

Study tracks seaweed piles to cesspools, fertilizers

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LAHAINA, Maui — A four-year \$1 million study of algae blooms off West Maui has found that cesspools and fertilizers are the primary causes for the massive clumps of seaweed that pile up on the shoreline.

The West Maui Watershed Project is providing tools for dealing with seaweed blooms in other areas of Hawaii, state Deputy Health Director Bruce Anderson said last week. Funding came from the Environmental Protection Agency.

"We now know that nutrient inputs from the land are required to support the large amount of *Hypnea* (seaweed) that occurs at specific locations along the shore," he said.

While there are other factors, such as temperature, wave action, certain amounts of sunlight and currents, Anderson said the primary factor is high levels of nutrients leaking into the ocean.

The studies cleared Maui County's Lahaina sewage treat-

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ment plant and its use of injection wells to dispose of treated effluent. The plant was suspected as a primary cause of the increasing amounts of algae in the ocean off West Maui when the studies began in 1993.

Treated sewage was not detected where algae blooms were occurring near the shoreline, Anderson said.

Sewage leaking out of cesspools near the shoreline is "the most significant finding," he said. "We're seeing fairly clear evidence that cesspools are contributing to the nutrient loading in the near-shore waters."

The problem has increased over the past decade, with unusual blooms of a green algae, *Cladophora sericea*, occur-

ring in 1989 and 1991 in deeper waters off West Maui. A red-brown algae, *Hypnea musciformis*, was introduced in Hawaii in 1974 at Kaneohe Bay and spread to other islands, causing piles of rotting seaweed on some beaches.

Fertilizers used in agriculture, on golf courses and in landscaping also are contributing to the nutrient loading in near-shore waters, Anderson said.

"The agricultural industry in West Maui already has gone a long way to reducing its use of fertilizer, but the landscaping industry still has a long ways to go," he said.

For landscapers and golf course managers who are anxious to keep everything green, "we have to get them to recognize that more isn't necessarily better," he said.

Anderson said state health officials will be able to use the knowledge and techniques developed in the West Maui studies to attack algae bloom problems in areas such as Haleiwa-Waialua on Oahu and West Kauai. There also are cesspools and use of agricultural fertilizers in those regions, he said.

The West Maui study will publish a "Watershed Owners Manual" that discusses the research and offers suggestions for preventing nutrients from getting into the ocean.

A series of public workshops focusing on the manual are planned on Maui.

Where cesspools are clearly identified as a problem, Anderson said the state will work with the counties to develop other sewage-handling systems.