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## Waiting for the DDT tide to turn

**Federal study shows that fish caught off L.A. County still contain the world's highest levels of the pesticide 35 years after it was banned.**

By Marla Cone

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Many fish caught off Los Angeles County still contain extremely high levels of DDT, a sign that anglers and consumers remain at risk and that the ocean's ecosystem may be far from recovery 35 years after the pesticide was banned.

Newly released data from a federal survey indicate that fish caught in the area contained the world's highest-known DDT concentrations. Among 1,200 fish caught from Ventura to Dana Point, white croaker off San Pedro and the Palos Verdes Peninsula were the most highly contaminated. Fish off Orange County and areas north of the Redondo Beach Pier had low concentrations.

The data, collected primarily in 2002, offer the most comprehensive look at the scope of contamination from a 100-ton deposit of DDT that still covers several square miles of the ocean floor decades after the pesticide flowed into county sewers beginning in the late 1940s.

More recent annual sampling by Los Angeles County, far less extensive than the federal survey, suggests that the DDT levels in fish may be improving but still far exceed safe levels.

In response to the new federal findings, the state's environmental health agency is reevaluating the risks of eating locally caught fish, which could result in updates to a health advisory and a commercial fishing ban that have been in effect since 1991.

Fish from local waters are often eaten by recreational anglers and subsistence fishermen, who catch them from piers and boats. Some highly contaminated white croaker is still showing up in a handful of Asian markets in Los Angeles and Orange counties.

The levels "are lower than what we historically have seen" in the 1970s and '80s, "but they are still levels of concern to us," said Sharon Lin, a Superfund project manager at the Environmental Protection Agency's San Francisco office.

Banned in the United States in 1972, DDT is classified as a probable human carcinogen and has been linked to liver disease, reproductive damage and altered hormones in lab animals and wildlife. So much DDT remains in bald eagles on Santa Catalina Island that their chicks die unless the weakened eggs are removed from the island to hatch.

The data from the federal survey by the National Oceanic and Atmospheric Administration and the Environmental Protection Agency suggest that there has been no improvement since the late 1980s, when the last regional fish survey was conducted. Some scientists have long theorized that the DDT on the ocean floor has been breaking down into less-toxic compounds and would soon disappear from marine life.

Yet at least through 2002, when most of the fish were caught for the survey, the DDT — as well as industrial compounds called PCBs, or polychlorinated biphenyls — remained a threat to people eating white croaker and several other species of local fish, particularly in waters off the Palos Verdes Peninsula and in San Pedro Bay.

"Things have not changed a whole lot in the last decade or so," said David Witting, a National Oceanic and

Atmospheric Administration fish biologist who directed the survey. "The biggest concern is still lower Santa Monica Bay, Palos Verdes Shelf and much of San Pedro Bay. The species that is consistently the most highly contaminated is still white croaker."

Manufacturing pesticides at a plant near Torrance from 1947 to 1971, the Montrose Chemical Co. released about 2,000 tons of DDT into county sewers, which empty into the ocean via an outfall off White Point on the Palos Verdes Peninsula. The pesticide adheres to sediment and continues to seep into marine creatures.

Mark Gold, executive director of the Santa Monica-based environmental group Heal the Bay, said the scope of the contamination revealed by the new fish data was worse than he thought.

"Not only have things not improved for contaminated fish off Palos Verdes, but this data shows that the concern is more far-ranging than we originally thought," Gold said. "Hot fish off Palos Verdes is no surprise, but we're finding hot fish all the way from the Redondo Pier throughout San Pedro Bay, and it's for a wide variety of species, not just the bottom-dwelling ones."

The goals of the survey are to update health advisories on which fish are unsafe to eat and to help the EPA decide whether to attempt to seal off the ocean deposit with a thick cap of sand, which could cost tens of millions of dollars.

In addition to white croaker — which feeds on the ocean floor — kelp bass, barred sandbass, scorpionfish and rockfish also contained some high levels above half a part per million.

The highest readings were in white croaker from the middle of San Pedro Bay — about 1.5 miles offshore in an area called Horseshoe Kelp — and near the Cabrillo Pier, half a mile beyond the breakwater. The average at Horseshoe Kelp was 3.2 parts per million of DDT, with one fish reaching almost 13 ppm.

Generally, 10% of the white croaker caught in San Pedro Bay were highly contaminated while the rest had lower levels. The "hot" ones probably migrated from the DDT deposit off White Point, Witting said.

Waters at the southern end of Santa Monica Bay, between Redondo Beach and Palos Verdes Estates, also had some highly contaminated croaker and barred sandbass. Pacific mackerel, opaleye and jacksmelt had the lowest concentrations.

All fish caught off Ventura County — even white croaker — had little contamination, and low levels also were found in fish off Long Beach, Seal Beach and Huntington Beach.

Derek Muir, a global contamination expert at Canada's National Water Research Institute, said the amounts found in the white croaker were "definitely the highest DDT that I have seen in any fish." He suspects they are so high that the fish have liver damage. In a new U.S. sampling of fish in 500 freshwater lakes and reservoirs, the worst DDT level was just under 1.5 ppm, about eight times lower than the peak found in San Pedro Bay.

In the past, the state has used 100 parts per billion of DDT as the threshold for acceptable cancer risk from eating fish. One of every 100,000 people who regularly eat such fish could contract cancer. The amount found in the average San Pedro Bay croaker was 30 times higher than that threshold.

Some of the most contaminated fish finds its way into local residents' kitchens, despite 15 years of health advisories and fishing restrictions.

One white croaker sold in an Asian market in Monterey Park contained nearly 12 ppm of DDT, virtually the same as the most contaminated fish caught in the federal survey.

But outreach programs spearheaded by the EPA and Heal the Bay apparently are working.

Ten years ago, a survey by the environmental group found that contaminated white croaker was plentiful in all Asian markets. But of 68 Asian markets in Los Angeles and Orange counties that the EPA surveyed in 2004 and 2005, only six sold white croaker. "The availability has gone down markedly, but the bad news is: The levels are just as high as they were in 1997," Lin said.

The last comprehensive fish survey prompted the state in 1991 to issue a health advisory for people eating local fish and a no-take zone for commercial fishing.

Most local fish are healthy to eat, but the advisory warns people to watch the types eaten and where they are caught.

People should never eat white croaker from near White Point or the Los Angeles and Long Beach harbors, particularly the Cabrillo Pier, the advisory says. Other fish from the San Pedro and Long Beach harbor area — including surfperch, rockfish, queenfish, scorpionfish and kelp bass — should be eaten no more than once or twice a month, depending on the location.

Commercial fishing of white croaker is banned in a relatively small area, a 15-mile stretch off the Palos Verdes Peninsula.

Robert K. Brodberg, chief of fish and water quality evaluation at the Office of Environmental Health Hazard Assessment, said the agency will launch a reevaluation of the health risks this year, as soon as a federal report detailing the new data is complete. The aim is to develop new fish consumption recommendations and advise the Department of Fish and Game in updating its commercial no-fishing zone.

The recommendation is expected to come next year. Brodberg would not say what levels of DDT and PCBs would be considered safe, because, he said, it would require complex formulations involving how much people eat.

In the meantime, he said, anglers and consumers should follow existing health advisories.

County sanitation officials, who annually test fish off the Palos Verdes Peninsula, said conditions may have improved at the DDT deposit in the four years since the federal survey was conducted. For two straight years, average DDT concentrations in white croaker there declined dramatically, from 33 ppm in 2002 to 4 ppm in 2005 — still a worldwide high.

David Montagne, supervising environmental scientist at the Los Angeles County Sanitation District, said that at least another year of data is needed before officials could be confident that the drop was permanent and not a temporary flux.

"The trend we see — and we don't know if it's real or not — suggests that concentrations over the area of greatest DDT contamination are dropping," he said. If that proves to be true, Montagne said, it supports the theory that the pesticide is degrading to less toxic compounds.

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(INFOBOX BELOW)

Toxic fish

A new federal survey of 1,200 fish shows that white croaker caught off San Pedro and the Palos Verdes Peninsula are highly contaminated with the pesticide DDT from a decades-old deposit on the ocean floor. Fish caught off Orange County and north of the Redondo Beach Pier had low concentrations.

DDT concentrations in white croaker

(in parts per million of fish tissue)

Readings from individual sites\*

1.

Median: 0.28

Maximum: 0.87

2.

Median: 0.80

Maximum: 3.6

3.

Median: 1.8

Maximum: 6.8

4.

Median: 0.74

Maximum: 1.4

5.

Median: 3.2

Maximum: 11.1

6.

Median: 0.07

Maximum: 0.17

7.

Median: 2.5

Maximum: 12.7

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Averages by decade\*\*

1970s

Median: 11.5

Maximum: 51.5

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1980s

Median: 7.4

Maximum: 101

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1990s

Median: 8.6

Maximum: 135

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2000s

Median: 5.8

Maximum: 78.8

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\* Measurements from fish mostly collected in 2002

\*\* Averages for each decade are for fish tested next to the DDT deposit off Palos Verdes Peninsula, the most contaminated area. Covers 1971 to 2005. Different testing methods were used in the 1970s and 1980s, so comparisons to later years are approximate.

Which locally caught fish are safe to eat: [oehha.org/fish/so\\_cal/socialpddp.html](http://oehha.org/fish/so_cal/socialpddp.html)

Sources: EPA, NOAA, Los Angeles County Sanitation District

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