

CSTR Responds to Basel Action Network's Recent Report, "Dishonorable Disposal"

1. In their report, the Basel Action Network (BAN) makes the claim that it "provides the first comprehensive analysis that makes it fundamentally clear that the environmental, human health and economic costs of dumping these ships at sea are too high". It goes on then to strongly advocate for the recycling of these unwanted ships. What is CSTR's response?

This statement is in direct opposition to the two most famous and most often quoted reports on the options that the U.S. Government has for reducing its inventory of obsolete ships. These reports were commissioned by the Department of Defense (DOD) from the independent and highly reputed Rand Corporation. The first study was completed in 2001 and the follow-up report was released in 2005. The 2001 Rand report says in part that they "examined the option of long-term storage and the three ship-disposal options: domestic recycling, overseas recycling, and reefing." Rand carefully looked at the costs of each program, as this was the government's primary question, to find "the most cost-effective and environmentally sound course of action." The basic conclusion to both the 2001 Rand Corporation Report and to the 2004 follow-up was quite simple: "Reefing is the least expensive domestic disposal option." It went on to say, "Reefing brings with it the potential for additional economic offsets in the form of benefits to communities: increased revenues from recreational diving, sport fishing, improved commercial fishing, and similar endeavors that prosper when reefing takes place in adjacent waters."

CSTR has consistently stated that any ship it plans to put down as an artificial reef will be fully cleaned, all contaminants will be removed especially any material containing PCB's. During the cleaning process valuable metals will be removed to the fullest extent possible for recycling as this is a source of revenue to cover costs. This cleaning and removal project is expected to swell the numbers of workers at the shipyards/dry docks involved. All of this clearly refutes the statement by BAN in their report: "domestic ship recycling is the only method capable of hazardous waste management, and also provides for the recovery of valuable materials." Also, refuting BAN's statement in the same paragraph: "ocean disposal...eliminates the creation of green domestic jobs." As regards jobs in general, we would note it is well documented that each new ship-based artificial reef creates significant economic benefits to the nearby communities including job opportunities at SCUBA shops, fishing shops, charter boats and especially at hotels, restaurants and other hospitality-industry businesses in the vicinity.

2. In “Dishonorable Disposal” BAN states that “it is very important to note that vessels have short underwater life spans as artificial reefs, estimated at 60 years”. CSTR has consistently used the term “up to 100 years or more” for the lifespan of a reefed ship. Why the discrepancy?

The assertion of a 60-year lifespan is difficult to support when faced with contrary evidence. First, take a look at the condition of the shallow “reef” created when the *USS Arizona* was sunk at Pearl Harbor on December 7, 1941. The remains of this vessel still support the memorial structure despite being down just a few months short of 70 years. This is certainly longer than the 60-year lifespan stated by BAN. Further, there is the photographic evidence of the still intact *RMS Titanic* even though it went down in April, 1912. It has been on the bottom nearly 100 years and it sits in water over 12,000 feet deep. At great depth the water pressure will cause the ship to degrade more rapidly due to the intense pressure. Yet, rails remain in place and chandeliers still hang from the ceiling. No scientific studies are known to have determined the estimated lifespan of ship-based artificial reefs, so it appears that the authors of this report have chosen their estimated lifespan at random.

CSTR has consistently stated that ship-based artificial reefs have an estimated lifespan of “up to 100 years or more”. This estimate too is chosen at random, however, the evidence from the *Arizona* and *Titanic*, as well as many others such as Scapa Flow and Chuuk (Truk) Lagoon, suggest that 100 years is actually a conservative figure.

3. “Dishonorable Disposal” makes a concerted effort to point out that toxic substances leaching from ship-based artificial reefs pose a credible threat to the environment and to humans through the consumption of tainted fish. Is this really a problem?

This is, of course, only a problem if the ships are not thoroughly cleaned prior to sinking. The report highlights PCBs (polychlorinated biphenyl), leaching from the artificial reef *USS Oriskany* in Florida. Unfortunately, not all PCB laden material was removed from the ship because the Navy conducted studies that indicated that solid forms of PCBs would leach at a very miniscule rate and therefore some material was not removed. Here is what BAN has to say at one point: “...the *Ex-Oriskany*, post-sinking fish data confirms solid PCBs leach more rapidly into the marine environment than the Navy’s simulated leach rate estimates and are taken up through the food chain more rapidly than the Navy’s environmental risk-based assumptions”.

Unfortunately, the study being cited here cannot confirm anything regarding PCB uptake in the food chain coming from the *Oriskany*. First, only legal size fish were caught for the study which was done in late 2006 and early 2007, and the *Oriskany* was sunk in 2006. The fish tested did not (could not) grow to adult size on or near the *Oriskany*, as she wasn’t there. The most reasonable interpretation is that these fish came from somewhere else. Additionally, an accidental PCB spill in the Escambia River in 1969 resulted in PCB advisories being issued as late as 2007 by the Florida Department of Health. The fish that tested positive for elevated PCB

levels caught on the *Oriskany* were not tested before their arrival on the *Oriskany*. In other words, BAN has no idea where the PCBs actually came from. Did they come from the *Oriskany*, the Escambia River or some other source? The study cited throughout the BAN report can't be relied upon as scientific support for their statements.

CSTR is committed to thoroughly cleaning toxins, including PCBs, from all ships it will repurpose as artificial reefs. With that said, CSTR feels it is unfortunate that the *Oriskany* was allowed to go down with PCB laden material on her and will not allow that mistake to be repeated in any of their activities.

4. “Dishonorable Disposal” on several occasions makes an assumption regarding fish population growth on artificial reefs as if it is fact. Here is a good example of the statement from page nine of the report, it is immediately preceded by the word “suggest”: “..artificial reefs do not necessarily protect and enhance species of fish, but rather attract species of fish. The attracting nature of the artificial reef can, in fact, be detrimental to species populations as concentrated populations can lead to fishing targets and thus overfishing, leading to a probably decline of species with the vicinity”. Isn't this the “Fish Attraction Device (FAD)” theory?

The authors of “Dishonorable Disposal” cite a 2004 report by Lukens and Selberg as the basis for this statement. The report cited is titled “Effect of Severe Hurricanes on Biorock Coral Reef Restoration Projects in the Turks and Caicos Islands”. It does not track fish population movements other than to report dispersal by weather driven currents. The overall report seems to be quite supportive of artificial reef projects and here is one quote from it regarding fish abundance: “fish populations rapidly increased with large numbers of juvenile fish along with seahorses, barracuda, turtles and stingrays.”

To date, no fully scientific studies (with baseline data) have answered the question “Do artificial reefs enhance fish populations or merely concentrate them for easier catch?” Many studies have looked at this issue but, without using a full and proper scientific method, including baseline data, there is only anecdotal evidence combined with evidence that can be derived from fish biology. All of these evidentiary sources suggest that artificial reefs do, in fact, enhance the overall environment and increase fish populations. Further, they suggest that artificial reefs actually reduce the demand on natural reefs thus allowing them to better thrive.

CSTR intends to conduct the research to scientifically prove this point, or not, by conducting baseline studies of our reefing sites along with nearby natural reefs, and then continuing the research after the deployment of our reefs. The final answers lie a few years down the road after completion of the studies. For now, however, the study protocol has been completed and peer reviewed, locations have been determined and CSTR is in the process of partnering with local universities and institutes for statistical analysis of the data that their volunteer divers will collect.

California Ships to Reefs is hoping to provide answers to some of these remaining questions, especially the “Fish Attraction” vs. “Fish Propagation” debate with our pioneering data collection prior to and ongoing after reef deployment.