

# Deep-sea 'Roombas' will comb ocean floor for DDT waste barrels near Catalina Island

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# Toxic

Credit: Pixabay/CC0 Public Domain

When Californians learned in October that the waters off Santa Catalina

Island once served as a dumping ground for thousands of barrels of DDT waste, the ocean science community jumped into action.

A crew was swiftly assembled, shipping lanes cleared, the gears set in motion for a deep-sea expedition aboard the Sally Ride, one of the most technologically advanced research vessels in the country.

By Wednesday, the ship was ready to leave San Diego and head for the San Pedro Basin, where 31 scientists and crew members will spend the next two weeks surveying almost 50,000 acres of the seafloor—a much-needed first step in solving this toxic mystery that the ocean had buried for decades.

"We want to provide a common base map of what's on the seabed at a high enough resolution," said Eric Terrill of the Scripps Institution of Oceanography, who is leading an effort made possible by the many scientists and [federal officials](#) who helped fast-track this expedition.

"There were a lot of heroics pulled by quite a few people ... to make this happen."

Public calls for action have intensified since the Los Angeles Times reported that the nation's largest manufacturer of DDT once dumped its waste into the deep ocean. As many as half a million barrels could still be underwater today, according to old records and a recent University of California, Santa Barbara study that provided the first real glimpse of this pollution bubbling 3,000 feet under the sea.

"These barrels are full of toxic chemicals that could be causing illness among ocean wildlife and even humans. Ignoring it or claiming it's just too difficult to deal with is not an option," said Sen. Dianne Feinstein, D-Calif., who has pushed numerous agencies to make this issue a priority.

"The Biden administration has indicated it's interested in taking action, and I intend to stay on them."

The expedition this month will deploy two high-tech robots that will comb large swaths of the ocean floor with sonar—"think of them as underwater Roombas," Terrill said. They will yield high-resolution data that will help his team of oceanographers, engineers and hydrographers determine where to send the robots back down for more detailed photos.

Terrill, who specializes in developing technology for deep sea exploration, had already agreed to test these robots as part of an ongoing effort to advance the National Oceanic and Atmospheric Administration's underwater data-gathering programs.

Rather than conduct a more scripted test run, the team agreed to apply this exercise to a real-world need—especially when the DDT question started reverberating across government and academia. As a result, a deep-sea expedition that would usually take at least two years to coordinate came together in less than five months.

Officials and scientists marveled at how quickly the logistics fell into place: finding a ship that wasn't already booked, mapping the expedition, assembling a crew that could operate the technology and process the immense amounts of data. (Pulling this off amid the COVID-19 pandemic was a feat of its own: Thirty-one people had to go through rigorous testing and strict isolation before they set sail.)

Each robot can run autonomously underwater for about 12 to 16 hours before needing half a day to recharge. Terrill and his team have choreographed a NASCAR-like system, in which one robot will always be mapping the seafloor while the other recharges, offloads its data and is recalibrated by the scientists on deck.

"We're going to have a 24/7 cadence while we're at sea," said Terrill, who directs the Marine Physical Laboratory at Scripps. (He also co-founded another deep-sea effort, Project Recover, which uses similar

underwater techniques to find downed warcraft and repatriate Americans missing in action since World War II.)

The plan, in fact, is to post the data almost immediately onto a NOAA-run repository usually used for live-time hurricane updates, oil spills and other major disasters. And within 30 days of the expedition, more polished data will be made available on the National Centers for Environmental Information's website.

"It's important to get this data up and shared as quickly as possible," said Rear Adm. Nancy Hann, who oversees the research fleet for NOAA's Office of Marine and Aviation Operations. "This is an opportunity for us to apply those resources quickly, to a real-world problem—practice launching, practice recovering, go through the process of: How can we use these vehicles to most efficiently provide answers that are needed?"

David Valentine, whose UC Santa Barbara research team first came across the barrels, said this map will help scientists figure out where to focus further sediment and chemical studies.

"There's a real need to look at the extent to which these materials, the DDT in particular, are working their way back into the active biosphere. We're not there yet, because we don't understand the distribution," said Valentine, who has been inundated with calls and emails since October.

One critical question whose answer remains elusive is how much the DDT dumped in the deep ocean has been harming wildlife.

Trying to answer that question anew is Allan Chartrand, an ecotoxicologist who first estimated the extent of the dumping in the 1980s, when he was a regulatory scientist for the California Regional Water Quality Control Board.

Chartrand has been reexamining his old reports that found high levels of DDT in three species of deep-water fish—puzzle pieces from the past that could help inform the questions still haunting the public today.

Fellow scientists continue to find significant amounts of DDT-related compounds in Southern California dolphins, and a recent study concluded that cancer growth in sea lions is somehow exacerbated by all the DDT and other persistent chemicals accumulating in their blubber.

Scientists at the California Cooperative Oceanic Fisheries Investigations program, which has maintained an enormous database of underwater specimens for the last 70 years, have also started reviewing decades of archived samples with fresh eyes. One of the program's most extensively sampled stations could be next to, and possibly on top of, part of the DDT dumpsite.

"The rediscovery of the massive DDT dumping ground off Southern California is certainly a disaster in need of context—how has the DDT, leaked from thousands of sunken barrels, made its way to the parts of the food chain that Californians rely on?" said Brice Semmens, program director and an associate professor of marine biology at Scripps.

Once hailed as a wonder pesticide, DDT saved crops and combated malaria across the world. The U.S. banned its use in 1972, but the chemical is so stable it continues to poison the environment and accumulate up the food chain.

For decades, the nation's largest DDT maker operated its plant on the border of Los Angeles and Torrance. A \$140 million Superfund battle in the 1990s exposed the company's disposal of toxic waste through sewage pipes that poured into the sea—but all the DDT that was dumped into the deep ocean had drawn comparatively little attention.

Renewed outcry has focused on both the dumpsite and the Superfund site, which is still awaiting cleanup after more than 20 years of meetings and high-level studies. Assemblyman Patrick O'Donnell, a Long Beach Democrat, recently introduced a joint resolution calling on Congress and the U.S. Environmental Protection Agency to take action.

In a statement to the Times, an EPA spokesperson said the issue was particularly complex and involved more than one contaminated site, as well as numerous agencies: "Since October 2020, EPA has shared information with our federal and state regulatory partners on this drum disposal issue."

As for the Superfund site, the agency pointed to its continued outreach programs "to minimize public exposure to DDT- and PCB-contaminated fish while final cleanup actions are being developed and implemented."

State leaders have also had numerous high-level meetings on the issue, said Mark Gold, who had championed the DDT problem as a marine scientist since the 1990s and currently serves as California Gov. Gavin Newsom's deputy secretary for coastal and ocean policy.

"The Scripps, NOAA effort will really shed light on what needs to be done next," he said.

Environmental groups have been fielding questions from the community and calling on those in power to ensure better monitoring and accountability.

"We also need to find out who can still be held liable for the deeper pollution," said Shelley Luce, president of Heal the Bay. "I want to know: Who's going to pay? For the studies, the education, and ideally, remediation."

Luce worries about the people who continue to feed their families with contaminated fish caught off local piers. Ultimately, she hopes this moment of outrage will lead to laws that better regulate all the pesticides, flame retardants and other questionable chemicals still polluting our environment today.

"It's a very insidious poisoning of our ecosystem and of human beings," she said. "And the public doesn't know it's happening until too late."

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