

SLO SEA

San Luis Obispo Science and Ecosystem Alliance

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SLOSEA Management Action Memo

TOPIC: Protecting Coastal Environments from Ongoing Pollution Danger
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Action Opportunity

State and local regulatory agencies need to regulate the use and manage the treatment of nonylphenol, a man-made chemical and proven endocrine disruptor, found in high levels in animals that live in California estuaries, including those animals raised as part of human food supply such as oysters and mussels. The threat and linkage with tumors in the liver and gonads of fish warrant a multi-pronged effort of immediate regulatory action, treatment planning, and targeted research.

Situation

SLOSEA scientists have found high levels of nonylphenols in the environment and in animals that live in estuaries in two areas of California - Morro Bay and Tomales Bay. We analyzed liver and gonadal tissue of arrow gobies, a common resident of California estuaries and a pollution indicator organism. Histological analysis demonstrated tumors in both the liver and gonads of fish. Chemical analysis of liver tissue from 250 fish showed that average levels of nonylphenol reached 716 ppb, which is about 70% of the level typically found in septic tanks. Moreover, nonylphenol was found in the human food supply: digestive tissue in oysters (363 ppb) and blue mussels (290 ppb) grown in Morro Bay showed levels significantly above those that can induce reproductive impairment in marine invertebrates.

SLOSEA Involvement

SLOSEA has developed a state-of-the-art water quality monitoring system and pollution analysis techniques to evaluate the health of the estuary and nearshore habitats. Over the last three years, we have evaluated key pollution indicator organisms and real-time monitoring data to assess ecosystem health. Addressing key pollutant sources and impacts is one of six key strategies SLOSEA has developed to improve ecosystem health.

Recommended Management Actions

Given the immediacy and severity of the nonylphenol impact on the food chain, we recommend the following actions:

1. Immediate action at the Regional Water Quality Control Board and State Water Board to initiate regulatory review of nonylphenol. Recent passage of the State toxics law may provide added authority for prompt results.
2. Evaluation of alternative Los Osos Waste Water Treatment options for their efficacy in removing nonylphenol from the waste stream (SLO County's draft EIR is currently under review) and review of current treatment practices at the California Men's colony and Morro Bay/Cayucos sewage treatment plant.
3. Support from OPC and other sources for continued SLOSEA research to develop a statewide plan on how to deal with unregulated toxic pollutants like nonylphenol, including protocols for sampling and indicator species for determining the extent and distribution of the problem for all estuaries in California.
4. Review the registration of nonylphenol and mechanisms to increase regulation on allowable uses.

Next Steps

With the necessary funding, SLOSEA will answer these key questions:

1. What are the sources of nonylphenol?
2. How does it move through the ecosystem and food chain?
3. What sampling protocol and indicator species can be used to determine the extent and distribution of the problem in California?
4. What are the human health risks?
5. How can regulators act to control the use and treatment of this and other critical pollutants?

SLOSEA Collaborative Partners

Cal Poly Center for Coastal Marine Sciences ~ California Bureau of Land Management ~ California Coastal Commission ~
California Coastal Conservancy ~ California Department of Fish & Game ~ California State Parks ~
Central Coast Regional Water Quality Control Board ~ Coastal San Luis Resource Conservation District ~
Los Osos Community Advisory Council ~ City of Morro Bay ~ Marine Interests Group of San Luis Obispo County ~
Monterey Bay National Marine Sanctuary ~ Morro Bay National Estuary Program ~ NOAA Fisheries Service ~ Port San Luis Harbor District