

Follow-up on Pesticides

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*Presentation to Scientific Guidance Panel
March 2, 2009*

CECBP initial screen of pesticides

- ▶ Agricultural
 - Includes certain non-agricultural uses
 - Adjuvants
 - ▶ Pyrethroids
 - Of special interest to SGP
 - Includes household and agricultural uses
 - ▶ Pet
 - ▶ Household
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Agricultural use: DPR Pesticide Use Report

- ▶ Started with top 50 (by pounds used in California) for screening purposes
 - ▶ Removed pesticides already on designated list
 - ▶ Excluded fumigants, inorganics and other pesticides not considered easily biomonitored or of low toxicity concern.
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First batch from DPR use report

<u>Primary use</u>	<u>Pesticide</u>	<u>Pounds applied</u>
<i>Agricultural</i>	Ethephon	427,247
	Glyphosate	4,299,462
	Oryzalin	656,439
	Oxyfluorfen	644,523
	Paraquat dichloride	966,583
	Pendimethalin	1,124,396
	Propanil	1,801,607
	Propargite	529,536
	Simazine	538,627
<i>Non-agricultural</i>	Octhilinone	444,257
<i>Adjuvant</i>	α -(p-Nonylphenyl- ω -hydroxypoly(oxyethylene))	1,123,129

Pyrethroids registered in California, not biomonitored by CDC

Bifenthrin

γ -Cyhalothrin

λ -Cyhalothrin

Esfenvalerate

Fenpropathrin

Imiprothrin

Sumithrin (Phenothrin)

Prallethrin

tau-Fluvalinate

Tetramethrin

Tralomethrin

Pet and household

Example pet pesticides

- Amitraz
- Fipronil
- Imidacloprid
- Metaflumizone
- Pyrethroids

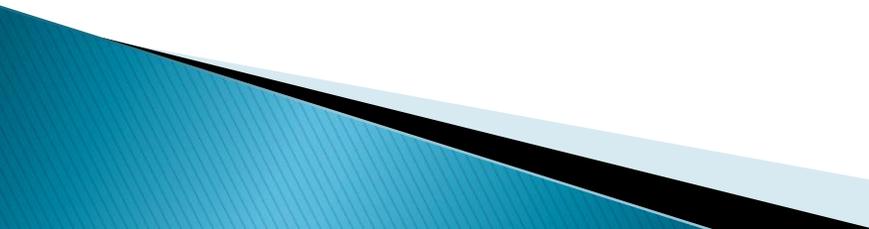
Household

- In progress
 - Difficulty in finding information on consumer pesticide use
 - Difficulty in identifying pesticides added to other household products
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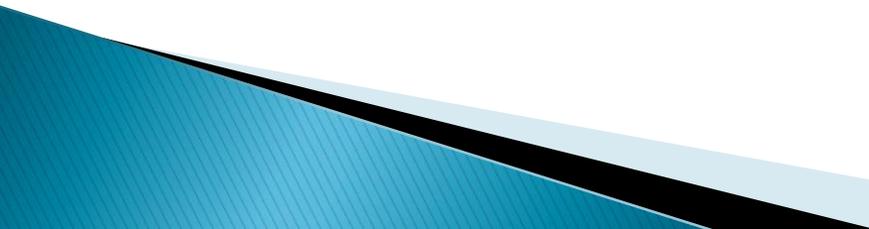
Considerations in screening process

- ▶ Pounds applied may not be the best screen
 - ▶ Many pesticides of concern are low volume
 - e.g., home and lawn use, pets
 - ▶ Product type and use
 - e.g., home pesticide contained in ant trap, versus aerosol spray
 - ▶ Physical and chemical characteristics
 - ▶ Pharmacokinetic factors
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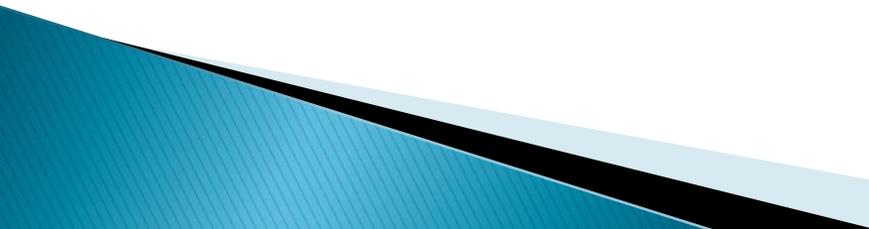
Criteria for recommending additional designated chemicals

- ▶ Exposure or potential exposure
 - ▶ Known or suspected health effects
 - ▶ Need to assess the efficacy of public health actions
 - ▶ Laboratory methods
 - Availability of analytical method
 - Availability of adequate biospecimen
 - Incremental analytical cost
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Example: Glyphosate

- ▶ Major herbicide used worldwide
 - California: almonds, grapes, cotton, landscape maintenance, rights of way, home garden use
 - ▶ Potential endocrine disruption
 - Disruption of cytochrome P-450 aromatase in human cells
 - Effects amplified by adjuvants in commercial formulations.
 - ▶ Physical and chemical characteristics available
 - ▶ Past biomonitoring studies identified
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Example: Octhilinone

- ▶ Use
 - Treated lumber
 - Consumer products (e.g., furniture, carpet, footwear, clothing, mattresses)
 - ▶ Some toxicity concerns
 - Chromosomal aberrations in one study
 - No adequate cancer bioassays
 - ▶ Physical and chemical characteristics available
 - ▶ No biomonitoring studies identified
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Example: Fipronil

- ▶ Topical flea and tick treatment for dogs and cats
 - Potential hand-to-mouth exposure from pet contact; particular concern for children
- ▶ Toxicity concerns
 - Possible endocrine disruption, cytochrome P-450 enzyme induction, GABA receptor antagonist, possible neurodevelopmental toxicity
 - Possible human carcinogen (U.S. EPA Group C)
- ▶ Physical and chemical characteristics available
- ▶ Pharmacokinetic information
- ▶ Analytical methods located in literature

Challenges and questions

- ▶ High volume important; low volume should not be neglected
 - ▶ What is the key information when screening a large number of chemicals?
 - ▶ What level of information is necessary to make a decision on designated chemicals?
 - Classes of pesticides?
 - ▶ Due to limited resources, trade-off between:
 - Number of pesticides that can be screened
 - Quantity of information to be reviewed
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