Update on Dormant Spray Regulations

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Overview

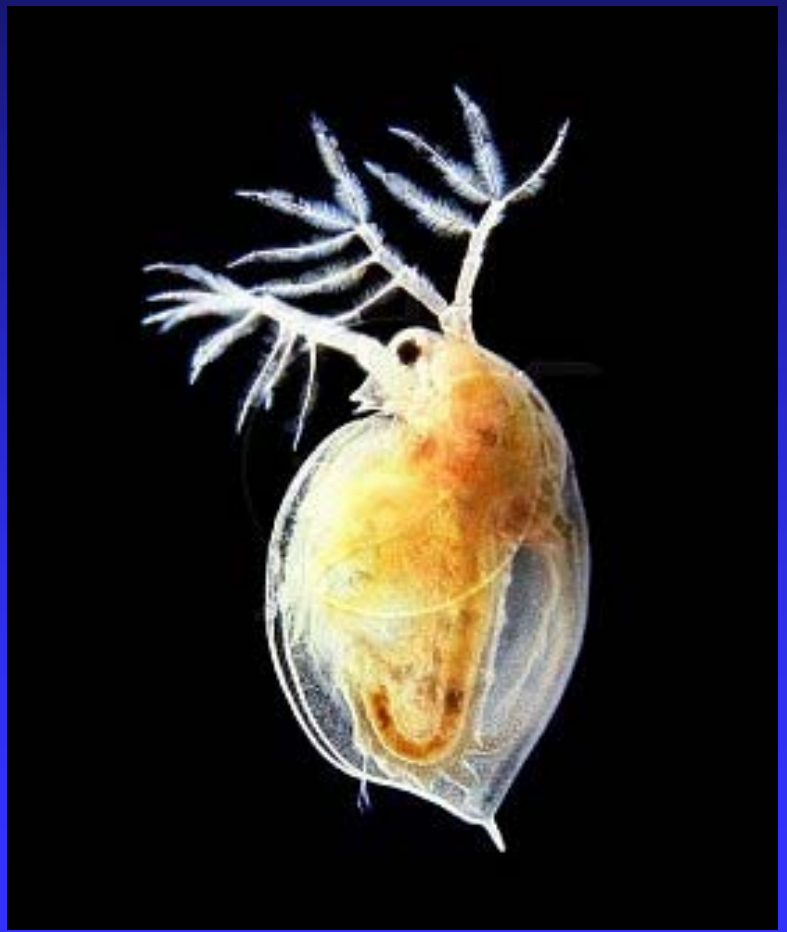
- Background on dormant sprays and water quality
- DPR's reevaluation of diazinon
- Proposed dormant spray regulations
- Pyrethroids: the next water quality threat?
- Chlorpyrifos reevaluation
- How DPR's programs integrate with Regional Water Board programs

DPR's Dormant Spray Regulations *Background*

- Diazinon, chlorpyrifos, and methidathion were found in the Sacramento and San Joaquin Rivers and their tributaries.
- Source: Rain runoff from treated orchards.
- Concentrations exceeded water quality criteria developed by DFG.

DPR's Dormant Spray Regulations
Background

Concentrations of diazinon were high enough to explain results of bioassays with sensitive arthropods.



DPR's Dormant Spray Regulations *Background*

- DPR stated it would monitor the presence of OPs in the Sacramento and San Joaquin River watersheds for five years, then assess data.
- If toxicity attributable to dormant sprays persisted through the 2000-01 season, DPR would consider regulatory options to reduce concentrations to acceptable levels.

DPR's Dormant Spray Regulations *Background*

DPR's staff analysis of 1991-2001 data

- 22 studies
- 7,862 concentration measurements of diazinon and chlorpyrifos
- 488 *Ceriodaphnia dubia* toxicity tests
- PUR data

DPR's Dormant Spray Regulations *Background*

DPR's staff analysis of 1991-2001 data

- Winter diazinon concentrations at Vernalis were significantly lower in 1997-2001 than in 1991-95.
- Diazinon concentrations still exceeded DFG water quality criteria.

DPR's Dormant Spray Proposal *Background*

DPR's Authorities for Addressing Water Quality

- Restricted material status for environmentally harmful pesticides—permit required.
- Use requirements
- CAC-authorized permits
- Cancellation
- Suspension
- Reevaluation

Diazinon Reevaluation

- DPR put diazinon dormant sprays into reevaluation.
- Registrants required to identify
  - Processes with which diazinon dormant sprays contribute to surface water detections.
  - Mitigation strategies that will reduce or eliminate diazinon in surface water.

Diazinon Reevaluation

- Registrants contended that mechanisms are sufficiently understood; more cost-effective to focus efforts on management practices.
- DPR agreed.

Diazinon Reevaluation

- Registrants responded with proposed label amendments to reduce off-site movement.
  - Application equipment restrictions.
  - Direct spray on outside rows to orchard interior when nearby waterways are vulnerable.

Diazinon Reevaluation

- More label amendments to reduce off-site movement.
  - Site conditions
    - Buffer zones near water bodies.
    - Wind speed restrictions.
    - Additional directions when wind blows toward water bodies.
    - Do not apply when runoff is expected.

Diazinon Reevaluation

- Diazinon registrants are sponsoring studies on practices to reduce dormant spray runoff.
  - Smart sprayers
  - Directing outside passes to orchard interiors
  - How to identify properties with high runoff potential

Proposed Dormant Spray Regulations

- Need to reduce offsite movement of dormant sprays in a comprehensive way, reducing opportunities for movement into surface waters.
- Increasing concern about environmental effects of OP “replacements” (e.g., synthetic pyrethroids).
- Use drift management and other means to prevent pesticide movement off the site of application.

Proposed Dormant Spray Regulations

Prohibitions on use

- Within 100 feet of sensitive aquatic sites
- When runoff is expected within 48 hours after application, considering soil moisture and storm status
- When winds are <3 mph and >10 mph
- Unless operator gets a written recommendation from PCA prior to use.

Proposed Dormant Spray Regulations

Other provisions

- Prohibitions do not apply if
  - Only dormant oil, *B t*, or spinosad is applied,
  - Site is hydrologically isolated, OR
  - Water can be held for at least 72 hours before release to a sensitive aquatic site.
- Aerial applications are permitted only if soil conditions do not permit entry or approaching bloom requires aerial application.

Proposed Dormant Spray Regulations

Definitions to be added

- Dormant insecticide
- Dormant oil
- Hydrologically isolated site
- Sensitive aquatic site

Proposed Dormant Spray Regulations *Status*

- Public comment period closed August 1.
- No public hearing.
- Staff responded to comments.
- No substantive changes anticipated—no additional comment period.
- On track to have in place for this upcoming season?

Proposed Dormant Spray Regulations *Next Steps*

- DPR management considers for approval and signature.
- Regulation documents submitted to Office of Administrative Law for review and approval (one month).
- Approved package submitted to Secretary of State for filing (effective one month later).

Pyrethroid Insecticides
General Characteristics

- Based on pyrethrins, an extract from a type of chrysanthemum.
- Broad spectrum insecticide.
- Low toxicity to mammals and birds.
- Applied at low rates.
- They are typically inexpensive to use.

Pyrethroid Insecticides
General Characteristics

- Highly toxic to aquatic invertebrates and fish.
- High affinity for particles and surfaces.
- Difficult to sample and analyze.
- Toxic levels are near or below detection limits.

Pyrethroid Insecticides
Investigations in Agricultural Waters

- Don Weston, UC Berkeley
- 70 sediment samples from water bodies dominated by agricultural runoff
- 42 locations in 10 Central Valley counties
- Analyzed for
  - 5 pyrethroids
  - 18 “legacy” organochlorines
  - 2 currently-used organochlorines

Pyrethroid Insecticides
Investigations in Agricultural Waters

Sediment bioassays were performed using a sediment-dwelling arthropod, *Hyalella azteca*

Pyrethroid Insecticides
Investigations in Agricultural Waters

- Significant toxicity to *H. azteca* at 42% of sites.
- High correlation between toxicity and pyrethroid concentrations.
- Pyrethroid concentrations were near of above concentrations toxic to *H. azteca* in 70% of the toxic samples.
- Organochlorine concentrations were generally far below those toxic to *H. azteca*.

Pyrethroid Insecticides
Investigations in Urban Waters

- Don Weston, UC Berkeley.
- Several urban creeks in Roseville, CA.

Pyrethroid Insecticides
Investigations in Urban Waters

- 9 of 21 sites had >90% mortality of *H. azteca*.
- High correlation between mortality and pyrethroid concentrations. Both were highest near storm drain outfalls.
- Native populations of *H. azteca* were low or zero in areas with high pyrethroid concentrations.
- OP and organochlorine concentrations could not account for mortality.

Pyrethroid Insecticides
Investigations in Ag and Urban Waters

- Link between pyrethroid concentrations and sediment toxicity is largely based on correlation, but correlations are:
  - significant.
  - consistent with predicted toxicities based on toxicity values derived in the laboratory.
- No alternatives explaining the toxicity.

DPR's Ongoing Pyrethroid Monitoring

- Continuing assessment of pyrethroid contamination in water and sediment in high use areas
  - Northern San Joaquin Valley
  - Feather River region / Sacramento Valley
  - Salinas Valley
  - Imperial Valley

Chlorpyrifos Reevaluation
Background

- Chlorpyrifos concentrations exceeded DFG recommended criteria.
- Chlorpyrifos (agricultural use) products are currently under reevaluation.

Chlorpyrifos Reevaluation
Status

- Chlorpyrifos registrant (Dow AgroSciences) proposed revised product labels that include runoff mitigation measures.
- DPR staff are reviewing proposed labels and supporting documentation.

Other Regulatory Programs Affecting Users of Dormant Sprays

Central Valley Regional Water Quality Control Board

- Waiver for waste discharge requirements for discharges from irrigated lands
  - Sets conditions for waiving waste discharge requirements for individual farms
  - Encourages the formation of “coalitions” so that resources for monitoring and reporting can be pooled.

Other Regulatory Programs Affecting Users of Dormant Sprays

Central Valley Regional Water Quality Control Board

- Waiver conditions
  - Monitor to assess sources and impacts of agricultural discharges.
  - Develop and implement management practices necessary to meet water quality targets.
  - Submit reports to the Regional Board on monitoring activities and management practice implementation.

Other Regulatory Programs Affecting Users of Dormant Sprays

Ag Waiver Program

- No direct connection with DPR's water quality efforts.
- But, as coalition members and individuals plan how to comply with waiver requirements, remember to consider label requirements and dormant spray regulations as management practices for water quality improvement.

Other Regulatory Programs Affecting Users of Dormant Sprays

Central Valley Regional Water Quality Control Board

- Total Maximum Daily Loads (TMDLs)
- TMDLs try to address the questions:
  - What amount of pesticides (load) can be carried in Central Valley rivers without exceeding water quality standards?
  - What has to be done to meet maximum load limits?

Other Regulatory Programs Affecting Users of Dormant Sprays

TMDLs	Sacramento Valley	San Joaquin Valley
Water Quality Standards	Diazinon	Diazinon and chlorpyrifos
Water Bodies	Sacramento and Feather Rivers	San Joaquin River
Focus	Dormant sprays	All agricultural uses
Compliance dates	June 30, 2005	December 1, 2005

What's DPR's Role in Regional Board Programs?

- Regional Water Quality Control Boards are lead agencies for water quality protection.
- DPR commits to be the Regional Boards' regulatory partner.
- DPR will work closely with Regional Boards to devise programs that efficiently use agency authorities to assure pesticide discharges comply with water quality standards.

DPR's Surface Water Program on the World Wide Web

http://www.cdpr.ca.gov >

Programs and Services >

Surface Water Protection Program