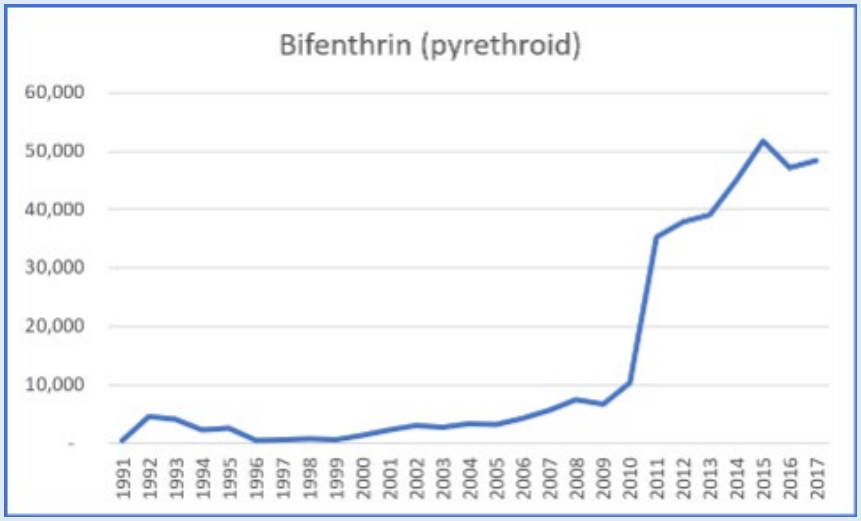
Requested Presentation

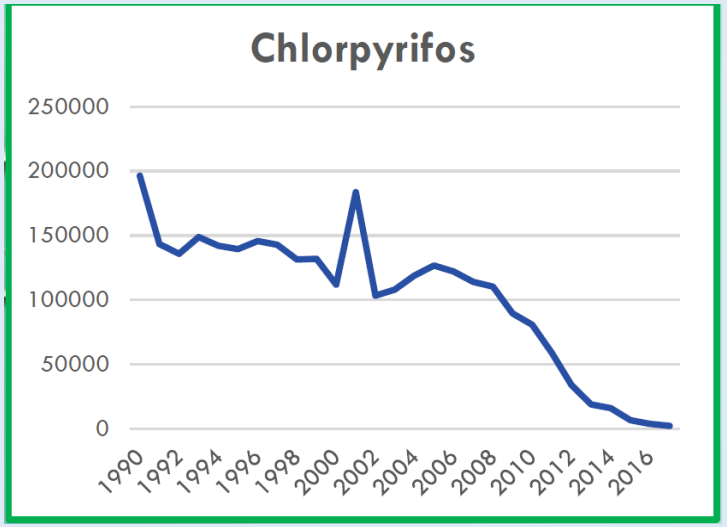
The Panel would like to hear presentations at their next meeting from both the growers and the petitioners regarding whether they believe the toxicity tests presently required in the monitoring program are the most appropriate ones for assessing potential effects of farming practices. If so, why? If not, what alternatives would you suggest?

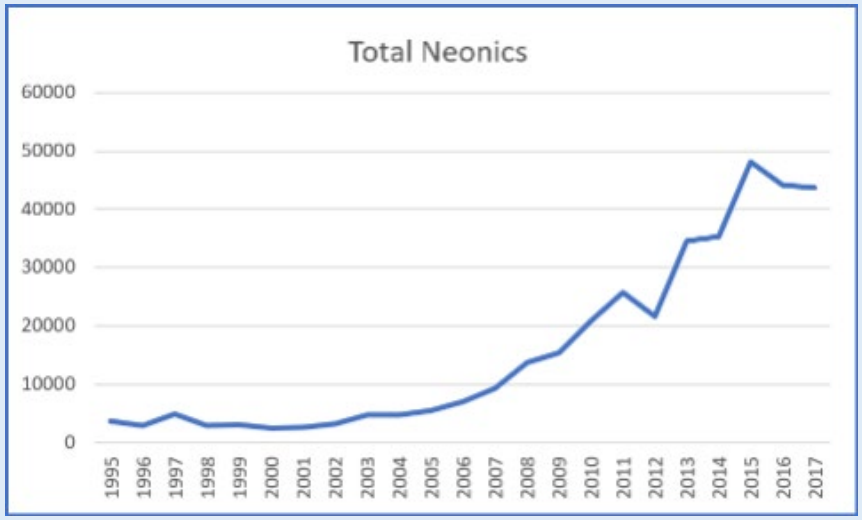
We Know That Pesticide Use Changes

- Advances in pesticide chemistry
- Resistance
- Changes in pests
- Changes in climate and weather
- Regulatory Pressures (Pesticide switching)

➡ Current use pesticides must be periodically reviewed and the testing design adapted as necessary.







Sum of lbs. active ingredient applied in Madera, Mariposa, Merced, Stanislaus, Tuolumne counties.

- Ag applications only.
- DPR data-run, 12/16/19,
- Updated database.

Updated recommendations for monitoring current-use pesticide toxicity in water and sediment in the Surface Water Ambient Monitoring Program

SWAMP
Surface Water Ambient Monitoring Program

Prepared by: Brian Anderson[1], Bryn Phillips[1], Marie Stillway and Linda Deanovic[2], Debra Denton[3], Michael Lyons[4], Mary Hamilton[5]

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[3]U.S. Environmental Protection Agency, Region 9
[4]California Regional Water Quality Control Board, Region 4
[5]California Regional Water Quality Control Board, Region 3

SWAMP Technical Memorandum
SWAMP-TM-2015-0001
September 2015 (updated July 2018)

Site Selection

- **Must be safe**
- **Must have water**
- **Must be receiving discharge (drain)**
- **Sediment sites must be depositional**

Must be Depositional

- “It has been known for decades that particle-bound constituents of concern (COCs) should be monitored in sediment (rather than in water samples), because **the water comes and goes but the sediment remembers.”**

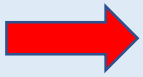
- “Fine sediments (<0.075 mm) hold much more adsorbed constituents per weight, due to larger surface area per weight ratio.”

- Core Site One -- Consistently low % Fines
- Core site Two – Usually high % Fines
- Core Site Three – Mostly high % Fines
- Core Site Four – Consistently low % Fines
- Core Site Five – Mostly high % Fines
- Core Site Six – Variable % Fines

Source: Dr. Revital Katznelson. (previously provided to panel)

What Type of Test?
Toxicity or Chemistry?

- **Toxicity**
  - Measures the functionally most important question: Impact on human and environmental health
  - Pesticides are almost always detected in mixtures and mixtures can be additive, synergistic, or antagonistic.
  - Doesn't give you a "name"
- **Chemistry**
  - Chemical name and concentration
  - Only find what you are looking for
  - Many chemicals have no MCL or Aquatic Life Criteria



<u>Both are essential and from the same sample</u>

- If high toxicity and no clues from chemistry, a follow-up Toxicity Identification Evaluation <u>may</u> be helpful.

Toxicity – What Species, What Test?

Species	*Sensitivity*	*Current*	*Recommended*
H. azteca (amphipod)	Pyrethroids	10-day chronic Sediment	10-day chronic Sediment
H. azteca (amphipod)	Pyrethroids	96-hour acute Water	96-hour acute Water
C. dilutus (midge)	Neonicotinoids	None	10-day chronic Water
C. dubia "water flea"	Organophosphates	96-hour acute	96-hour acute Water
P. promelus (minnow)	nothing	Y/N	Not
S. capricornutum (algae)	Copper & herbicides	96-hour acute Water	96-hour acute Water

How Often? (Chemistry and Toxicity)

- Monthly April thru October (water and sediment)
- Plus First Flush, water only (within 24 hours of rain event. Currently 3 days.)
- Plus storm (water) event during dormant spraying.
- Total 9x. (Current 8-11x water + 2x sediment.)

Neonicotinoid	2018 Data	2019 Data	2020 Workplan	Detections
Imidacloprid	5 Core sites 2-3 samples each	5 Core sites 1-3 samples each	7 Core sites 1-5 samples each	None (but detection limit much higher than tox thresholds)
Thiamethoxam	1 sample at 1 site Cottonwood Ck	none	none	Data not in CEDEN
Clothianidine	3 Core sites 1-2 samples each	none	1 sample at 1 site Dry Ck	1 detection (4 ng/L Duck Slough)
Acetamiprid	2 Core sites 1-2 samples each	1 sample at 1 site Merced River	none	None

Imidacloprid

- MDL = 0.5 ug/L
- RL = 1 ug/L
- Chronic EPA aquatic life benchmark = 0.01 ug/L
- Acute EPA aquatic life benchmark = 0.385 ug/L
- Region 3 chronic WQC (UC Davis) = 0.016 ug/L
- Region 3 acute WQC (UC Davis) = 0.17 ug/L

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