

# Water Board Agricultural Regulatory Programs

## Current Issues and Challenges

Johnny Gonzales, CalEPA, State Water Resources Control Board

California agriculture is extremely diverse and spans a wide array of growing conditions from northern to southern California. California's agriculture includes more than 400 commodities. The state produces nearly half of US-grown fruits, nuts and vegetables. Across the nation, US consumers regularly purchase crops produced in California. Many of the products are exported to markets worldwide.

Water discharges from agricultural operations in California include irrigation runoff, flows from tile drains, and storm water runoff. These discharges can affect water quality by transporting pollutants, including pesticides, sediment, nutrients, salts (including selenium and boron), pathogens, and heavy metals, from cultivated fields into surface waters. Many surface water bodies are impaired because of pollutants from agricultural sources. Groundwater bodies have suffered pesticide, nitrate, and salt contamination.

To prevent agricultural discharges from impairing the waters that receive these discharges, the Water Boards developed the Irrigated Lands Regulatory Program (ILRP) which regulates discharges from irrigated agricultural lands. This is done by issuing waste discharge requirements (WDRs) or conditional waivers of WDRs (collectively Orders) to growers. These Orders contain conditions requiring water quality monitoring of receiving waters and corrective actions when impairments are found.

The Water Boards acknowledge the vital and challenging work the agricultural professionals (e.g. Pest Control Advisers and Certified Crop Advisers and other technical service providers and farm advisers) perform to maintain agricultural productivity, which is key to our social and economic well-being in California. From the water resources perspective, the Water Boards applaud agricultural professional's effort and commitment to evolve toward more sustainable management practices, and ongoing attention to the prevention of unintended effects of today's agricultural operations. The Water Boards support and reinforce a spirit of cooperation and problem-solving between the water boards and agricultural professionals.

### **PESTICIDES AND FERTILIZER ISSUES**

#### **Pesticides:**

The Water Boards extensive monitoring programs identified several pesticides at levels of concern and have also identified several impairments on the federal Clean Water Act section 303(d) list that require a regulatory response. There are over 100 pesticides currently used that have been detected in California waters, and about 20 of these are found at levels exceeding standards, several others are at levels of concern. Part of the concern, especially given their widespread presence, is that the full effect of pesticides

in our waters is not known. Pesticides make it into the water via drift, runoff from rain and irrigation and very low levels can have impacts on aquatic life, like affecting the invertebrates at the base of the food chain. Because of these impairments and detections, pesticides and toxicity are a major focus of the Water Boards. Pesticides are becoming more of an issue in stormwater and wastewater regulation, and are a concern in forestry. The Water Boards have several total maximum daily load (TMDLs) and Basin Planning actions related to pesticide discharges.

In urban areas, concerns include pyrethroids (esp. bifenthrin) and fipronil, and in agricultural areas concerns include organophosphates like chlorpyrifos and also pyrethroids. The Water Boards are also seeing several other insecticides and herbicides and fungicides in the water at potential levels of concern. Pesticides are a common cause of toxicity detected in receiving water monitoring. Their widespread detections also can be a concern for drinking water.

Regional water quality control plans (Basin Plans) include several requirements regarding pesticides and their potential discharge to waters of the state, some of which include:

1. No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.
2. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that affect beneficial uses.
3. Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies
4. For toxicity, all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

Additionally, some specific numeric limits identified in the Basin Plan are chlorinated hydrocarbons, rice pesticides, diazinon and some metals used such as copper and arsenic.

The State Water Board has reported the extent of pesticides impairment to USEPA in their 2012 Integrated Report as required by the Federal Clean Water Act Section 303(d). Sources of pesticide impairment is largely due to agricultural operations, however urban runoff has also been identified as a source. Pesticide impaired waters that are 303(d) listed:

- 4,582 miles of rivers, streams and coastline
- 793,253 acres of lakes, reservoirs, bays, estuaries, ocean and wetlands
- These impairments are largely due to agricultural sources, but also may be from urban runoff

The 3 most commonly detected pesticides in groundwater above regulatory drinking water benchmarks. The three most commonly detected pesticides in groundwater are:

- 1,2,3-Trichloropropane
- Ethylene Dibromide
- Dibromochloropropane

These chemicals are most frequently detected in the Central Valley portion of the state.

### **Fertilizers and Soil Amendments:**

Nitrate is one of California's most prevalent groundwater contaminants, and can pose significant health risks at concentrations above the public health drinking water standard Maximum Contaminant Level (MCL) of 45 mg/L (as NO<sub>3</sub>). High concentrations of nitrate in groundwater are primarily caused by human activities, including fertilizer application (synthetic and manure), animal operations, industrial sources (e.g. wastewater treatment and food processing facilities), and septic systems. Agricultural fertilizers and animal wastes applied to cropland are by far the largest regional sources of nitrate in groundwater, although other sources can be locally important. Nitrate in groundwater affects public water systems and groundwater users, requiring treatment or alternative supplies, often at great cost. Small water systems, disadvantaged communities, and private domestic well owners may not be able to afford treatment or development of alternative water supplies.

Due to California's reliance on groundwater, and because many communities are entirely reliant on groundwater for their drinking water supply, nitrate contamination has far-reaching consequences. Solutions to nitrate-contaminated drinking water are achievable, but require additional funding and resources that are currently not available. Access to safe drinking water for every Californian will not take place without additional resources.

### **REGULATORY STRATEGY**

As stated previously, the California Water Code authorizes the Water Boards to regulate discharges that impact or may have the potential to impact waters of the state. This includes both surface water and groundwater. Even though the Water Boards have regulatory authorities, the Water Boards find that a collaborative approach to outreach, education and implementation is just as important to the success of Water Board Agricultural Regulatory programs. Some of the agencies and groups that Water Boards partner with to leverage their authorities and responsibilities are:

- Coalition and Commodity Groups
- Third-Party Certification Groups
- Farm Bureaus

- Natural Resources Conservation Services
- USEPA
- Resource Conservation Districts
- Certified Crop Advisers
- CA Department of Food and Ag
- County Ag Commissioners
- University of California Cooperative Extension
- CA Department of Pesticide Regulation
- CA Department of Food and Agriculture
- Team Concept Water Quality Improvement Projects

As an example of this collaborative team approach, education classes are often organized by coalition groups, with instruction provided by academia, resource agencies, or commodity groups. The classes are organized by crop type or watershed drainage area. The commodity-specific classes might include best management practice (BMP) instruction specific to a certain type of crop. The watershed-specific classes might be offered to a group of farms that all drain to the same monitoring location, and the classes would explain what types of BMPs are necessary to address specific pollutant exceedances, such as retention and infiltration BMPs for sediment-bound pesticides or nutrient management plans for excessive nitrogen.

If we have willing producers and if we work together we can get results. Overall, growers can play a significant role in supporting the program. The Water Boards recognize that growers see themselves as stewards of the land and most want to work with us. Growers may not be happy paying fees and conducting monitoring, but the Water Boards anticipate that the growers see the multiple benefits that come along with protecting water quality, such as more efficient water and fertilizer use and associated costs.

The next step of the Water Boards ILRP is better BMP implementation. We need to figure out how to work better with our coalition groups, technical service providers, and 3rd party certification programs to ensure that growers are actually implementing the BMPs they say they will. The Team Concept Water Quality Improvement projects mentioned earlier is an attempt to implement these approaches. Widespread non-point source (NPS) pollution caused by agricultural runoff cannot be addressed with scattered BMP implementation. It will take a watershed effort, drainage area by drainage area, where all growers will have to implement multiple BMPs before we start seeing results.

The Water Boards recognize that having robust and viable agricultural operations in California is very complex and challenging. However the use of pesticides and fertilizers in crop production and the protection of water quality should not be in conflict. Therefore, we should seek to co-manage the goals of both. The Water Boards wish to ensure that California maintain sustainable crop production that does not undermine efforts to protect wildlife and water quality for current and future generations. 🌱

