DIOXINS

The State Water Resources Control Board's Draft Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California and Functional Equivalent Document indicates that "CDDs and CDFs represent two families of chemicals, chlorodibenzo-*p*-dioxins (dioxins) and chlorodibenzo-*p*-furans (furans), respectively, which, taken together, comprise over 200 closely related compounds. Dioxins and furans generally occur in the environment as mixtures of various congeners; that is, they rarely appear individually. Dioxins and furans containing chlorine at the 2,3, 7, and 8 positions are some of the most toxic substances in existence; additionally, they are environmentally persistent, they bioaccumulate, and some are probable human carcinogens. The dioxin compound that is best studied and considered the most toxic is 2,3,7,8 - TCDD." Seventeen of the CDD and CDF congeners have chlorine at all four of the 2, 3, 7 and 8 positions. These seventeen are of primary concern to water quality.

In 1990, the SWRCB in its Ocean Plan, established a water quality objective of 0.0039 picograms per liter for TCDD equivalents. The Plan states "TCCD equivalent are defined as the sum of the concentrations of seven chlorinated dibenzodioxins (2,3,7,8-CDDs) and ten chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their individual toxicity factors."

The USEPA's California Toxics Rule is proposing criteria for 2,3,7,8-TCDD, but not for the other 16 dioxins and dibenzofurans. The CTR bases its proposed criteria on five factors: cancer potency, cancer risk level, bioconcentration factor, average sea food consumption rate,, and the average adult weight. The SWRCB uses the USEPA's calculation method for the Ocean Plan water quality objective; however, it calculated a higher fish consumption rate to better represent the amount of fish eaten by Californians.

The SWRCB's Draft Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, which will establish provisions to implement the California Toxics Rule criteria, is proposing a method for calculating effluent limitations for toxic chemicals, including 2, 3, 7, 8 - TCDD. The Draft Policy and also proposes that the RWQCBs adopt an order to amend the monitoring provisions of NPDES permits and, as appropriate, non-NPDES permits to require dischargers to conduct effluent and ambient monitoring for the 2, 3, 7, 8 - TCDD congeners. However, the levels of concern are at such low concentrations that they may not be achievable with standard lab techniques. Also, the analyses necessary are very expensive and there are only two labs in California that can perform the analyses. In addition, determining inputs is difficult because there are both point and nonpoint sources, such as stormwater runoff and atmospheric deposition (direct and indirect), of dioxins and dibenzofurans. USEPA has indicated it will promulgate the CTR in late-June or early-July 1998.

The SWRCB is currently reviewing public comments on its Draft Policy. The SWRCB projects a revised draft will be available for public comment in the late Spring. SWRCB anticipates adopting the Draft Policy in summer 1998, following promulgation of the CTR.

New information regarding the sources of dioxins is still coming to light. The San Francisco Bay Regional Water Quality Control Board starting imposing dioxin limits in NPDES permits for oil refineries. The refineries had excess levels of dioxins in their discharge and began carbon treatment to remove dioxins; however, there was no change in the tail end result. Testing followed and found that stormwater runoff contained dioxins and stormwater was possibly mixing with the discharge of the refineries. Dioxins have also been found in air emissions and atmospheric deposition is a possible source. The San Francisco Bay Regional Water Quality Control Board has issued a fish advisory in San Francisco Bay for PCBs, mercury; and dioxins. Although the advisory is primarily for PCBs and mercury, dioxins are also constituents of concern in fish tissue.

With regard to human health, dioxins are not only probable carcinogens, dioxins affect the human endocrine and reproductive systems. Dioxins remain in your body for approximately 7 years and are slowly excreted and sloughed off.

Should CALFED decide to include dioxins as a parameter of concern for the CALFED Water Quality Program, it will need to coordinate closely with the State Water Resources Control Board on issues relating to dioxins.

Sources:

Personal communication, Lila Tang, San Francisco Bay Regional Water Quality Control Board, January 22, 1998.

State Water Resources Control Board, Draft Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (Phase I of the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan) and Functional Equivalent Document. September 1997.