**What We Know About the "Garbage Patches"**

"Garbage patches" – inaccurate nickname given to open ocean areas where marine debris concentrates.

What’s in a name? - The name “garbage patch” is a misnomer. There is no island of trash forming in the middle of the ocean nor a blanket of trash that can be seen with satellite or aerial photographs. This is likely because much of the debris found here is small bits of floating plastic not easily seen from a boat.

**Pacific Ocean “Garbage Patches”**

-Eastern garbage patch - Concentrations of marine debris have been noted in an area midway between Hawai’i and California known as the North Pacific Subtropical High or the “eastern garbage patch.” The High is not a stationary area, but one that rotates, moves, and changes.

-Western garbage patch - Another area of marine debris concentration is located off the coast of Japan, and researchers believe it to be a small recirculation gyre (ocean feature made up of currents that spiral around a central point) likely created by winds and ocean eddies.

**Other Areas? Other Oceans?**

The “patches” are not the only open ocean areas where marine debris is concentrated. Another important area is the North Pacific is the Subtropical Convergence Zone (STCZ). This area, located north of the Hawaiian archipelago, has a high abundance of marine life, is a known area of marine debris concentration, and is one of the mechanisms for accumulation of debris in the Hawaiian Islands (Pichel et al., 2007).

Oceanographic features similar to the North Pacific Subtropical High and STCZ exist in other oceans of the world. Little research to date has been conducted on marine debris in these areas. Because of this no one can say for sure how large these areas are, especially since they move and change, sometimes daily, and no accurate estimate exists of how much debris is out there.

Regardless of the exact size, mass, and location of these areas of concentration, man-made litter and debris do not belong in our oceans or waterways.

For more information & details please visit www.Marinedebris.noaa.gov/info/patch.html

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**“Garbage Patch” Recipe**

- Floatable marine debris from land- and ocean-based sources (e.g., tiny pieces of plastic)
- Ocean and atmospheric conditions suitable for the concentration of marine debris (e.g., waters rotating—large or small area, fast or slow rotation—in a cyclone-like fashion)

**What Can I Do?**

- Be responsible for all of your trash on land and on the water. Dispose of items properly.
- Get involved! Participate in local cleanups in your area.
- Remember that the land and sea, no matter where you are, are connected.
  - Reduce the amount of waste you produce.
  - Reduce items whenever possible. Choose reusable items over disposable ones.
  - Recycle as much as possible. Bags, bottles and caps, cans, cell phones, ink cartridges, and many other items can be recycled.

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**Main Ingredient = Plastic Debris**

Why such a common ingredient? Likely because of the abundance of plastics and the fact that some common types of plastic float.

Do plastics degrade in the ocean? In general, yes*, however there are many things to note.

A few points to consider (Singh and Sharma, 2008):

- There are MANY types of plastic, and thus many different chemical compositions
- Degradation rates depend on chemical composition, molecular weight, additives, environmental conditions, etc.

Based on research to date, most commonly used plastics do not ever fully “go away,”** but rather break down into smaller and smaller pieces. (And, yes, this is true.) Also keep in mind that many of the bio-based and truly biodegradable plastics break down in a compost pile or landfill, but not necessarily in the ocean.

*Degradation here is defined as processes leading to elimination of the physical properties of a plastic (polymer Bikins and Wobbe, 1978).

**Here, “go away” refers to a process called mineralization, or the full conversion of all breakdown products into carbon dioxide, water, and small inorganic molecules (Andrade, 2018).

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**References**


