

Goode, M., Discussion of Proposed Amendment to the Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento and Feather Rivers, PowerPoint slides presented to California Water Resources Control Board, Sacramento, CA, February 19 (2008).

[made available, with permission, at
<http://www.members.aol.com/GFLEnviroQual/GoodeDiazinonChlorp.pdf>]

**SACRAMENTO AND FEATHER
RIVERS DIAZINON AND
CHLORPYRIFOS TMDL/BASIN
PLAN AMENDMENT**

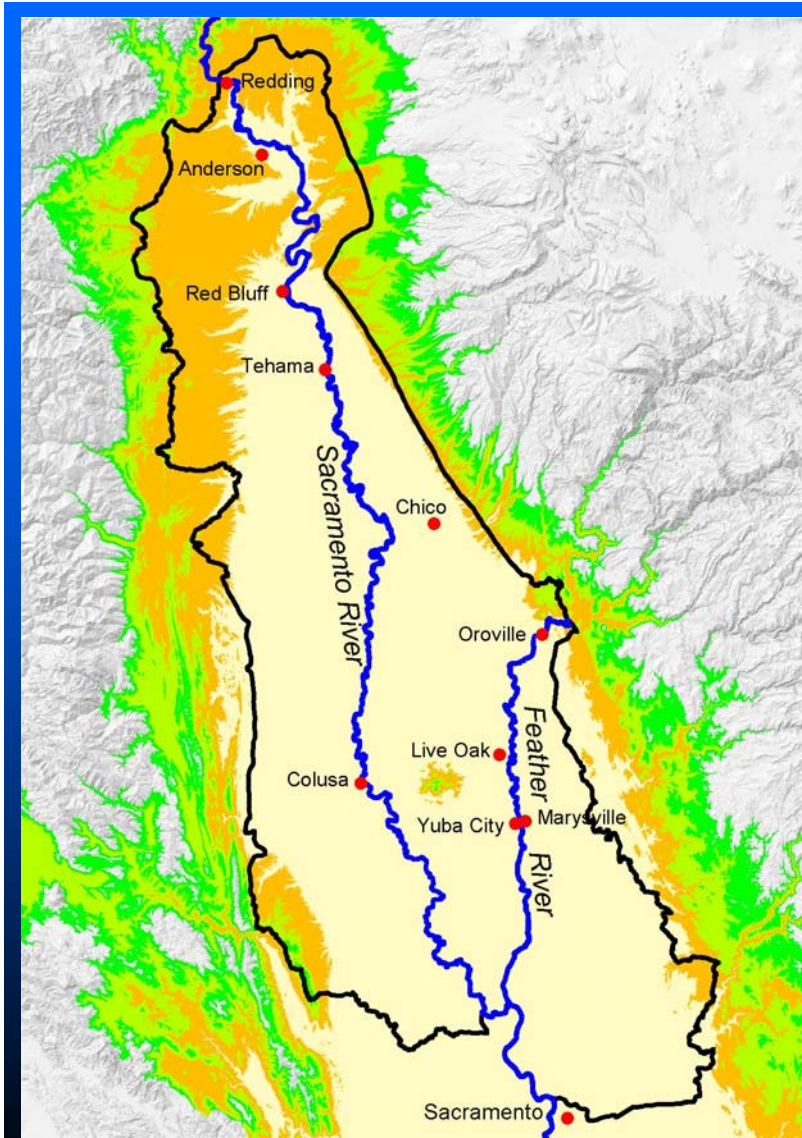
**Agenda Item #7
February 19, 2008**

Staff

- State Water Board Staff
 - Mitchell Goode
- Office of Chief Counsel
 - Steven Blum
- Central Valley Water Board Staff
 - Paul Hann
 - Danny McClure
 - Jerry Bruns

Impetus For Action

- Diazinon Review Required by
 - Basin Plan
 - Sacramento Superior Court Order from the case: *Makhteshim Agan of North America v State Water Resources Control Board; Regional Water Quality Control Board-Central Valley Region, Sac. Cty.*
Sup. Ct. - Case No. 04CS00871
- Chlorpyrifos Program Recommended to Address
 - 2006 Impaired Waters List
 - Current Data



Geographic Scope

- Main stems of the Sacramento and Feather Rivers below the major reservoirs

Diazinon and Chlorpyrifos Use

- Agricultural and urban uses
- Most urban uses stopped by end of 2004
- Diazinon – primarily dormant use on plum, peach, and almond orchards
- Chlorpyrifos – primarily irrigation season use on alfalfa, and walnut and almond orchards
- Both pesticides are applied in significant quantities throughout the spring

Movement of Pesticides & Current Detectable Levels

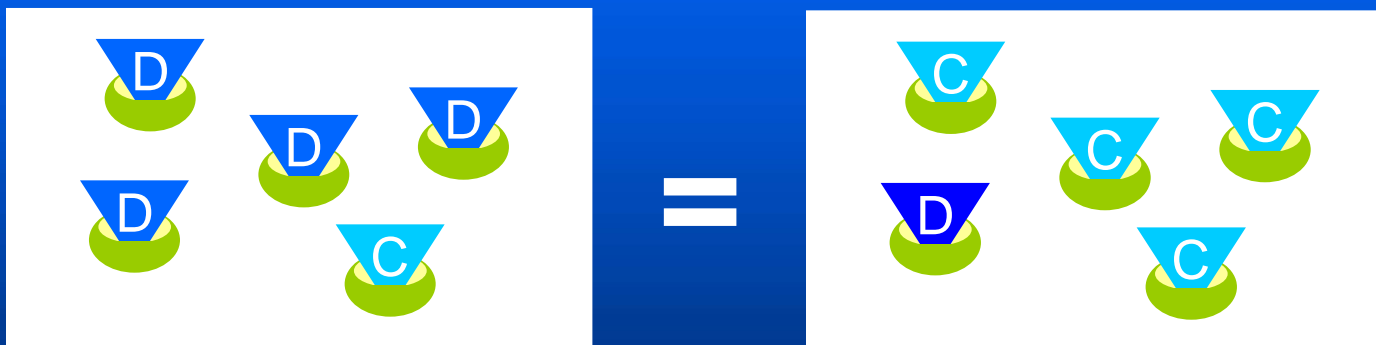
- Pesticides applied to crops, wash offsite after storm events, enter surface water
- Some exceedances of current Diazinon objectives
- Diazinon and Chlorpyrifos have caused exceedances of loading capacity, based on both proposed acute and chronic water quality objectives

Properties & Additivity

- Toxic to aquatic invertebrates at low concentrations
- Additivity Facts
 - Data shows that Diazinon and Chlorpyrifos co-occur
 - Exhibit same mode of toxic action resulting in additive effects
 - Basin Plan requires that the cumulative impact must be considered if more than one pesticide is present
 - Peer reviewers concurred and scientific literature supports
 - Additivity formula was consistently applied in adoption of
 - » Sacramento Urban Creeks Diazinon and Chlorpyrifos Amendment
 - » San Joaquin River Diazinon and Chlorpyrifos Amendment
 - » Delta Diazinon and Chlorpyrifos Amendment

Toxicity of OP Pesticides

Acetylcholine esterase inactivation occurs regardless of which OP molecules are inhibiting the enzyme



Diazinon



Chlorpyrifos



Acetylcholine esterase (inhibited by D or C)

Water Quality Objectives

- Diazinon (revision of existing objectives)
 - 0.16 µg/L Acute (revised from 0.08 µg/L)
 - 0.10 µg/L Chronic (revised from 0.05 µg/L)
- Chlorpyrifos (new objectives)
 - 0.025 µg/L Acute
 - 0.015 µg/L Chronic
- Same as San Joaquin River and Delta Amendments
- USEPA supports objectives

Antidegradation

- Change to proposed Diazinon objective is consistent with antidegradation policies
- Proposed objective corrects calculation error
- Proposed objective maintains full protection for most sensitive species

Loading Capacity and Allocations

- Allocations are set equal to the loading capacity
- Loading capacity requires that all discharges to the Sacramento and Feather Rivers must meet the additivity formula
- Load allocations would need to be met at the point they enter the rivers

Implementation

- Conditional waiver or WDRs are expected method of implementation
- Conditional Prohibition of Discharge provides backstop if no waiver or WDRs
- Submission of management plans
- Management plans must be revised if loading capacity is not met and allocations exceeded
- Implementation language was revised to allow consideration of the primary pesticide responsible for an exceedance
- Consistent with San Joaquin River and Delta Amendments

Monitoring

- To determine compliance with WQOs, load allocations, & loading capacity
- To determine the effectiveness of management practices
- To determine the impacts of alternative pesticide use

Economic Considerations

- No additional costs expected for NPDES sources
- If Chlorpyrifos dischargers aren't causing or contributing to exceedances, no need to change management practices
- Estimated annual Ag costs for all acreage treated in the Delta Watershed
 - Management practice costs \$0-\$6.2M
 - Monitoring planning, evaluation \$0.3-\$1.5M
 - Total costs \$0.3-\$7.7M

Economic Considerations

- Estimates are likely high
 - Growers already implementing practices
 - Requirements for new practices are pending
 - Broadly applicable practices considered – farm specific solutions likely to be less expensive
- State and federal funds available
- Other benefits

Public Comments

Questions?