Written Testimony of Dr. Roger Payne
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I am Roger Payne, Founder and President of Ocean Alliance a non-profit research organization that has been working to conserve ocean life for the past 40 years.

The oceans are downhill from everything on land. That means that everything that can be moved by wind or water eventually ends up in the sea where ocean currents then spread it around the world. Some of the most insidious things that reach the sea are the chemicals humans synthesize and, through use, release into the environment.

Such compounds have unmemorable names such as Polychlorinated biphenyls, Polybrominated diphenyl ethers, dioxins, furans, pthalates, Bisphenol-a. Collectively, these chemicals threaten our future. Other contaminants have more familiar names like chromium, mercury and lead.

18 years ago I wanted to know how extensive oceanic contamination had become. I decided that my institute could establish a global baseline for many pollutants by measuring their worldwide concentrations in sperm whales. I chose sperm whales because they occur worldwide and live about as high on food pyramids as humans do. Seeing how badly sperm whales are poisoned tells you how badly you are likely to be poisoned.

To this end, we conducted the Voyage of the *Odyssey*, a 5-year circumnavigation of the globe during which we collected 955 samples from sperm whales, giving us the first worldwide sample-set from a single species. It made our trip the first to measure how badly polluted all oceans are with synthetic chemicals and toxic metals.

We discovered that our samples contain some of the highest levels of pollutants ever found in any free-ranging animal—the very highest readings were from whales we sampled in some of the remotest regions we visited. In short, the oceans are polluted to a far worse degree than anyone had imagined.

For the moment, consider just one of the many pollutants we studied - chromium. (The film *Erin Brockovich* was about chromium poisoning). It is a known human carcinogen with the ability to break and destroy DNA.

With our partner, Dr. John Wise, at the University of Southern Maine, we found levels of chromium in sperm whale skin tissue that are on a par with chromium levels found in the lungs of industrial workers who died of chromium-induced lung cancer. These workers had decades of exposure to chromium because they

worked in factories using and making chromium compounds. Our results show that whales are experiencing similar, even higher, levels of exposure.

We also worked with sperm whale cells grown in the laboratory to see how these cells are affected by chromium. We found that chromium damages whale DNA just as it does human DNA, suggesting that chromium poses problems to whales as they grow and develop.

The most polluted whale lived in waters around Kiribati (in the central Pacific) about as far as it is possible to get from industrialization and big agriculture. This whale contained a concentration of chromium 183 times higher than is needed to break chromosomes.

In short, we have a major pollution problem—we are poisoning our entire ocean ecosystem. We cannot afford any longer to look at the ocean as a giant sink capable of diluting to “safe levels” whatever we put into it. We are slowly and surely poisoning and chemically sterilizing the marine world.

Seafood is the principal source of animal protein for over a billion people. If we keep polluting, humanity will eventually lose access to this key food source. The prospect of over a billion people losing their principle source of meat - because it has become too contaminated with pollutants for safe consumption - will be one of the most serious public health crises humanity has ever faced.

In spite of the obvious seriousness of this problem, it is not on any government’s radar. Before Ocean Alliance circled the globe sampling sperm whales, no one had measured how polluted ocean life had become.

However, if we address this problem vigorously it is not too late. We offer the following Policy Recommendations:

1) We need global legislation to stop industries from discarding harmful substances into the sea or the air (which simply carries them to the sea).

2) We need to thoroughly test chemicals for safety. According to a major report released last Thursday by the President’s Cancer Panel, (a top policy voice on cancer) [Quote] “Only a few hundred of the more than 80,000 chemicals in use in the United States have been tested for safety, many known or suspected carcinogens are completely unregulated.” [End quote]

3) When we have evidence that chemicals damage wildlife we need to apply the precautionary principle and get them out of circulation—for the sake both of wildlife and the humans most at risk—children and fetuses.

3) We need to allocate funds specifically aimed at studying and reducing ocean pollution.

There are next to no federal funds available even to measure ocean pollutant levels. The usual Federal Agencies don't fund such studies, and most EPA funds are expended internally on its own projects… very important, but so are the projects folks like us would do if we could find funding for them. What's needed is a specific set-aside—specific allocations.

It is crucial to stop the flow of toxic contaminants into the seas—it's easier to stop than global warming, but no less important.

Thank you for this opportunity to address you; I would be glad to try to answer your questions.

Roger Payne Biography

Dr. Roger Payne has studied whales since 1967. He is Founder/President of Ocean Alliance. He has an AB from Harvard, and a Ph.D. from Cornell (both in biology). He is best known as the co-discoverer that humpback whales sing songs, and for his theory that fin and blue whales sounds are audible across oceans, a theory since validated by Payne's former student, Christopher Clark.

Payne has led over 100 expeditions to all oceans (most recently an around-the-world study on sperm whales and pollution) and studied every species of large whale in the wild. His laboratory has pioneered many of the benign research techniques now used throughout the world to study free-swimming whales, and he has trained many of the current leaders in whale research both in America and abroad. He directs long term research projects on the behavior of over 2000 individually known Argentine right whales—the longest such continuous study.

He has taught at Cornell, Tufts and Rockefeller Universities and served on many commissions including: the International Whaling Commission (IWC) Scientific Committee (and many of its sub-committees) including a three-man panel that wrote the report establishing the Indian Ocean Whale Sanctuary. He has been Scientific Advisor to the National Aquatic Resources Agency of Sri Lanka and to the IWC delegation of Antigua/Barbuda. He has worked with the Organization of American States to initiate programs training Latin American biologists in whale study techniques (designed as the first step towards conserving whales in their own countries). He has been a scientific consultant for projects sponsored by the US Minerals Management Service concerning the effects on bowhead whales of noises generated by offshore oil exploration. He has worked with the US Marine Mammal Commission, and was a member of the Workshop on Humpback Whales in Hawaii, sponsored by the U.S. Office of Coastal Zone Management, which studied the feasibility of creating a National Marine Sanctuary in Hawaiian waters. He wrote the policy statement on the Ethics of Whaling for the U.S. Delegation to the 1978 meeting of the IWC, and it was his research that lead to making Golfo San José off Peninsula Valdés, Argentina, into a sanctuary for southern right whales.

Payne publishes for both technical and general audiences. His publications include the book, *"Among Whales"* (1995), and three recordings: *"Songs of the Humpback Whale"* (1970—the best-selling natural history recording), *"Deep Voices"*, (1975), and *"Whales Alive"* (1989—compositions composed by whales but arranged and played by humans, in this case by musician Paul Winter). One of Payne's articles in *National Geographic Magazine* contained a record of whale sounds for which 10.5 million copies were printed—still the largest single print order in the history of the recording industry. Payne has lectured at most major universities in the U.S. and England, and has appeared on most major TV and radio talk shows. He is a writer and presenter for television documentaries, and co-writer and co-director of the IMAX film *"Whales* (much of it is based on research by Payne and his institute). His 1992 appearance on *One-On-One With Charlie Rose* won the Emmy for *Best Interview*.

Payne's honors and awards, include: a *knighthood* in the Netherlands, a *MacArthur Fellowship*, the similar *Lyndhurst Prize Fellowship*, the *Joseph Wood Krutch Medal* of the Humane Society of the U.S., *The Albert Schweitzer Medal* of the Animal Welfare Institute, WWF's *Member of Honor;* and a United Nations, UNEP, "*Global 500*" Award. He was a finalist for the *Indianapolis Prize* in 2006 and in 2008. In 2007 he won the *Dawkins Prize* from Balliol College, Oxford University, and in 2008 the Earth Society of New Zealand made him its *Earth Trustee*.