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Whose job is it to clear up all the rubbish floating in the oceans?

Alistair McIlgorm

University of Wollongong, amcilgor@uow.edu.au

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Whose job is it to clear up all the rubbish floating in the oceans?

Abstract

I was in the middle of giving a talk on the marine debris problem at a notable Californian marine research institute, when I drank the last of my water bottle, threw it onto the hall floor from the podium, and kept talking.

There it sat, to the surprise of several members of the audience. One well-meaning citizen then picked it up and returned it to the lectern.

"Why did you do that?" I asked. "It just seemed wrong to leave it there," he replied. Individuals know that something is wrong when the oceans are filled with debris. It is time for governments to act on that knowledge.

But sea debris comes from both land and sea sources and it's hard to point to its exact origin and hence to get a polluter to take responsibility for cleaning it up

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Whose job is it to clear up all the rubbish floating in the oceans?

Author



[Alistair McIlgorm](#)

[Professor of Marine Economics at University of Wollongong](#)

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The oceans are filled with garbage. Who's in charge of the cleanup? [cesar harada/Flickr](#), [CC BY-NC-SA](#)

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“Why did you do that?” I asked. “It just seemed wrong to leave it there,” he replied. Individuals know that something is wrong when the oceans are filled with debris. It is time for governments to act on that knowledge.

But sea debris comes from both land and sea sources and it's hard to point to its exact origin and hence to get a polluter to take responsibility for cleaning it up.

How much is out there?

The search for Malaysian Airline flight MH370 was reportedly [hindered by marine debris](#), which from satellite can appear quite similar to the remains of an aircraft. This sea junk doesn't just impede missing flight searches, it has a severe impact on the health of the oceans, through entanglement and plastic pollution.

Marine debris is manufactured or processed solid waste material developed by humans, so waste like floating logs, vegetation or sewage are not marine debris. In the last 25 years has seen the use of plastics increase 20 fold with dramatic impacts on marine debris levels.

The data available on the actual quantity of marine debris in the oceans is limited, usually revising estimates made over a decade ago by the [UN Environment program](#). Of the debris that enters the ocean, approximately 70% of the inflow sinks and the other 30% floats or is suspended in the water column.

Marine debris is found at background or ambient levels in all of the world's oceans, with estimates of [13,000 pieces per square kilometre](#) being proposed by UN Environment Program in 2005.

Big pieces of marine debris include plastic sheets and covers, tarpaulins, crates, pallets, ropes, strapping and miscellaneous packaging, building materials, sealed drums and assorted industrial fishing nets, traps and lines.

Marine debris is not uniformly distributed. In fact it usually starts to be noticed by humans when it builds to noticeable "hot spots" requiring clean up. The Pacific garbage patches are examples of [oceanic garbage hotspots](#) related to the north Pacific ocean gyres which cause garbage to accumulate. We know less about how debris accumulates in the Indian Ocean.

Marine insurers recognise the occasional risk to shipping of a rogue floating container washed overboard, but rate the risk of hull loss as less than 1%. Ingestion of plastics into ship's water intakes causing engine cooling issues and damage is more common, and can be costly, but rarely fatal.

Only 20% of marine debris is from ocean sources such as shipping, and 80% comes from land. Shipping has attempted to address waste at sea through marine pollution (MARPOL) International Convention for the Prevention of [Pollution From Ships 1973/78](#). Primarily developed to address marine oil pollution, the convention requires ships to store and bring waste to port.

However, the oceans are a common area that is a convenient dump for debris resulting from storms, floods and poor land and sea waste management practises.

Prevention better than cure

One reason that marine debris does not get picked up is that it is too dispersed to collect it economically at sea.

Because the word marine is in there, the issue of whose responsibility is pushed to the door of government marine and fishery departments. Rarely is it seen as a waste issue, as waste is a local authority issue and their agency does not have anything to do with the sea.

To really clean up our oceans, we need to focus on stopping debris at the source on land through waste infrastructure.

My local coastal council deals with debris accumulation incidentally and instruct the garbage truck team to swing past the south end of the beach once a week where debris gathers. High densities of marine debris can be removed more cheaply per tonne than dispersed debris at sea.

But the failure of public municipal waste infrastructure is the primary source of chronic levels of marine debris near coastal megacities in Asia. In Jakarta, [less than half](#) of the city's rubbish may reach landfill and the balance heads seaward via 13 rivers.

Some Indian and Pacific ocean islands have municipal dumps at one end of the island, and the monthly high tide lifts the lot and another small debris island goes to sea.

Another method is to make polluters pay, or provide incentives for cleaning up. However even on land it is difficult to link irresponsible waste dumping to those who manufactured the product. But mishandling waste at other stages can put us right back where we started.

But it doesn't always pay to do the right thing. An Alaskan fisher who brought a large fishing net he found floating in the Bering Sea back to town, and was [faced US\\$10,000](#) for landfill disposal.

Good ports are increasingly getting free receiving points for waste, but it still all too easy to leave it out there, a variation of "not in my backyard", except in this case the backyard is really everyone's.

Who is responsible?

Ultimately the problem with sea debris is responsibility. There is a low sense of responsibility, ownership or recognition in government departments world wide that might encourage stewardship. Instead the problem is reduced to changing individual behaviour instead of government departments linking up to prevent debris entering the oceans.

National agencies need to relate with municipal authorities to bring attention to the need to prevent debris entering the water courses and then the sea. Ideally prevention will reduce or minimise the occurrence and cost of clean-up on the coasts.

Long-term education is also an important but generally underrated part of the remedy. Education needs to produce awareness of marine debris and ways to prevent it entering the sea. Schools and volunteers can be involved in debris clean up, but it is preferable they gain an understanding of the need to prevent debris as well.