238

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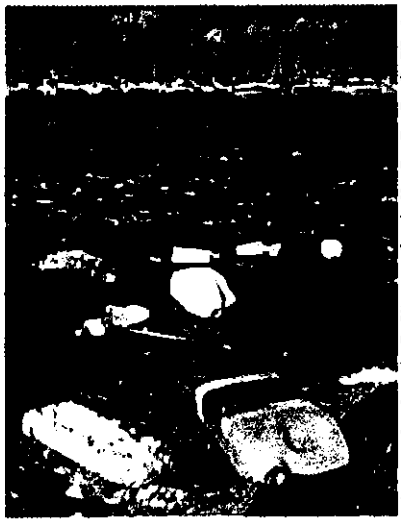
U.S. Environmental Protection Agency

Habitat Protection

Marine Debris Abatement

Trash in our Oceans--You Can Be Part of the Solution



Marine debris, often called litter, has become a problem along shorelines, coastal waters, estuaries, and oceans throughout the world. It is defined as any man-made, solid material that enters our waterways directly (e.g., by dumping) or indirectly (e.g., washed out to sea via rivers, streams, storm drains, etc.). Objects ranging from detergent bottles, hazardous medical wastes, and discarded fishing line all qualify as marine debris. In addition to being unsightly, it poses a serious threat to everything with which it comes into contact. Marine debris can be life-threatening to marine organisms and humans and can wreak havoc on coastal communities and the fishing industry.

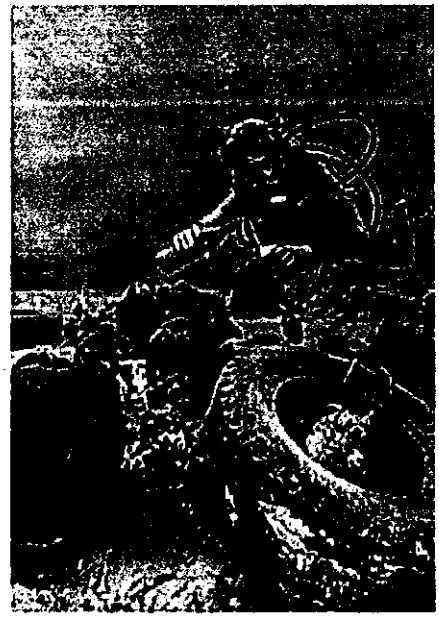
National Marine Debris Monitoring Program EXIT disclaimer

International Coastal Cleanup EXIT disclaimer

Assessing and Monitoring Floatable Debris

Sources of Marine Debris

There are two different sources from which debris pollutes our oceans. The first is from the land and includes users of the beach, storm water-runoff, landfills, solid waste, rivers, and streams, floating structures, ill maintained garbage bins and dumps and litterbugs. Marine debris also comes from combined sewer overflows, and storm drains. Typical debris from these sources includes medical waste, street litter and sewage. Land-based sources cause 80% of the marine debris found on our beaches and waters.



The second source of marine debris is from ocean sources, and this type of debris includes galley waste and other trash from ships, recreational boaters and fishermen and offshore oil and gas exploration and production facilities.

Adding to this problem is the population influx along our nation's shores. More people means more paved area and wastes generated in coastal areas. These factors; combined with the growing demand for manufactured and packaged goods, have led to an increase in non-biodegradable solid wastes in our waterways.

The Beaches Environmental Assessment and Coastal Health Act (BEACH) of 2000

The BEACH Act was enacted on October 10, 2000, and it is designed to reduce the risk of disease to users of the Nation's coastal recreation waters. The act authorizes the EPA to award program development and implementation grants to eligible states, territories, tribes, and local governments to support microbiological testing and monitoring of coastal recreational waters, including the Great Lakes, that are adjacent to beaches or similar points of access used by the public. BEACH Act grants provide support for developing and implementing programs to notify the public of the potential for exposure to disease-causing microorganisms in coastal recreation waters. The act also authorizes EPA to provide technical assistance to States and local governments for the assessment and monitoring of floatable materials. In partially fulfilling that obligation, EPA has compiled the most current information to date on assessing and monitoring floatable materials in the document Assessing and Monitoring Floatable Debris.

The International Coastal Cleanup

The Ocean Conservancy, formerly known as the Center for Marine Conservation, established and maintains the annual International Coastal Cleanup Campaign (ICCC) with support from EPA and other stakeholders. The first cleanup was in 1986 in Texas, and the campaign currently involves all of the states and territories of the United States and more than 100 countries around the world. The ICC is the largest volunteer environmental data-gathering effort and associated cleanup of coastal and underwater areas in the world. It takes place every year on the third Saturday in September. In 2001, over 140,000 people across the U.S. participated in the ICCC. They removed about 3.6 million pounds of debris from more than 7,700 miles of coasts, shorelines, and underwater sites.

National Marine Debris Monitoring Program

EPA along with other federal agencies helped to design the National Marine Debris Monitoring Program (NMDMP), and EPA is supporting The Ocean Conservancy's implementation of the study. NMDMP is designed to gather scientifically valid marine debris data following a rigorous statistical protocol. The NMDMP is designed to identify trends in the amounts of marine debris affecting the U.S. coastline and to determine the main sources of the debris. This scientific study is conducted every 28 days by teams of volunteers at randomly selected study sites along the U.S. coastline. The NMDMP requires, at a maximum, that 180 monitoring sites located along the coast of contiguous U.S. States and Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands be fully operational. The program began in 1996 with the establishment of 40 monitoring sites ranging from the Texas/Mexico border to Port Everglades, Florida and included Puerto Rico and the U.S. Virgin Islands. To date 163 study sites have been designated and 128 sites are collecting data. The program will run for a 5-year period once all of the study sites have been established. For more information please visit: http://www.oceanconservancy.org/dynamic/getInvolved/events/debris/debris.htm.

Other Floatable Debris-Related Legislation

In response to a growing concern over floatable debris, governments have taken actions nationally, as well as internationally, to reduce discharges at their source. For example, intentional at-sea dumping of garbage generated on land became subject to international control in 1972 through the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter EXIT disclaimer, commonly called the London Convention. Similarly, at-sea disposal of garbage generated during the routine operation of ships (e.g., garbage not deliberately carried to sea for the purpose of disposal) was addressed through a 1978 Protocol to the 1973 International Convention for the Prevention of Pollution by Ships (commonly called the MARPOL Convention). EXIT disclaimer

In the Shore Protection Act of 1989 EXIT disclaimer provides for controls on operations relating to the vessel transport of certain solid wastes (municipal or commercial waste) so that those wastes are not deposited in coastal waters. This act has provisions that reduce wastes being deposited in coastal waters during the transfer of waste from the waste source to the transport vessel to the waste receiving station.

As amended by the Water Quality Act of 1987, the Clean Water Act requires EPA to establish regulations that treat storm water and combined sewer overflows (CSOs) as point source discharges that must be regulated under the National Pollutant Discharge Elimination System (NPDES). The permits will prohibit non-storm water discharges into storm sewers while leading to improved control techniques and best management practices.

Debris Hazardous for Marine Animals

Each year millions of seabirds, sea turtles, fish, and marine mammals become entangled in marine debris or ingest plastics which they have mistaken for food. As many as 30,000 northern fur seals per year get caught in abandoned fishing nets and either drown or suffocate. Whales mistake plastic bags for squid, and birds may mistake plastic pellets for fish eggs. At other times, animals accidentally eat the plastic while feeding on natural food. According to recent estimates,

267 marine species have been reported entangled in or having ingested marine debris (Marine Mammal Commission, 1998). The plastic constricts the animals' movements, or kills the marine animals through starvation, exhaustion, or infection from deep wounds caused by tightening material. The animals may starve to death, because the plastic clogs their intestines preventing them from obtaining vital nutrients. Toxic substances present in plastics can cause death or reproductive failure in the fish, shellfish, and wildlife that use the habitat.

Polluted Waters Make Trouble for Humans, Too

Humans can also be directly affected by marine debris. Swimmers and divers can become entangled in abandoned netting and fishing lines like marine organisms. Beach users can be injured by stepping on broken glass, cans, needles or other litter. Appearance of debris, such as plastic, can also result in economic consequences. Floating debris, either as a floating slick or as dispersed items, is visually unappealing and can result in lost tourism revenues. New Jersey now spends $1,500,000 annually to clean up its beaches, and $40,000 to remove debris from the New York/New Jersey Harbor (YOTO Discussion Papers, 1998).

Fishing Industries and Communities Hit Hard by Marine Debris

Marine debris also acts as a navigational hazard to fishing and recreational boats by entangling propellers and clogging cooling water intake valves. Repairing boats damaged by marine debris are both time consuming and expensive. Fixing a small dent in a large, slow-moving vessel can take up to 2 days, costing the shipping company $30,000-40,000 per day in lost carrying fees, as well as up to $100,000 for the repair itself (Peter Wallace, personal contact). According to Japanese estimates, the Japanese fishing industry spent $4.1 billion (U.S.) on boat repairs in 1992 (YOTO Discussion Papers, 1998). Lost lobster traps cost New England fishing communities $250 million in 1978. These traps continue to catch lobsters and other marine organisms that are never harvested and sold; the communities' economies are therefore adversely affected.

Beach Raking

Mechanical beach raking, which is accomplished with a tractor and is used to remove debris from the shoreline, can help to remove floatable material from beaches and marine shorelines. However, it can also be harmful to aquatic vegetation, nesting birds, sea turtles, and other types of aquatic life. A study in Maine compared a raked beach and an adjacent natural beach to determine the effects of beach raking on vegetation. Beach raking not only prevents the natural re-vegetation process, but it reduces the integrity of the sand root mat just below the surface that is important in slowing beach erosion. Other problems include disturbance of vegetation if raking is conducted too, close to a dune. By removing seaweed, beach erosion can also be caused. Sand compaction is reduced when seaweed is removed, resulting in suspension of the sand in the water during high tides and contributing to loss of sand and erosion of the beach. Beach cleaning machines are harmful to nest birds and can destroy potential nesting sites, crush plover nests and chicks, and remove the plovers' natural wrack-line feeding habitat. To reduce the effects on nesting birds, beach raking should not be done during the nesting season.

Unseen Consequences

Once debris reaches coastal and ocean bottom, especially in areas with little current, it may continue to cause environmental problems. When plastic film and other debris settle on the bottom, it can suffocate immobile plants and animals, producing areas essentially devoid of life. In areas with some currents, such as coral reefs, debris can wrap around living coral, smothering the animals and breaking up their coraline structures.

Trash Indicator of Bigger Problems

The typical floatable debris from Combined Sewer Overflows includes street litter, sewage (e.g., condoms, tampons, applicators), and medical items (e.g., syringes), resin pellets, and other material that might have washed into the storm drains or from land runoff. These materials or objects can make it unsafe to walk on the beaches, and pathogens or algae's blooms can make it unsafe to swim. Pollutants, such as toxic substances, can make it unsafe to eat the fish caught from the waters. Swimming in or ingesting waters which are contaminated with pathogens can result in human health problems such as, sore throat, gastroenteritis, meningitis or even encephalitis. Pathogens can also contaminate shellfish beds.

What Needs to Be Done

Reducing marine debris means reducing the amount of waste generated on land and disposing of it properly. Recycling can significantly reduce the amounts of litter reaching marine and coastal waters. Volunteer coastal cleanups and public education efforts can also help reduce the amount of debris reaching our waterways.

What You Can Do

- Dispose of trash properly. This will help reduce the amount of trash that is washed into our waterways from storm drains.
- Reduce, reuse and recycle. Visit the EPA's solid waste web site for more information.
- *Cut the rings of plastic six-pack holders. This lowers the risk of* entanglement to marine animals if the holders do make it out to sea.
- Participate in local beach, river or stream clean ups.
- Practice good housekeeping.
- Look for alternative materials or avoid excessive packaging when deciding on purchases.
- Educate others about marine debris.
- Get involved in your local area.

What the EPA and Other Partners Are Doing

- Providing resources to educate the public on the impact of marine debris and guidance for how to eliminate it.
- Providing resources and technical support for the development of studies to address the impact of marine debris.
- Providing guidance for the implementation of regulations addressing marine debris.
- Organizing and sponsoring cleanup efforts, like the U.S. and International Coastal Cleanups.

Whether directly or indirectly, many of our land-based activities ultimately impact and adversely affect the oceans. At the heart of the problem lie the great quantities of trash generated in our daily lives. Reusing and recycling efforts have helped, but a great deal more can be done. You can be part of the solution.

For more information on Marine Debris Abatement

For additional information contact:

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