

Implementation of new Coast Guard ballast water regulations doomed to fail

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Karl Blankenship's article, *Organisms in ballast water increasing despite discharge measures*, (Bay Journal, June 2017) summarizes recent research into why tens of billions of nonnative aquatic organisms introduced into the Chesapeake each year in the ballast water discharged by ships visiting Bay ports pose a significant and growing threat to the Bay's health. That research showed an alarming fivefold increase in these biological invasions since 2005, the year the U.S. Coast Guard was supposed to start implementing ballast water regulations to address the problem.

The article explained some of the reasons why the Coast Guard's ballast water strategy is failing, and ended with a note of optimism that threats to the Bay from ballast water discharges "might be reduced, over time, by new (Coast Guard) regulations that will be phased in starting this fall."

It is my view that the Coast Guard's strategy to implement these regulations is so certain to fail that the best outcome for the Bay would be for it to fail quickly. This would provide opportunities and incentives for new strategies and markets to develop that are more likely to allow ballast water regulations to succeed. It is also preferable to moving forward on the path of least

political resistance we are on now in which the Coast Guard attempts to "work the kinks out" as it implements its strategy, while the shipping industry attempts to save tens of billions of dollars in compliance costs by preventing these "kinks" from being worked out and preventing ballast water regulations from being enforced until they are.

The new Coast Guard regulations to be phased in this fall impose two compliance requirements on ships that discharge ballast water into U.S. coastal waters. Each ship must install a ballast water management systems (BWMS) that has been "certified" by the Coast Guard as being capable of killing or removing enough living organisms for ballast water discharges to meet specific allowable discharge limits. And, the water discharged by a ship, when sampled and tested for compliance, must actually meet these allowable discharge limits.

Because of problems with the Coast Guard program for testing and certifying BWMS, the second compliance requirement will be the source of many enforcement/compliance problems. It means that for a ship to be in compliance, the certified BWMS it has on board must not only work as well in practice as it did during Coast Guard certification testing, but also be capable of routinely

meeting allowable ballast water discharge standards. Any deficiencies in the program that the Coast Guard uses to test and certify BWMS, therefore, could translate into some shipowners, through no fault of their own, being unable to meet allowable discharge standards.

The regulatory context for assessing the Coast Guard strategy for implementing ballast water regulations is enormously complicated and includes ongoing multijurisdictional lawsuits and competing, conflicting, and overlapping international, national, and state ballast water regulations. The economic context is just as complex and involves a financially stressed global shipping industry coping with many new environmental regulations, changing international trade patterns and routes, and, most importantly, fledgling markets for Coast Guard-certified BWMS.

Grow very large, very quickly

BWMS markets would need to grow very large, very quickly, for the shipping industry to meet the schedule for when ships of various types, sizes and ages will need to comply with ballast water regulations. Unfortunately, the current Coast Guard strategy for implementing ballast water regulations has created so much uncertainty in BWMS markets that not enough investments are being made in manufacturing and installation capacity for this to happen. This situation will not change until the Coast Guard changes its implementation strategy.

A few specific issues will set the rules for what might be considered a ballast water “game” that will begin this fall. In this game, the Coast Guard will employ

strategies to enforce or threaten to enforce new provisions of existing ballast water regulations that many shipowners will not be able to adhere to. In response, shipping industry leaders will launch technical, legal and political challenges to those ballast water regulations to prevent shipowners from being forced to spend tens of billions trying to comply. It is a good bet that the shipping industry will succeed if the Coast Guard proceeds as planned.

The Coast Guard ballast water regulations to be implemented in earnest this fall represent the culmination of an enormously ambitious and risky application of what economists call a technology forcing regulation (TFR). When the Coast Guard issued ballast water regulations in 2012, it required ships to achieve specific ballast water discharge standards that could not be achieved using the BWMS technologies available at that time. The success of this TFR depended entirely on potential profits in regulation-driven markets for BWMS technologies that could meet ballast water discharge standards attracting enough investments in research and development for these technologies to be developed. That potential profit would then have to attract enough investments in BWMS manufacturing and installation capacity to bring this technology to market and allow widespread shipping industry compliance by the time the regulations were enforced. Even though these two stages have yet to materialize, the Coast Guard announced that it will start phasing in the enforcement of the new TFR starting this fall.

Of the 50,000 or so ships in the global merchant fleet, about 10,000 routinely visit U.S. ports and would need to spend an average of \$1 million to \$2 million each to

purchase and install Coast Guard-certified BWMS to meet the new regulations. The shipping industry trade news has been flaunting the fact that full, on-time shipping industry compliance with the regulations would mean a potential \$10 billion to \$20 billion market for Coast Guard-certified BWMS over the next five or so years. If the demand for Coast Guard-certified BWMS included all of the other ships that may want to visit U.S. ports, or decide to install one of these systems to be able to comply with international ballast water regulations when they start being enforced, the potential market is claimed to be worth between \$50 billion and \$100 billion.

What is lost in these market predictions is that these numbers also represent levels of potential shipping industry spending that generate no offsetting revenues. And, they represent the cost savings to the shipping industry if BWMS markets do not grow large enough and quickly enough to allow new Coast Guard regulations to be enforced.

So, the problems that will become apparent this fall or winter will expose that the Coast Guard has not sufficiently nurtured the development of the BWMS markets on which the success of its strategy for implementing ballast water regulations depends.

A late start

In fact, the Coast Guard made several decisions that hurt these markets. First, it did not certify any BWMS until 2016, when three types were approved. (A fourth BWMS received Coast Guard certification in June.) There is not enough time for BWMS manufacturing and installation capacity to support the widespread shipping

industry compliance, even taking into account the Coast Guard's multi-year schedule for phasing in compliance requirements for various ships.

Of course, temporary shortages of Coast Guard-certified BWMS on the global market could be overcome with time and "compliance extensions." Unfortunately, a second and more important problem will prevent that from happening. That problem is the widely shared view within the shipping industry and among BWMS experts that some of the systems that were certified by the Coast Guard in 2016–17 will not be able to routinely meet the allowable ballast water discharge standards they were supposed to have met during certification testing.

Ship owners know this from unofficial reports by ship operators who have attempted to use BWMSs already installed on a few thousand ships. But shipping industry data from at-sea testing are not being used routinely to resolve installation and operational problems, nor are they being shared openly with scientists or regulators. This will be the situation until it is in the shipping industry's interest to start releasing data about at-sea failures of Coast Guard-certified BWMS. That will probably be the case this fall or winter when the Coast Guard starts trying to force shipowners to spend billions to purchase and install Coast Guard-certified BWMS.

Testing & certification woes

Mario Tamburri, a well-known international expert in BWMS technologies who has been testing BWMS for the Coast Guard for many years, has not only confirmed that Coast Guard-certified BWMS will not be

capable of routinely meeting allowable ballast water discharge standards, but has gone to great lengths to persuade the Coast Guard that it needs to correct significant flaws in its BWMS testing and certification program.

In 2015, before the Coast Guard had certified any BWMS, he was publishing papers and giving presentations documenting that some BWMS passed Coast Guard-certification testing when they should have failed, or passed certification testing at one Coast Guard-approved test facility when they would have failed at another. The titles of some of Tamburri's recent publications, such as *The Emperor Has No Clothes: Coast Guard Type Approval of Ballast Water Management Systems*, demonstrates how critical he and some of his colleagues are of the Coast Guard's BWMS testing and certification program. Most of these publications focus on how a lack of transparency, rigor and consistency in certification testing has led to widespread uncertainties about how Coast Guard-certified BWMS will perform in practice. These publications, by ballast water scientists not shipping industry consultants, contribute to the growing sentiment among shipowners that it would be unfair for the Coast Guard to require them, under penalty of law, to purchase, install and use certified BWMS that are "not fit for purpose."

There are many seemingly logical reasons why the Coast Guard may have decided or been forced by circumstances to relax BWMS certification testing standards to allow at least some Coast Guard-certified BWMS to start reaching the market in 2016. For example, the regulations might be considered successful if the BWMS that

were certified could achieve allowable ballast water discharge standards at least 80–90 percent of the time, or with respect to 80–90 percent of targeted organisms. Having the Coast Guard proceed with implementation under these circumstances could be viewed as a significant improvement over the current situation.

Reductions in invasive species threats to the Bay, though, depend not only on the percent of invasive species killed or removed by certified BWMS, but on the percent of ships that install certified BWMS as well as the percent of time these ships use them successfully. This is where the "gaming" of ballast water regulations becomes an important consideration. The Coast Guard's decision to move ahead with regulations by allowing certified BWMS that cannot routinely meet allowable standards to reach market is a risky move. And, Coast Guard attempts to bolster that market by broadcasting that it will start being aggressive about enforcing regulations that require ship owners to purchase and install these BWMS is even more risky. It forces the shipping industry to initiate some type of counter-strategy to avoid wasteful investments and costly enforcement-based delays.

That is where the third and most significant problem exists with the current Coast Guard strategy. The shipping industry has no interest in helping to "work out the kinks" in the implementation strategy for ballast water regulations by being forced, under penalty of law, to "beta test" Coast Guard-certified BWMS that should have been "beta tested" earlier during the certification-testing program.

The shipping industry payoff from cooperating with ballast water regulators in this effort would be justification for ballast water regulators to force shipowners to spend tens of billions of dollars to comply with the new standards. From a logical economic perspective, it makes much more sense for the shipping industry to prevent the kinks from being worked out and to spend a few million on lawyers and lobbyists to challenge the Coast Guard's implementation of ballast water regulations because the kinks have not been worked out.

A better strategy

A better strategy for the Coast Guard to pursue would be one that reduces widespread uncertainty in BWMS markets, which at present, have few buyers or sellers — and maybe forcing some BWMS vendors into bankruptcy. The strategy should provide fewer opportunities for the shipping industry to game ballast water regulations, and it should create more economic incentives for shipowners to cooperate in “beta testing” BWMS. The new strategy should also require beefing up and more carefully monitoring uniform and transparent BWMS testing and certification protocols and standards; as well as requiring those few BWMS that have already been certified to be retested using these new protocols and standards.

The new strategy should also include strong legal and political inducements for the world's P&I (Protection and Indemnity) Clubs to get directly involved in helping to find solutions. P&I Clubs insure and provide full risk management services to more than 90 percent of ocean-going vessels, including nearly all of the ships that discharge ballast water in U.S. waters. They indemnify

shipowners, operators and charterers against virtually all types of economic losses that do not result from illegal activity or gross negligence on the part of the insured.

So far, ballast water problems and attempts at regulatory solutions have introduced no significant costs or risks for ship operators. As a result, P&I Clubs have shown no interest in ballast water problems and no concern for the potential economic risks and costs that many ship operators who will not be able to comply with the regulations will face when they start being enforced. P&I Clubs should be at the very center of efforts by the Coast Guard to promote the development of BWMS markets and widespread compliance with ballast water regulations.

It should become apparent this fall that the Coast Guard strategy to implement regulations to reduce the threats that ballast water poses to the Bay's health is doomed to fail. If that happens, demand should grow for it to be replaced with something better. And, one can hope, the lessons that have been learned about what not to do when establishing and implementing environmental regulations aimed at the shipping industry will improve how regulators address similar threats to the Chesapeake from other sources.

Over the next few years, for example, Bay scientists and regulators must start addressing shipping-based biological invasion threats associated with the bio-fouling of the hulls of ships visiting Bay ports. These threats may be as serious and as difficult to deal with as those associated with ballast water discharges. That means reducing the threats that ship-based biological invasions pose to the health of the

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Chesapeake requires not only revising the strategy for implementing ballast water regulations, but not making the same mistakes when developing and

implementing strategies to deal with hull fouling.

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Find more of Dennis King's reports and publications about ballast water at:
<http://www.maritime-enviro.org/Reports.php>