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Link between unexploded munitions in oceans and cancer-causing toxins determined.

Note: Dr. James Porter is a Reef Relief Scientific Advisor.

Athens, Ga. – During a research trip to Puerto Rico, ecologist James Porter took samples from underwater nuclear bomb target *USS Killen*, expecting to find evidence of radioactive matter – instead he found a link to cancer. Data revealed that the closer corals and marine life were to unexploded bombs from the World War II vessel and the surrounding target range, the higher the rates of carcinogenic materials.

"Unexploded bombs are in the ocean for a variety of reasons – some were duds that did not explode, others were dumped in the ocean as a means of disposal," said Porter. "And we now know that these munitions are leaking cancer-causing materials and endangering sea life."

These findings will be presented at the Second International Dialogue on Underwater Munitions on February 25-27 in Honolulu. Data has been gathered since 1999 on the eastern end of the Isla de Vieques, Puerto Rico – a land and sea area that was used as a naval gunnery and bombing range from 1943-2003. Research revealed that marine life including reef-building corals, feather duster worms and sea urchins closest to the bomb and bomb fragments had the highest levels of toxicity. In fact, carcinogenic materials were found in concentrations up to 100,000 times over established safe limits. This danger zone covered a span of up to two meters from the bomb and its fragments.

According to research conducted in Vieques, residents here have a 23% higher cancer rate than do Puerto Rican mainlanders. Porter said a future step will be "to determine the link from unexploded munitions to marine life to the dinner plate."

While Porter believes every nation with a coastline has problems with unexploded munitions, there is a solution. "With the creation of the Ordinance Recovery System, we now have a way to safely remove unexploded munitions," he said. The machine picks up unexploded bombs off the sea floor and delivers them safely to a lift basket for surface disposal or deep sea burial. It is operated remotely with proportional toggle switches that allow much more fine control of the delicate undersea operation than an on/off button. The system relies on an underwater hydraulic system designed James Barton, president of Underwater Ordinance Recovery, Inc., with the technical expertise of machinists at the UGA instrument shop.

"When you remove the bomb, you remove the problem – but you've got to pick it up," said Porter. "Our tests in Toppino's Quarry near Key West used disarmed munitions supplied to us by the US Navy. These tests proved that our underwater hydraulic machine can pick up and remove hazardous compounds and dangerous materials from coral reefs. It may seem like a long way from Key West to San Juan, but our work in the Florida Keys proved that we can restore coral reefs in Vieques, Puerto Rico. This test would have been impossible without Reef Relief's advice and support in the Keys."

With roots that date back to the 1950s, the UGA Odum School of Ecology offers undergraduate and graduate degrees, as well as a certification program. Founder Eugene P. Odum is recognized internationally as a pioneer of ecosystem ecology. The school is ranked tenth by U.S. News and World Report for its graduate program. The Odum School is the first standalone school of ecology in the world. For more information, see <http://www.ecology.uga.edu>.