

Pesticide Permits Toxicity Study Design

- Pesticide Permits Background:

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- State Water Board Study:

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- Toxicity Study Design:

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Pesticide Permits Background Pesticide Regulation Chronology

Date	Action
3/2001	9 th Circuit Court issued Talent Decision
7/2001	State Water Board adopted WQO 2001-12-DWQ (Emergency Permit)
5/2004	State Water Board adopted WQO 2004-0009-DWQ (Vector) and WQO 2004-0009-DWQ (Weed)
11/2006	USEPA adopted the Aquatic Pesticide Rule
1/2009	6 th Circuit Court vacated USEPA's Aquatic Pesticide Rule
6/2009	6 th Circuit Court granted stay of mandate: USEPA Aquatic Pesticide Rule would remain in place for 2 years
3/1/2011	State Water Board adopted the Aquatic Animal Invasive Species and Spray Permits and the revised Vector Permit
3/28/2011	6 th Circuit Court extended its stay of mandate for 6 months
10/31/2011	6 th Circuit Court extension of stay ends; NPDES Permits required for pesticide applications.

Pesticide Permits Background

Waterkeepers Suit

- Waterkeepers sued State Water Board on WQO 2001-12-DWQ
- State Water Board settled and funded the Aquatic Pesticide Monitoring Program (APMP) which was conducted by the San Francisco Estuary Institute (SFEI)

Pesticide Permits Background

APMP Findings

➤ APMP

- Focused on aquatic pesticides (herbicides)
- Evaluated impacts of aquatic pesticides & effectiveness of non-chemical alternatives

➤ Findings

- Acrolein and copper caused toxicity; diquat and triclopyr with R-11 (surfactant) exceeded their water quality criteria/trigger; 2,4-D, fluridone, and glyphosate were not a problem.
- Non-chemical alternatives' costs varied per water body and weed controlled; should be done at the right life cycle of weed.

➤ SFEI Reports on APMP

http://www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml#sfei

Pesticide Permits State Water Board Study

- Focus on Spray and Vector Permits
- Limited funding requires prioritization

Example: EPA OPP Benchmark Values (ug/L)

Active Ingredients	Acute Fish	Chronic Fish	Acute Invertebrates	Chronic Invertebrates	Nonvascular Plants	Vascular Plants
temephos	1,745	—	5	—	—	—
malathion	16.4	8.6	0.3	0.035	2,400	
naled	46	2.9	—	0.045	25	> 1,800
carbaryl	110	6.8	0.85	0.5	660	

Additional Information for Prioritization

- Acreage Sprayed
- Use Patterns: Number of spray events

High Priority

Active Ingredients	Spray Applications	Vector Control	Weed Control	Chemical Type	Comments
temephos		√		Insecticide	Organophosphate
malathion	√	√		Insecticide	Organophosphate
naled	√	√		Insecticide	Organophosphate
carbaryl	√			Insecticide	Carbamate
imidacloprid	√			Insecticide	Advantage – Neonicotinoid
ethofenprox		√		Insecticide	Pyrethroid
permethrin		√		Insecticide	Pyrethroid
prallethrin		√		Insecticide	Pyrethroid
pyrethrins	√	√		Insecticide	Pyrethrin
piperonyl butoxide (PBO)		√		Insecticide	Pyrethrin synergist
resmethrin		√		Insecticide	Pyrethroid
sumithrin		√		Insecticide	Pyrethroid
cyfluthrin	√			Insecticide	Pyrethroid

Moderate Priority

Active Ingredients	Spray Applications	Vector Control	Weed Control	Chemical Type	Comments
N-octyl bicycloheptene dicarboximide (MGK-264)		√		Insecticide	Synergist used with pyrethrins
diquat			√	Herbicide	
triclopyr butoxyethyl ester (BEE)	√			Herbicide	
methoprene		√		Insecticide	

Low Priority

Active Ingredients	Spray Applications	Vector Control	Weed Control	Chemical Type	Comments
acid blue			√	Herbicide	Very low toxicity
acid yellow			√	Herbicide	Very low toxicity
aminopyralid	√			Herbicide	Very low toxicity
endothall			√	Herbicide	N,N-dimethylalkylamine salt is more toxic
clomazone			√	Herbicide	Very low toxicity
chlorsulfuron	√			Herbicide	Very low toxicity
clopyralid	√			Herbicide	Very low toxicity
imazapyr	√		√	Herbicide	Very low toxicity
penoxsulam			√	Herbicide	Rice crop herbicide, very low toxicity
petroleum distillates		√		Insecticide	
acetamiprid	√			Insecticide	Neonicotinoid
dinotefuran	√			Insecticide	Neonicotinoid
pheromone	√			Insecticide	LBAM? Not toxic
sodium carbonate peroxyhydrate			√	Herbicide	Very low toxicity
spinosad A and D	√	√		Insecticide	Fruit fly bait – low toxicity
triclopyr triethylamine salt (TEA)	√		√	Herbicide	Not toxic – short half life

Vector Permit Study Design

Chemical Class	Test Matrix	Test Species	Pre-Event	8-Hour	24-Hour	7-Day
			Sample	Sample	Sample	Sample
Organophosphates (Malathion, Naled, Temephos)	Water	<i>C. dubia</i>	X	X	X	
Pyrethroids/PBO (Cyh, Per, Phe, Pra, Res, Sum)	Water	<i>H. azteca</i>	X	X	X	
	Sediment	<i>H. azteca</i>	X			X
Pyrethrins/PBO	Water	<i>H. azteca</i>	X	X	X	
	Sediment	<i>H. azteca</i>	X			X

Spray Permit Study Design

Chemical Class	Test Matrix	Test Species	Pre-Event Sample	8-Hour Sample	24-Hour Sample	7-Day Sample
Organophosphates	Water	<i>C. dubia</i>	X	X	X	
Carbaryl	Water	<i>C. dubia</i>	X	X	X	
Imidacloprid	Water	<i>C. dubia</i>	X	X	X	
Pyrethroids/Pyrethrins/PBO	Water	<i>H. azteca</i>	X	X	X	
	Sediment	<i>H. azteca</i>	X			X