)	1,455,054	876,722	579,200	306,976	60,474
Copper Sulfate (Pentahydrate)	5,646,324	2,916,477	2,649,632	675,656	133,104
Copper Thiocyanate	?	61	9	5	1
Copper Triethanolamine Complex	256	2	256	256	50
<b>TOTAL</b>				<b>3,303,610</b>	<b>650,811</b>

### Copper-Containing Pesticides Active Ingredients and Their Urban Uses

Pesticide Active Ingredient Name	Algaecide	Marine Paints	Root Killer	Wood Preservative	Garden Fungicide
Copper	X			X	X
Copper 8-quinolinoleate				X	
Copper Ammonia Complex					X
Copper Ammonium Carbonate				X	
Copper Carbonate	X			X	
Copper Ethanolamine Complexes, Mixed	X			X	
Copper Ethylenediamine Complex	X				
Copper Hydroxide		X			X
Copper Naphthenate				X	
Copper Oxide (Cuprous)		X			
Cupric Oxide				X	
Copper Oxychloride					X
Copper Oxychloride Sulfate					
Copper Resinate					
Copper Soap (Copper Octanoate)					X
Copper Sulfate (Basic)					X
Copper Sulfate (Pentahydrate)	X		X	X	X
Copper Thiocyanate		X			
Copper Triethanolamine Complex	X				

**San Francisco Bay Area Copper-Containing  
Landscaping Pesticide Use Estimate, 2002**

<b>Pesticide</b>	<b>Estimated Bay Area Copper Use (lb Cu/yr)</b>
Copper	672
Copper Ammonia Complex	1,910
Copper Hydroxide	173,628
Copper Oxychloride	3,027
Copper Sulfate (Basic)	60,474
Copper Sulfate (Pentahydrate)	6,800
<b>TOTAL</b>	<b>250,000</b>

*Assumed Cu & CuSO<sub>4</sub>•5H<sub>2</sub>O all use is reported ("professional" products).*



## Limitations

**San Francisco Bay Area Copper-Containing  
Algaecide Use Estimate, 2002**

<b>Pesticide</b>	<b>Estimated Bay Area Copper Use (lb Cu/yr)</b>
Copper	Unknown (<55,829)
Copper Ethanolamine Complexes, Mixed	32,765
Copper Ethylenediamine Complex	287
Copper Sulfate (Pentahydrate)	Unknown (<126,304)
Copper Triethanolamine Complex	50
<b>TOTAL</b>	<b>?</b>



## Can CalPIP Provide an Estimate of Reported Algaecide Use?

- Surface water application sites
- 9 San Francisco Bay Area Counties
- Copper-containing algaecides
- Compare to algaecide use reported to San Francisco RWQCB (Aquatic Pesticide Permit)


*Result: no match (not even close)*





## DPR Non-Ag. Use Report Sites

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- Structural Pest Control
- Landscape Maintenance
- Right-of-Way
- Public Health
- Vertebrate
- Commodity Fumigation
- Regulatory
- Other 



## Conclusions

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- DPR Annual Reports
  - Limited data on urban use
  - Useful for general estimates
  - Good for 7 use categories listed on reporting forms
- CalPIP
  - Great for getting County-by-County data
  - Sites of use breakdown problematic





## Recommendations

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- Modify reporting forms
  - Simplify identification of additional non-crop application sites
  - Move toward the same sites of use as in the DPR Product/label database (*use major categories instead?*)
  - Record if structural applications are outside, inside, or underground



## Recommendations

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- Data entry
  - Non-crop sites difficult to enter correctly
  - Until forms are changed, give up trying to track reported pesticide use with sites in the DPR Product/label database (*use major categories instead?*)
  - Modify databases to record formulation of applied pesticide



## Recommendations

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- Learn why certain urban product applications are not being reported
  - Paints (marine and structure)
  - Treated wood
  - Carpet/fabrics
  - Cooling system biocides