Environmental Remediation of Sea-Dumped Chemical Weapons: Fixing the Mistakes of Our Past

By Grant Dawson and Frans Nelissen

For many generations to come, there is only one place where we can live, and that one place is the Earth. It is therefore imperative that we take care of our home, rather than treating the Earth as if it were given to us for our own selfish exploitation. The impending collapse of some ecosystems is motivating more and more of us to take action in the present to avoid suffering in the future—all the more since much of this suffering will be experienced most intensely by communities that wield relatively less political and economic power. But few will be fully spared.

It has become axiomatic that the health of the Ocean is essential for the survival of not only marine life itself, but also for the whole Earth. The land and the sea are one. In the ignorance—or *naiveté*—of the nineteenth and twentieth centuries CE, some thought—and daresay still do think—that the Ocean's immensity was such that we humans could not harm and exhaust it, the so-called 'infinity of the oceans'.

A myriad of scientific studies has revealed that the Ocean has been seriously impacted by land-based pollution, global warming, overfishing, emissions from vessels, oil spills, and the dumping of industrial waste, radioactive waste, and munitions, including chemical weapons. The nature of this environmental harm is inherently transboundary in nature: although we have created legal delimitations in the Ocean and seas, all things in nature are connected. The marine environment knows no geo-political borders, and we will all have to deal with the degradation of the Earth's ecosystems in the coming decades and centuries.

It is time for a radically different approach to the Ocean and the living creatures that inhabit it. Instead of a resource to be exploited, we need to regard the Ocean as integral to our survival on Earth—the one place in the Universe where we can live, at least for the foreseeable future. This reconceptualization of our relationship with the Ocean may bring the need to include new legal arrangements to protect it; however, so far, the adoption of legal promises to preserve and protect the Ocean has not led to adequate protection and action on the part of public and private stakeholders. The London Dumping Convention, the United Nations Convention on the Law of the Sea, the Regional Seas Conventions, and customary international law (specifically the principles of prevention, precaution, and cooperation) entail mandatory legal obligations for the protection of the Ocean. These *binding* legal instruments and principles of law require the cleanup of sea-dumped chemical weapons, not only in areas that are under the sovereignty of states, but in all areas of the Ocean. In addition to their territorial seas and exclusive economic zones, states must avoid a 'tragedy of the commons' where all have access and can make use of the high seas, but no one is acting as the caretaker of those areas to preserve them for future generations.

The chemical weapons that were dumped into our Ocean and seas after the world wars of the twentieth century CE have been languishing there, in some cases, for over 100 years with little to no action to environmentally clean them up. Chemical weapons have been dumped in all the areas of the Ocean (except the Antarctic) and also in many seas. Estimates range from one to one-point-six million tonnes. Many of them are in shallow waters and regularly wash up on shore or are caught in fishing nets. People are injured every year in accidents involving sea-dumped chemical weapons. Many of the chemical weapons have already contaminated the marine environment. In time, the remaining munition casings will erode, and their toxic contents will be released into the marine ecosystem. It is not yet fully known how devastating the effect will be, but scientists have already observed the contamination of the flora and fauna surrounding chemical weapon dump sites. Sea-dumped chemical weapons are therefore yet another environmental pressure on an already troubled marine environment.

The time for action is long overdue. The problem is a finite one with finite solutions. A worldwide intergovernmental solution might not be realistic, as stakeholders historically have even tried to legally *exempt* themselves (via international treaty) from being legally obligated to clean up sea-dumped chemical weapons and so far have been unwilling to devote the resources necessary to the remediation of the munitions we know about—not to mention the ones that are yet to be located. Rather, an incremental and iterative process might be more feasible and achievable.

Efforts to clean up sea-dumped chemical weapons could also be seen as a political, financial, and technological challenge. One place to start would be to require off-shore projects to adopt a holistic approach to cleaning the seabed for future projects, rather than avoidance or underwater relocation of the munitions, which can be considered re-dumping. Public entities need to provide subsidies to off-shore ventures to clean up munitions in order to provide economic incentives (necessary in our market economy) for the remediation of the munitions, either *in situ* or on land. Such subsidies could, for example, take the form of a 'bounty' paid for each remediated munition or site.

An international organisation could serve as a coordinating agency for efforts in this area, such as a centralised database for the location and status of the munitions, a clearing house for best remediation practices, and the administration of a modest, voluntary trust fund to finance further research and operations. A pilot project could be undertaken in the next years to fully remediate a site in the Baltic Sea—an area of particular concern due to the large number of dump sites, the low depth of the water, and the increased economic activity there. Lessons would be learned from such a project and then applied to future cleanup projects.

These efforts would be undertaken as voluntary cooperation and would be consistent with the legal obligations undertaken by states to preserve and protect the Ocean. In this manner, the taboo that has long been associated with sea-dumped chemical weapons can be lifted, and we can get on with the work of altering the mistakes of our past, so that we can restore the balance of our planet's Ocean, upon which we all depend for survival.

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