

**The Power of Partnerships and Green Chemistry to Solve Ocean
Pollution**
September 22, 2009
BayModel Visitors Center, Sausalito, California

Good morning to all of you. I would like to begin by thanking the Department of Toxic Substances Control for its organization of this event as well as its vigilance in overseeing and ensuring compliance with California's environmental laws and regulations relative to hazardous materials and substances. As a former prosecutor, it has been my pleasure and privilege to work with many of the Department's personnel, and I assure you that the citizens of California are well protected as a result of the outstanding work the Department has done over the years.

The Algalita Marine Research Foundation was founded approximately 15 years ago by Captain Charles Moore who was sailing from Hawaii to his home in Long Beach, California and came upon an area which begins some 600 miles northeast of Honolulu and has since been named the North Pacific Subtropical Gyre. Captain Moore was shocked by the amount of plastic debris which had accumulated in this location which has since been geographically identified as an area twice the size of the State of Texas. The gyre, one of five which exist on our planet, is a vortex or a concentration of ocean currents which is characterized by exceptionally high concentration of plastics and other marine debris.

I have been asked to provide some commentary today on what we as individuals can do to address this environmental concern. If the answer was simply to discourage individuals, either by logic or draconian enforcement measures, from depositing one time disposable plastic products into our planet's oceans, I could sit down and my commentary would be at an end. The solution is not that simple. The solution for us, as individuals, begins by attempting to understand the enormity of the problem. The ocean serves as the largest and most important feeding source for humankind, and, frankly, we are not doing a good job in preserving this precious resource. Fisheries of almost every species have been severely mismanaged. Coral reefs are disappearing at an alarming rate. Since the discovery of the North Pacific Gyre, Captain Moore and AMRF have successfully completed ten voyages to this area extracting dozens of samples which have been analyzed to show a ratio of plastic to zooplankton, the ocean's primary feeding source, as high as 46:1 in 2008 after an initial finding of 6:1 in 1998. In short, our most precious resource is slowly transforming into a plastic soup. Plastics in the ocean last forever because they are not biodegradable. The heat of the sun rapidly serves to create a photodegradable process which when combined with the ability of plastic to absorb pollutants from other sources serves to create a recipe of catastrophic proportions. The harm becomes even more magnified when we engage in a conversation relative to the impact of plastic upon the marine environment.

The ingestion of plastic debris has been well documented in many types of marine mammals such as turtles and seabirds and is considered to be detrimental to their health. Marine fishes also consume plastic debris but the amount ingested and the effects of this

ingestion have not been well studied or documented. In 2008, AMRF and Captain Moore returned to the North Pacific Gyre in an effort to address this issue. Six Manta Trawl samples taken from the Gyre yielded a total of 672 fish representing 6 species of feeder fish known as myctophids or lantern fish. These fish were analyzed and dissected in an effort to determine whether or not they had ingested any particles of plastic marine debris. The results were astonishing. Of the 672 total fish, 235 were found to have plastic particles in their stomachs with an average number of two pieces per fish. Two species of lantern fish averaged 6-7 pieces of plastic in their stomach with one male fish measuring two and one-half inches in length having 83 pieces of plastic in its stomach. The debris pulled from the stomach was categorized by size, class, type, and color. A total of 1298 pieces of plastic were pulled from the fish. Of the fish with plastic in their stomachs, 33 % were female and 40 % were male, with 26% found to be immature.

So, how do we, as individuals, address this serious problem? We don't. Not as individuals. We do it together and through collaborative efforts such as the one organized today. We do it not through blame or the pointing of accusatory fingers or draconian methods such as bans or other forms of negative energy. We engage in a conversation and strategy whereby everyone from the consumer, industry, government, and the community in which we live is invited to become a part of the solution. We educate the consumer in the proper disposal of plastic products coupled a strategy designed to reduce, re-use, and recycle. We encourage industry to embrace the Green Chemistry Program by identifying and reducing the impact of toxic chemicals on public health and the environment. We encourage industry to develop new eco-friendly products which are designed to reduce or eliminate toxic chemicals through biodegradation rather than contamination. We explore the possibility of placing a redemption value upon disposable plastic bottles and donating the proceeds to research so that we may shed further light upon the manner in which such products impact our environment.

As a consumer, I was excited to learn that 6 days ago, Mead-Johnson, an American company that makes the baby formula, Enfamil, and has provided parents with plastic bags when mother and newborn are discharged from the hospital has pledged to use an environmentally friendly and reusable "Enfamil Carryall" thus eliminating their reliance upon plastic bags. This was done voluntarily and as a way of acknowledging the work of Captain Moore and the Algalita Marine Research Foundation. They have also pledged to show the video "Our Synthetic Sea" at hospitals throughout the country in an effort to raise awareness of the dangers posed by the improper disposal of plastic products into our oceans. We at Algalita Marine Research Foundation are proud to work with companies like Mead Johnson in an effort to address the issue of plastic marine debris. We are equally proud to collaborate with California's Department of Toxic Substances Control in an effort to ensure the health and sustainability of our oceans for future generations. Thank you all very much for your attendance today and an extra special thanks to DTSC for inviting AMRF to be a significant part of the Ocean Pollution Prevention effort.

Respectfully submitted,
Algalita Marine Research Foundation

John M. Fentis, Member
Board of Directors