

# Encounters with Chemical and Conventional Munitions 2011



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Policy Issue: OSPAR Framework for Reporting Encounters with conventional and chemical munitions in the OSPAR maritime area (OSPAR Recommendation 2010/20).

Policy Objective: To promote the reporting of encounters with conventional and chemical munitions by fishermen and other users of the sea in order to make informed decisions on the management of dumpsites

## Background

Following World Wars I and II large amounts of munitions were dumped in the OSPAR maritime area. Dumped munitions included conventional munitions such as bombs, grenades, torpedoes and mines as well as phosphorus incendiary devices and chemical munitions containing, for example, mustard gases. Dumped chemical and conventional munitions are causing environmental and safety concerns in many parts of the world, including in the OSPAR maritime area. Historical records on the quantities of munitions dumped and their location is limited and of dubious accuracy.

## What is the problem?

Encounters with conventional or chemical munitions pose a great threat to human health, as well as a potential threat to aspects of the marine environment. In 2005, three fishermen lost their lives in the southern part of the North Sea when a World War II bomb exploded on board their fishing vessel after having been hauled aboard in their nets.

Chemical agents are composed of a variety of substances. Potential for persistence, bioaccumulation and/or toxicity (PBT) are of particular concern in the marine environment. Marine dumped chemical munitions react differently in water depending on the agent they contain. Nerve agents and many other agents hydrolyze, or break down and dissolve once they come into contact with water, and are therefore rendered harmless in a relatively short period of time. Mustard gas, however, is insoluble in water and most injuries have occurred when fishermen have come into contact with mustard gas. Phosphorous devices also present long term problems. If disturbed, these positively buoyant devices may float to the surface and represent a real risk to the seafarers and to the general public should they be washed ashore.

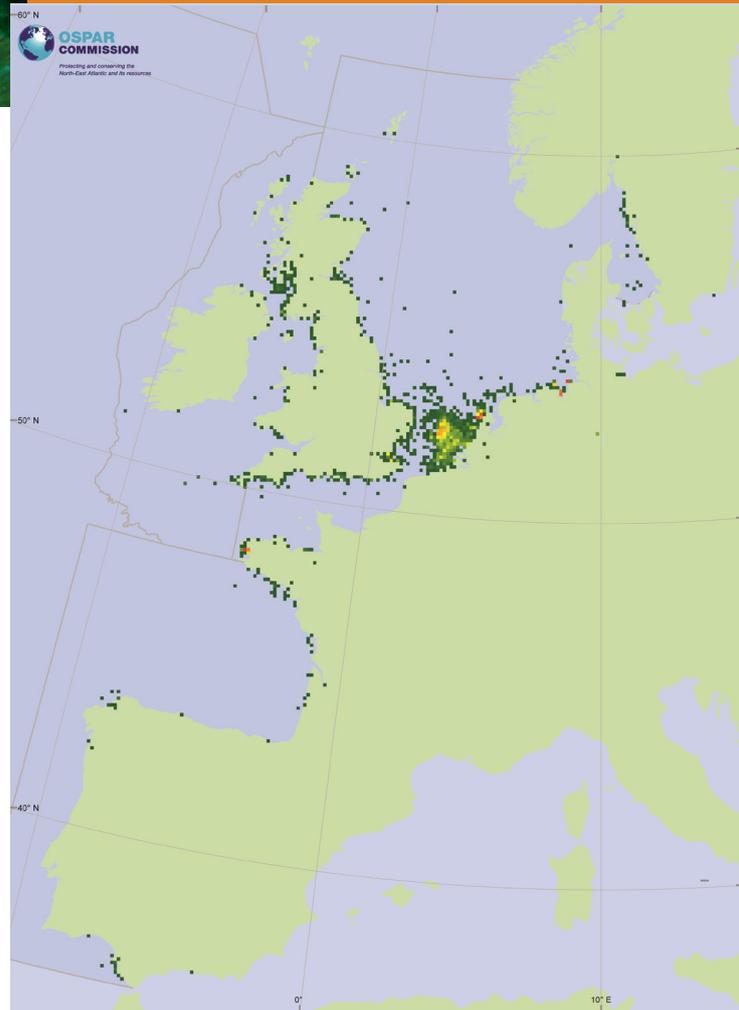


Figure 1: Clustering of munition encounters, 2009-2011

## Environmental concerns

Of chief concern from a chemical perspective in the marine environment are discarded weapons containing organo-arsenic agents, such as Clark and Adamsite, as well as mustard gas (sulphur and nitrogen) and organo-phosphorus agents. Arsenic compounds will partition to marine sediment and can be toxic to some marine organisms.

Noise and pressure impacts from underwater spontaneous and disturbance-induced explosions include auditory damage for marine mammals, injury and death for marine organisms. Deliberate explosions during disposal can also contribute to the pressure. Health and safety issues from human encounters with munitions during fishing, shore based activities and dredging can occur through skin contamination and inhalation as well as serious injury or death resulting from explosion.

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## Findings

The Recommendation (2010/20) has revealed that munitions were dumped at 151 sites. More than 3000 encounters with munitions have been reported between 2004 and the end of 2011; nearly 1500 of these since the last assessment in 2008. There were 337 encounters in 2011 however there is no obvious trend in the number of encounters reported over time. Where there is an increase in numbers of reported encounters, this has coincided with incidents resulting in injury or death. Analysis of encounter data has indicated clusters along the NW French coast, N Dutch coast and NW German coast, shown in Figure 2. Of the encounters, the predominant types are entanglement in nets, found on shore and dredging, as shown in Figure 3. Reporting has identified the southern North Sea as the area of highest risk of encountering munitions and that fishing is the activity during which munitions are most likely to be encountered.

## Implications

Dumped munitions, and in particular the disturbance of dumped munitions by seabed activities is an important issue and should be addressed. It is essential that details of the locations of all munitions dumpsites, and areas where clusters of encounters are detected on the seabed be identified.

There are serious safety risks associated with the clean-up of dumpsites, as well as increased risk of dispersing hazardous substances. The most common management practice is to leave munitions on the seabed and allow them to disintegrate naturally. However, where clusters have been identified Contracting Parties should consider whether any other management options are appropriate.

The decision to permit marine based activities such as sand and gravel extraction, pipe and cable laying and wind farm construction should consider information about the location of known dumpsites and the density of munitions encounters. Where appropriate, risk assessments should be carried out.

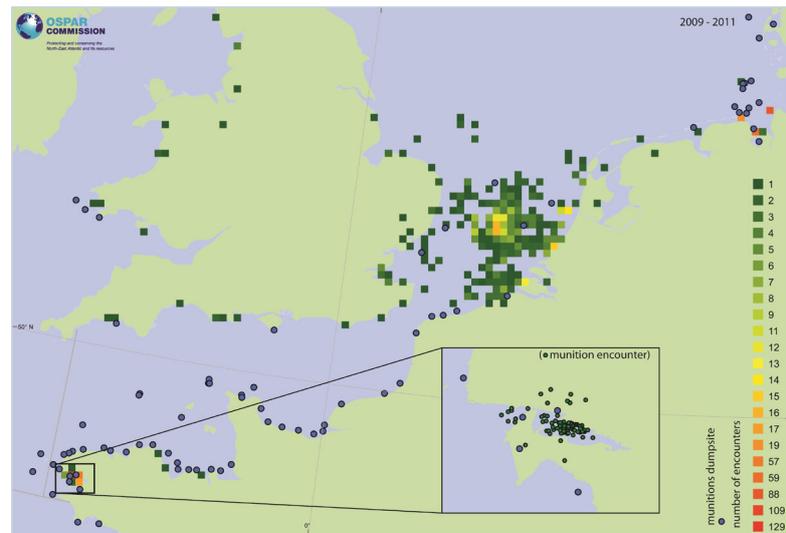


Figure 2: Identified clusters of encounters (2009-2011)

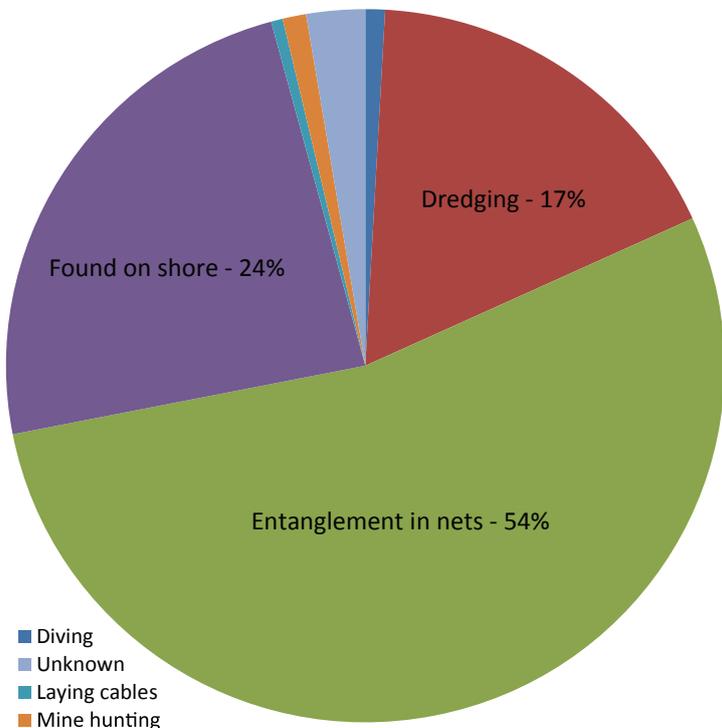


Figure 3: Munion encounters per category (2009-2011)

## What should be done next?

The reporting of encounters with munitions has identified the areas and activities at high risk of encountering dumped munitions. However, it is important that Contracting Parties maintain a dialogue with fishermen and other users of the sea to ensure reporting levels are maintained and do not fluctuate (e.g. following incidents).

Where the return to sea of encountered munitions is unavoidable, they should be adequately marked, with markers such as a sonar reflector, so that they can be readily recovered and neutralised. Following the 2005 incident there was a reduction in the number of munitions returned to the sea but there is evidence to suggest that it increased again in 2010. Contracting Parties should ensure there are adequate resources to handle the disposal of munitions on shore.

Studies on the impacts of dumped chemical and conventional weapons in the marine environment should be encouraged including investigation of potential new techniques which allow the neutralisation of munitions without explosion. This would allow a more complete assessment of the impact and management of munitions to be undertaken.

### Sources of data and information:

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- OSPAR, 2003b. OSPAR framework for reporting encounters with marine dumped conventional and chemical munitions. OSPAR Commission, London. Recommendation 2003/2.
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