Swimming, Sunning, and Talkin' Trash: All in a Day at the Beach!

By Betsy Rickards, CZM

You have just reveled in a glorious day at the beach. It's time to pack up and hit the road. You gather your belongings, pick up your trash, and deposit it in the closest receptacle. You wipe your hands clean, proud that you are standing true to your "carry in/carry out" resolution. Great job for not leaving all that debris on the beach. But, throwing away plastic water bottles, newspapers, polystyrene food containers, and plastic bags may not be the best way to protect the marine and coastal environment and all of its inhabitants (including you). Here are some reasons—and suggestions—for making those famous words "reduce, reuse, recycle" a reality at the beach and beyond.

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The First Problem: Energy and Resource Consumption

Did you know that in 2006, Americans generated about 251 million tons of trash ? Youch! In fact, the average American discards 4.5 pounds of trash a day, according to the U.S. Environmental Protection Agency (EPA). All that trash originally came from natural resources such as trees, sand, soil, water, petroleum, and metals, many of which are nonrenewable (i.e., they can be used up). When we throw these materials in the trash, they often end up in a landfill where the natural resources cannot be used again. In addition, the energy that went into extracting, transporting, processing, and manufacturing the raw materials and products are lost. We then need to consume more energy to produce and distribute new products. And as we all know—energy consumption means the burning of fossil fuels and the emission of carbon dioxide into the atmosphere, which may ring a bell as being a major contributor of the greenhouse gases that are causing global warming and sea level rise. (For more details, see *CZScience*, page 72.) Rising sea levels and storm wave activity are not great for the stability and longevity of the shoreline. Valuable coastal properties and natural resources could be lost, including that beach you spent your day enjoying. See the coastal connection?

The Second Problem: Air and Water Pollution

Though you may feel a catharsis upon purging your house of garbage by kicking it to the curb on trash day, or dumping it at the local landfill or transfer station, that trash does not just vanish into thin air (even when you burn it!). When trash goes to landfills, it can leach toxins and bacteria into the groundwater and can contaminate stormwater that drains to coastal waterbodies (even well-designed landfills will eventually fail and leak these contaminants). Landfills also consume a great deal of space and building new landfills is not something one wants (or wants to pay for) in their backyard. On the other hand, incinerating waste substantially reduces the amount of trash that goes to landfills, but has its own potentially harmful side effects. Trash that is incinerated releases greenhouse gases and other emissions that cause air-quality problems, as well as produces other nasty by-products, like ash ladened with heavy metals and toxins, which is often put in landfills—causing water quality problems. Basically, it's a no-win situation. Trash going to landfills also leads to our third problem.

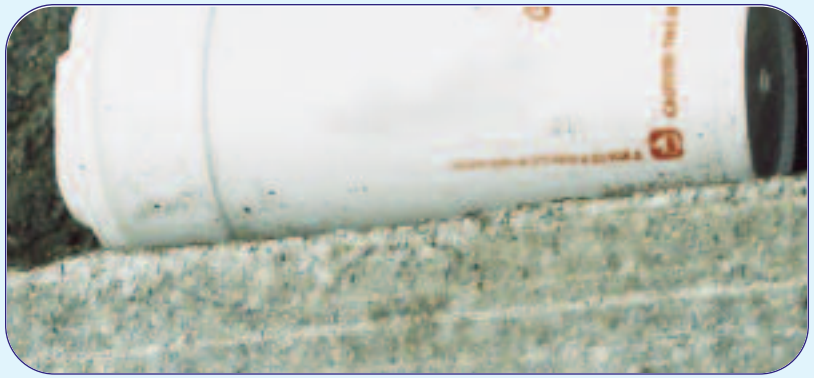
The Third Problem: Marine Debris

Trash doesn't always make it to the landfill. It can be mishandled, littered, blown into the water, or carried by creeks, rivers, storm drains, and sewers into the ocean. Trash that ends up in the ocean or on the shoreline becomes marine debris, a major threat to our coastal environment and marine life, as well as to human health and safety. Once in the environment, a glass bottle can take one million years to break down; an aluminum can, 80 to 200 years; a plastic bag, 10 to 20 years; a cigarette filter, one to five years; and a newspaper, six weeks. Though one million years for glass sounds like a lot of time, the real threat is the marine debris that is most abundant and floats—plastic.

According to findings from a five-year national study of trash in the ocean conducted by the National Marine Debris Monitoring Program

of the Ocean Conservancy (November 2, 2007), the most abundant debris items found nationally were straws, plastic beverage bottles, and plastic bags. The study also determined that the amount of debris items significantly increased over the five-year period, from 2001 to 2006. Regionally, total debris increased on the East Coast, specifically north of Cape Cod to the U.S./Canada border. Obviously plastic waste is a problem—but, where did it all come from?

More plastic is produced in the United States than the combined output of steel, aluminum, and copper. Unlike organic materials (such as wood and paper) that can be degraded by microbes, plastics are not biodegradable, but may break down into smaller pieces through exposure to sunlight. Some plastics are engineered to last more than 450 years! They are therefore persistent in the environment and are a threat to the health and welfare of many marine animals. Even with



Styrofoam can take hundreds of years to break down.

the signing of the MARPOL (International Convention for the Prevention of Pollution from Ships) Annex V in 1988, making it illegal to dump plastic into the ocean, plastics are still found in the oceans and washing up on shorelines all over the world. As much as 80 percent of the plastics that end up there come from land-based sources.

The same qualities that make plastic so popular—its light weight, durability, and strength—also make it especially harmful to marine life. Plastic marine debris affects at least 267 species worldwide, including sea turtles, sea birds, and marine mammals. Many species of seabirds ingest plastic pellets, bottle caps, and other plastic materials. In fact, plastic particles were found in the stomachs of eight out of 11 species of seabirds in a study off the North Pacific. Fish, mammals, and reptiles also ingest plastic for food (such as sea turtles that consume plastic bags thinking they are jellyfish), with often fatal consequences. Plastics, such as disposable bags, six-pack yokes, and fishing lines have the potential to get caught around the necks, mouths, or bodies of marine animals, hindering their movement, breathing, and feeding, and leading to starvation or strangulation.

Another ill-fated consequence of floating plastic is alien invasion. Organisms have always been able to travel on natural debris such as floating wood, but these materials would only go so far before they degraded or sank. Traveling on plastics allows marine organisms to go farther than they ever have, colonize new areas, and lead to a potential threat to native plants and animals.

How Reusing and Recycling Can Help

Reusing and recycling materials has environmental benefits—starting at the very beginning of a product's life all the way to its final method of disposal. First of all, reusing or manufacturing goods from recycled materials typically requires less energy than producing goods from virgin materials. Take for example an aluminum can. According to the EPA, recycling aluminum saves 95 percent of the energy needed to produce new aluminum from raw materials. The energy saved from recycling one ton of aluminum is also the equivalent of 36 barrels of oil, or 1,655 gallons of gasoline, or the amount of electricity the average home uses over 10 years. Recycling aluminum scrap instead of extracting and reducing bauxite ore to make new aluminum products also significantly cuts air and water pollution (the techniques used to mine bauxite ore are noisy, dusty, and can cause contamination of groundwater supplies). The other great thing about recycling aluminum is that it can be recycled indefinitely (unlike plastic)—particularly important since aluminum is a nonrenewable resource. Another example is paper and trees. Paper is the number one material that we throw away. But waste paper can effectively be turned into raw material for new paper and paper products. A paper mill uses

Photos: Arden Miller

Each day, across the United States, millions of plastic cups are discarded. Kinda makes me want to buy the world a travel mug.

40 percent less energy to make paper from recycled paper than it does to make paper from fresh lumber. Recycling paper fiber is also cheaper than harvesting and processing virgin fiber from trees, while saving trees. In fact, a ton of paper made from recycled fibers instead of virgin fibers conserves 17 to 31 trees. Trees are known to be a carbon "sink"—meaning they actually remove carbon dioxide from the atmosphere. So not only will recycling paper require less energy for production, but the trees left standing will be able to continue to suck up greenhouse gas emissions and help save our climate, which as mentioned above will help save our coastline. Love those trees… Recycling and re-using materials and diverting wastes from landfills and incinerators will also reduce the negative by-products that lead to air and water pollution, which ultimately affect our coastal and marine ecosystem. And less trash making its way into our marine and coastal waters means less marine debris to impact marine life, the ecosystem, and the aesthetics and safety of our coastline.

Think Before You Throw It Away

REDUCE

A great thing you can do for your environment, your ocean pals, and your health is to first "reduce" your consumption of disposable products and lessen your overall output of garbage. By buying less stuff, you are also helping to reduce the overall consumption and manufacturing of disposable products. Here are some ideas for refocusing your purchase power:

Buy products made from recycled materials - Since a successful recycling system depends not only on a supply of waste to be recycled but also on a demand for the recycled materials, buying packaging or items with recycled content helps the recycling market. Buy items such as 100 percent recycled-content paper, 100 percent reclaimed wood products and other construction materials, post-consumer plastic for decking or carpets, re-manufactured electronic equipment, or recycled glass made into a variety of products, such as birdfeeders, candle holders, window ornaments, and lamps.

Buy products with little or no packaging - Unfortunately, there is high demand for individually packaged items, such as juice boxes and mini-snack packages, all with separate polymer wraps and boxing. Don't fall prey to this convenience packaging, which is not so convenient for the environment. Instead, try reusing your own containers, reusable bags, or wraps to pack your snacks and drinks. And another tip that can't be emphasized enough: when heading to your local coffee shop to purchase a cup of java, BRING YOUR OWN CUP! You can pick from an assortment of sizes, shapes, and colors of stainless steel or plastic cups that are available at most stores, and you will be helping to eliminate the thousands of paper or polystyrene cups that end up littering our shores.

Reduce your purchase of bottled water - Many people are afraid to drink tap water. But, municipal water supplies, which are subject to strict water quality standards, are clean and safe. Many brands of bottled water are just plain old tap water in a bottle anyway. Bottled water has all sorts of environmental consequences. First of all, because of its weight, shipping and transporting bottled water requires a great deal of fuel. Second, those plastic water bottles that you buy in bulk because you think they are completely recyclable are actually only "down-cyclable." Plastic bottles used to hold food and beverages are "down-cycled" into lower grade plastic products, like decking, carpets, park benches, and milk crates, which are more difficult, if not impossible, to recycle. Therefore, those water bottles can rarely be recycled more than once, before coming to the end of their life. So, limit your purchases of these plastic products from the start.

REUSE

Now that you have reduced your consumption of products, the second step is to reuse your items.

Re-use packaging - Use packages such as plastic bags and glass jars more than once (except those plastics that are not safe to reuse for food and beverage). Peanut butter jars are great for storing items, such as small hardware; cream cheese containers are perfect for packing

snacks; kids love to play and containerize things with plastic cups. You can re-use plastic bags for groceries, as garbage bag liners, for dog waste or kitty litter, or diapers, or you can even bring them back to many stores to be recycled.

Pass it along - There is always someone out there who will think that your trash is a treasure! By giving away or selling your items, everyone wins. Many municipalities have swap shops, which welcome any of your discards. Other groups, such as the Salvation Army or veterans groups, will sell your items for their cause. You can try online options such as Freecycle, which shares unwanted products with others, or Craig's List or E-Bay, which allow you to sell your more "valuable" discards.

Give it a new life - Some items deserve a second chance. Take surfboards for instance. Throwing these beauties into a landfill once they are no longer able to catch the waves would be a shame. Recycling these products is nearly impossible, but one way to salvage the boards is to turn them into second-hand commodities. One creative genius makes mosaic tile tables out of them: beautiful, functional, and environmentally favorable. As an aside, surfboard production, which was once a polyurethane, chemical, and toxic-emissions nightmare, is cleaning up its act. Many surfboard companies are producing boards with lower environmental impact, such as with sustainably harvested wood and EPS foam (the only recyclable surfboard foam), and an epoxy that emits very low volatile organic compounds (chemicals that easily evaporate at room temperature) and does not require harsh cleaning materials for clean up. (See www.surfrider.org for more information.)

RECYCLE

As a last measure in your "think before you throw it away campaign," you can recycle many of the items that you haven't been able to reduce or reuse. (For ideas and specifics, see *Things You Can Do to Be Clean and Blue-Green*, page 24.) Nationally, we recycled 82 million tons of municipal solid waste in 2006, thereby reducing the same carbon emissions as removing 39.4 million passenger cars from the road. And just as important is that recycling these materials reduces solid waste, air and water pollutants, and greenhouse gases that contribute to global warming; conserves our natural resources; and helps to preserve the natural places here on the coast that we value.

Photo: Chris Jordan