06/21/06 BMtg Item
Chlorine Policy
Deadline: June 5, 2006

State of California

Memorandum

To: State Water Resources Control Board
Executive Office
Song Her, Clerk to the Board
1001 I Street, 24th Floor
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Date: May 26, 2006

From: Kenneth Mayer
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Subject: **Comments – Chlorine Policy**

The Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) has reviewed the State Water Resources Control Board (SWRCB), Draft Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California (April 2006). The Policy will affect entities that discharge to the State's inland surface waters, enclosed bays and estuaries of California through the issuance of National Pollutant Discharge Elimination System (NPDES) Permits. Currently, there is no statewide Policy that establishes uniform water quality objectives for chlorine. DFG-OSPR commends the SWRCB for developing this Policy and overall supports the provisions of the Policy. We would like to offer the following comments.

1. *Part I. Objectives.* DFG-OSPR supports the Policy proposal to adopt the U.S. Environmental Protection Agency (EPA) 304(a) criteria to protect aquatic life from continuous discharges of total residual chlorine (TRC) in freshwater and chlorine-produced oxidants (CPO) in saltwater (U.S. EPA, 1985). These criteria are based on a reliable scientific foundation and are a logical choice for protecting aquatic life from TRC and CPO toxicity. The U.S. EPA criteria document (U.S. EPA, 1985) notes that the criteria are protective of aquatic organisms, except possibly where locally important species are very sensitive. DFG-OSPR encourages the Regional Water Quality Control Boards (RWQCBs) to consider site-specific sensitive resources when issuing NPDES permits and setting compliance schedules that address chlorine limits.

2. *Part I. Objectives.* DFG-OSPR has concerns about the protectiveness of the instantaneous maximum objectives for intermittent chlorine discharges (*i.e.,* not to exceed 120 minutes). These objectives are based on a study by Mattice and Zittel (1976) where acute and chronic toxicity thresholds were developed for freshwater and marine organisms. In this study, toxicity thresholds were graphically depicted as a function of the organism's duration of exposure in minutes (x-axis) and the chlorine concentration in the water (y-axis). The draft Substitute Environmental Document for the Total Residual Chlorine and Chlorine-Produced Oxidants Policy of California (April 2006) recreates these acute toxicity thresholds (see pages 40-41) but

incorrectly refers to duration of exposure (x-axis) as the discharge duration in minutes. The Mattice and Zittel (1976) study concludes that the duration of exposure of the organism in the discharge plume should be used to determine whether a chlorine concentration exceeds the toxicity threshold. Thus, the basis of DFG-OSPR's concern is that the intermittent discharge effluent limitations appear to consider the duration of the discharge and not the duration of exposure of the aquatic organisms in the receiving water. Since allowable instantaneous maximum chlorine concentrations may exceed the U.S. EPA 1-hour average TRC/CPO criteria, there is the potential for inadequate protection of aquatic life when the duration of exposure in the water body exceeds the duration of the discharge. Thus, DFG-OSPR recommends that these intermittent criteria be applied on a site-specific basis by the RWQCBs, considering the flow dynamics of the discharge and the receiving water and the potential exposure duration of the aquatic organisms. Additionally, it is recommended that the RWQCBs consider whether these intermittent discharges will occur on an occasional or a daily basis. Mattice and Zittel (1976) did not address the impacts of chronic exposure to intermittent discharges.

3. *Part II, Monitoring Requirements*. DFG-OSPR supports the Policy proposal to use continuous monitoring for continuous discharges.

4. *Part II, Mixing Zones and Site-Specific Objectives.* DFG-OSPR supports the Policy proposal to apply the criteria for continuous discharges as "end-of-pipe" effluent limits.

Thank you for the opportunity to review the draft Chlorine Policy. If you have questions or would like to discuss these comments further, please contact our Staff Toxicologist, Regina Donohoe, Ph.D., at (831) 649-7150 or by e-mail at rdonohoe@ospr.dfg.ca.gov.

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References:

Mattice, J.S. and H.E. Zittel. 1976. Site-specific evaluation of power plant chlorination. Journal of the Water Pollution Control Federation 48:2284-2308.

U.S. Environmental Protection Agency (U.S. EPA). 1985. Ambient Water Quality Criteria for Chlorine – 1984. Office of Water, U.S. EPA, Washington D.C. EPA 440/5-84-030.