



EPA Inaction a Potential Harm to Wildlife

The State of California had the longstanding responsibility to establish water quality standards for pollutants toxic to the state's many rivers, lakes, enclosed bays, and estuaries and related wildlife. California's inaction prompted the Environmental Protection Agency (EPA) to institute the California Toxics Rule (CTR) in 2000, which established water quality standards for 126 priority toxic pollutants.

The State Water Resources Control Board (State Board) and the Regional Water Quality Control Boards (Regional Board) use these standards to create effluent limitations in Clean Water Act National Pollutant Discharge Elimination System (NPDES) permits and Total Maximum Daily Loads (TMDLs), both of which allocate limits on pollutants discharged into protected waterways. The CTR standards are also used to set goals and plan water quality policies under the Clean Water Act Section 303.

While developing the California Toxics Rule, the EPA was required to consult with the federal resource agencies for Endangered Species impacts. In 1998, the Fish & Wildlife Service found that the California Toxics Rule, originally proposed in 1997, would jeopardize the continued existence of 25 federally endangered species, and result in adverse effects on 11 critical habitat units under the Endangered Species Act. The EPA and Fish & Wildlife Service discussed reasonable and prudent alternatives to avoid a determination that the CTR is jeopardizing endangered or threatened species. EPA made several modifications which were resubmitted to the Fish & Wildlife Service in late 1999.

The Fish & Wildlife Service completed their review and issued a Biological Opinion that approved the revised CTR with the inclusion of Reasonable and Prudent Measures and Terms and Conditions which required EPA to complete to ensure the continued protection of threatened and endangered species. In particular, Fish & Wildlife found that the CTR's numeric water quality criteria for selenium, mercury, pentachlorophenol, cadmium, and the formula based criteria for metals to be the most problematic for listed species and their designated critical habitat. For that reason, Fish & Wildlife asked EPA to withhold promulgation of the selenium and mercury criteria altogether and issue those criteria pursuant to the directions in the Biological Opinion. Fish & Wildlife also required EPA to review and revise the criteria for pentachlorophenol and cadmium as well as the formulas used to derive the water quality criteria for several metals. Nearly thirteen years have passed since the Biological Opinion was issued, but EPA has failed to finalize the criteria for selenium and mercury or fully revise and implement the criteria for

pentachlorophenol, cadmium, and the formulas used to calculate water quality criteria for several other dissolved metals criteria.

Fish & Wildlife withheld issuing an opinion that the CTR was jeopardizing several threatened and endangered species based on the expectation that EPA would implement the Reasonable and Prudent Measures and promulgation of all the new or revised CTR criteria in a timely fashion, generally by 2003. Thus, the State and Regional Boards have been lacking water quality criteria to be used in issuing NPDES permits that are properly protective of various endangered and threatened species discussed below for more than ten years beyond the original deadlines proscribed by the Biological Opinion. As described below, EPA's ongoing inaction thus has dramatic consequences for numerous threatened and endangered species in California.

Pollutants and Impacts on Wildlife

The following table summarizes the significant impact these toxic pollutants have on wildlife:

Constituent	Likely Source	Effect on Wildlife	Species Likely to Be Effected
Selenium	Fossil-fuels, agricultural irrigation, overgrazing, sulfide mining, intensive confined livestock operations, wastewater treatment	General: Bioaccumulation. Birds: Gross embryo deformities, winter stress syndrome, depressed immunity, reduced juvenile growth and survival rates, mass wasting, loss of feathers, embryo deaths, altered hepatic enzyme function, Fish: depressed immunity, impaired migration, smolting.	Birds, especially California clapper rail, California least tern, light-footed clapper rail, Yuma clapper rail. Fish: Salmonids, Green and White Sturgeon.
Mercury	Aerial deposition from fossil fuel combustion, discharge of industrial and mining wastes.	General: Bioaccumulation. Birds: Weight loss, difficulty flying, walking, standing, impaired muscle coordination and hearing, reproductive impairments. Fish: Adverse impact on behavior, growth, histology, reproduction, and survival. Mammals: Neurological impairments including loss of motor control and visual impairments.	Birds: numerous birds, notably least tern and California clapper rail in San Francisco Bay. Light-footed clapper rail. Fish: Coho and Chinook salmon, steelhead trout, Little Kern Golden trout, Paiute cutthroat trout, Lahontan cutthroat trout, Sacramento splittail, unarmored threespine stickleback, bonytail chub, shortnose sucker, Lost River

			sucker. Mammal: Southern sea otter.
Pentachlorophenol	Wood treatment plants, waste water treatment facilities receiving wood treatment plant effluent, legacy contamination.	Impairments in reproduction, early life stage survival, growth, and behavior of salmonids.	Coho and Chinook salmon, steelhead trout, Lahontan cutthroat trout, Paiute cutthroat trout, Little Kern golden trout.
Cadmium	Mining and ore smelting, via direct discharge and atmospheric deposition, industrial discharges, stormwater runoff.	Reductions in growth, survival, fecundity.	Coho and Chinook salmon, steelhead trout, Lahontan cutthroat trout, Paiute cutthroat trout, Little Kern golden trout, unarmored threespine stickleback.
Dissolved Metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc.	Permitted industrial discharges and waste water treatment plant effluent	Numerous impairments based on synergistic effects of the metals present.	Numerous species of birds, fish, and amphibians, including: California red-legged frog, San Francisco garter snake, many species of fairy shrimp. Copper is known to particularly threaten endangered Coho and other salmon.

Pollutants, the California Toxics Rule, and EPA Inaction

Selenium

Although selenium is an essential nutrient to vertebrate species, selenium can contribute to toxicity syndromes in many species when dietary uptake only narrowly exceeds the required levels. Selenium's toxic effect to fish and wildlife is ultimately determined by how much selenium is partitioned into the food chain. Because selenium bioaccumulates, even small increases in the background level of selenium can create excessive concentrations in organisms such as fish that are higher up the food chain. For that reason, Fish & Wildlife Service warned EPA that their selenium criteria would only be adequate if it protected aquatic food chains from excessive bioaccumulation. Fish & Wildlife Service postulated that the selenium criterion should be no more than 2 ug/L and explained that levels as low as 0.2 ug/L would be needed to protect specific species in water bodies where the food chain is already contaminated with selenium.

After the issuance of the Biological Opinion, EPA decided that it would be appropriate to promulgate two selenium criteria - one applicable to the San Francisco Bay-Delta region, and the other to be applied in the rest of the State. However, EPA has failed to promulgate any selenium water quality criteria to date. The agency's target for issuing the proposed selenium criteria for the Bay-Delta is sometime in the

next two years. EPA has not set a timeframe for when the statewide criteria may be proposed. In the meantime, the effluent limitations for selenium set by Regional Boards in their NPDES discharge permits water quality criteria are likely to be inadequate for protecting numerous aquatic or aquatic dependent species.

Mercury

Mercury is a trace element with no known essential biological function. In water, mercury can exist in many forms including methyl-mercury, which is the most toxic and the most bioaccumulated form of mercury.

The Fish & Wildlife Service asked EPA to withhold promulgation of the mercury criteria in the CTR because the Fish & Wildlife Service concluded that EPA's proposed mercury criteria was likely to adversely impact numerous threatened and endangered bird, fish, reptile, amphibian, and mammal species. EPA was to revise the mercury criteria levels proposed by Fish & Wildlife Service that were based on the levels necessary to protect salmonids and the California least tern (as these are among the most sensitive species to adverse mercury impacts).

Due to political pressure, EPA later decided that it would not take any action on adopting mercury criteria and instead would allow the State Board to adopt statewide mercury criteria. After making some initial mercury proposals in 2007, the State Board has not taken any public action to create a statewide water quality standard for mercury. Because of EPA's ongoing inaction, the mercury effluent limitations set by Regional Boards in their NPDES discharge permits water quality criteria are likely to be inadequate for protecting numerous aquatic or aquatic dependent species.

Pentachlorophenol

At one time, pentachlorophenol ("PCP") was widely used as a fungicide, herbicide, insecticide, and disinfectant. EPA sharply restricted PCP's use by the general public in 1984, though it is still permitted as a wood preservative in certain industrial applications.

Unlike selenium and mercury, the Biological Opinion allowed EPA to promulgate water quality criteria for PCP in the CTR. However, Fish & Wildlife Service expressed concern that EPA's PCP criteria in the CTR was not protective enough of salmonid species because when EPA set this criteria, it did not consider the cumulative and interactive effects of commercial grade PCP toxicity through the critical life-cycle of salmonids under conditions of elevated temperatures or reduced dissolved oxygen. The PCP criteria in the CTR also do not consider bioconcentration of PCP or its impurities into aquatic organisms and subsequent ingestion by wildlife.

Numerous scientific studies have demonstrated that PCP adversely affects the reproduction, early life stage survival, growth, and/or behavior of salmonids at concentrations at or below the levels that EPA promulgated in the CTR. For that reason, Fish & Wildlife Service directed EPA to generate new research that considers the interactive effects of pH, dissolved oxygen or temperature on PCP toxicity to fish and subsequently re-evaluate the PCP criteria in the CTR. In the interim, Fish & Wildlife Service noted that the existing data indicated that a chronic criterion of between 0.2 to 2.0 ug/L PCP would be protective of early life stage salmonids.

EPA has not produced any new research as directed in the Biological Opinion nor did EPA revise the CTR PCP criteria to the level recommended by Fish & Wildlife Service. In 2007, EPA informed Fish & Wildlife Service that the State and Regional Boards should instead bear the responsibility for adopting site

specific PCP criteria where warranted. In response, most of the Regional Boards have indicated that carrying out this task is a very low priority and have taken no action to implement a lower PCP criteria.

Cadmium

Cadmium is a soft metal that is frequently found in natural deposits with other metals such as zinc, copper, and lead. Although the Biological Opinion allowed EPA to promulgate a water quality criteria for cadmium in the CTR, the Fish & Wildlife Service found that the CTR's chronic aquatic life criterion for cadmium does not protect several endangered or threatened salmonid and stickleback fish species. The Fish & Wildlife Services therefore directed EPA to review and revise the cadmium criteria to be more protective of ESA-listed species within a relatively short time frame. EPA has never promulgated these more protective cadmium criteria in California, instead deciding that get would wait and see if the State Board would instead promulgate cadmium criteria. The State Board has not done so, and thus, the water quality criteria implemented by Regional Boards in their NPDES discharge permits are likely not protective of numerous aquatic or aquatic dependent species.

Dissolved Metals

In the CTR, EPA promulgated water quality criteria for the metals arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. However, these criteria for metals are "formula-based." This means when State and Regional Board regulators use the CTR criteria for these metals to calculate the applicable water quality criteria for a given water body, they have to consider site-specific data about that water body and input it into a formula to generate the final numeric criteria that will be used to set effluent limitations in NPDES permits. The site-specific data that may be necessary to calculate and/or modify the given criteria include things like water hardness, conversion factors and translators, and water effect ratios.

The Fish & Wildlife Service found that EPA's formula-based metal method for establishing water quality criteria for metals does not sufficiently consider the environmental fate, transport, and transformations of these metals in natural environments and would likely lead to EPA, the State Board and Regional Boards allowing higher levels of metals to be discharged into waters used by endangered and threatened species than would be safe for these species. For that reason, the Biological Opinion directed EPA to develop various guidelines in how to utilize a formula based approach to establishing metals criteria that would likely lead to more stringent metals criteria. EPA largely failed to follow the Fish & Wildlife Service mandate and instead indicated that it would let the State Board develop much of the guidelines. The State Board still has not done so. As a result, the State and Regional Boards are likely effectively setting higher metals criteria that in turn leads them to adopt more lenient NPDES permit limits for metals than would be the case if the guidelines were revised to take the Fish & Wildlife Service's concerns into consideration.

The metals in issue are frequently discharged by NPDES permittees (such as industrial dischargers and waste water treatment plants) and are routinely found in aquatic environments. Accordingly, EPA's failure to complete or revise these guidelines are leading to adverse impacts on numerous bird, fish, and amphibian species.

Impaired Water Bodies

The Clean Water Act requires EPA and the State Board to list waters in California that are so polluted that they do not meet water quality criteria or fully support the "beneficial uses" designated for those waters, such as wildlife habitat (such waters are known as "impaired waters"). There are numerous

water bodies in California that EPA and the State Board have listed as impaired by excessive pollution with selenium, mercury, PCP, cadmium, or various other metals. This underscores that excessive discharge of these pollutants is not a mere academic concern, but is causing numerous water bodies in the state to be degraded to the point where their value for wildlife habitat and other purposes has been officially recognized as diminished. Thus, there is an obvious need to curb discharge of these pollutants into California's waters.

While not a comprehensive list of impaired waters or contaminants, the following list demonstrates the widespread presence of the contaminants that implementation of the Biological Opinion's Reasonable and Prudent Measures would address. The EPA is overdue to incorporate these measures fully into the California Toxics Rule.

Constituent	Waterbodies
Selenium	San Francisco Bay, Sacramento Delta and tributaries, Calleguas Creek, Los Angeles River
Mercury	San Francisco Bay, Sacramento Delta and tributaries, Calleguas Creek, Los Angeles Harbor
Pentachlorophenol	Morrison Creek (Central Valley), Green Valley Creek and Kit Carson Creek (San Diego)
Cadmium	Numerous waterbodies in Los Angeles, Central Valley, San Diego
Chromium	Los Angeles Harbor
Copper	Stege Marsh, Oakland Inner Harbor, much of Los Angeles Basin, San Diego Harbor
Lead	Mission Creek, Oakland Inner Harbor, San Leandro Bay, several reaches of the Los Angeles River, Mission Bay
Nickel	Petaluma River, Moss Landing, portions of Calleguas Creek
Silver	Mission Creek (San Francisco Bay)
Zinc	Mission Creek, Oakland Inner Harbor, San Leandro Bay

Source: Ecological Rights Foundation