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# Great Pacific Garbage Patch

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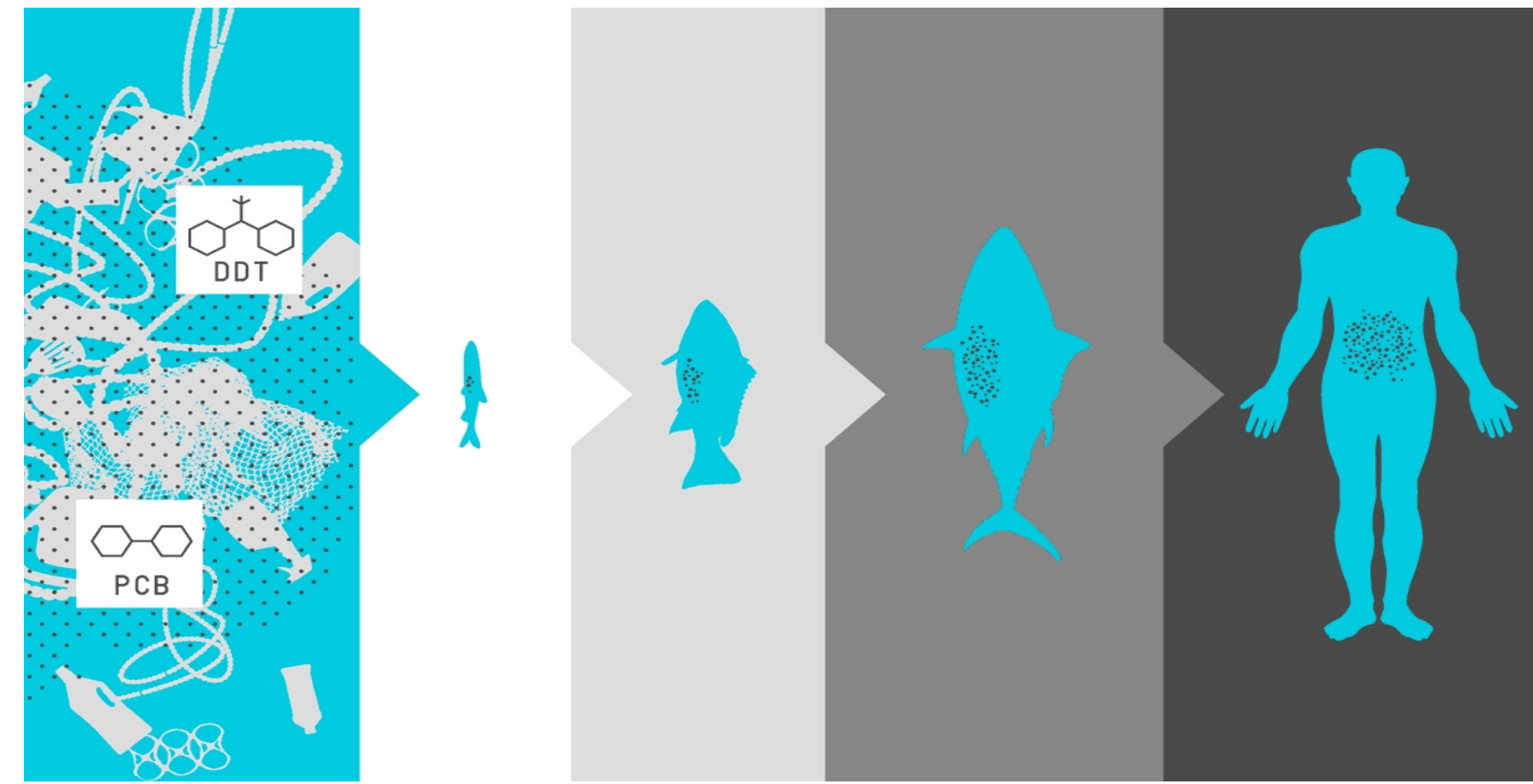
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# Great Pacific Garbage Patch

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## Not So Fun Facts <sup>[3]</sup>

- Plastic is found in 9% of fish
- At this rate, the Garbage Island will likely double in size in ten years.
- 7 billion pounds of non recyclable plastic are produced every year
- Only 7% of the plastic in America is recycled
- 1500 plastic water bottles are put in landfills and the ocean every second
- The average person produces a half-pound of plastic waste every day in the U.S.

## The Ocean Clean-Up Process

### Build a Wheel <sup>[9]</sup>

- Giant water wheel in Baltimore, MD
- Collected 50 tons of garbage in a month
- Solar panel to turn wheel

### Build a Wall <sup>[2]</sup>

- 62 mile floating wall in 2020
- Works with ocean currents to capture millions of tons of plastic
  - Plastic will be trapped, collected, recycled

### Goals

- Potential to clean up half of the patch in 10 years <sup>[2]</sup>
- Pilot testing a 1-mile wall of the coast of Japan in 2016 <sup>[2]</sup>
- Nestle, Coca-Cola, Procter & Gamble, Bank of America, and the World Wildlife Fund are committing to making their products "ocean-friendly" <sup>[10]</sup>

## Steps to Reduce the "Patch"

- Reusable shopping bags, food containers, and water bottles are the better option to use <sup>[5]</sup>
- Avoid extra and excessive packaging <sup>[5]</sup>
- Be educated on what your area recycles
- DO NOT litter. Ever. And try your best to pick up litter when seen.

## Public Health and the "Patch"

### Plastic

- There are many different plastics spread throughout the ocean
- Toxicity from lead, cadmium, and mercury <sup>[1]</sup>
- Styrofoam breaks into small parts of polystyrene
  - Pollutant spreads throughout the sea column

### What We Eat

- The ocean is like a huge sponge that soaks up toxins
- Chemicals are ingested by the animals
- Contaminated fish and mammals
- Diethylhexyl phthalate (DEHP): a toxic carcinogen found in many fish in the ocean <sup>[1]</sup>

### Defects from Plastic

- Cancers, birth defects, immune system problems, and childhood developmental issues <sup>[1]</sup>
- BPA polymer chains broken down contaminating the water affecting human hormonal function <sup>[1]</sup>



## Health Indicators

### Directly

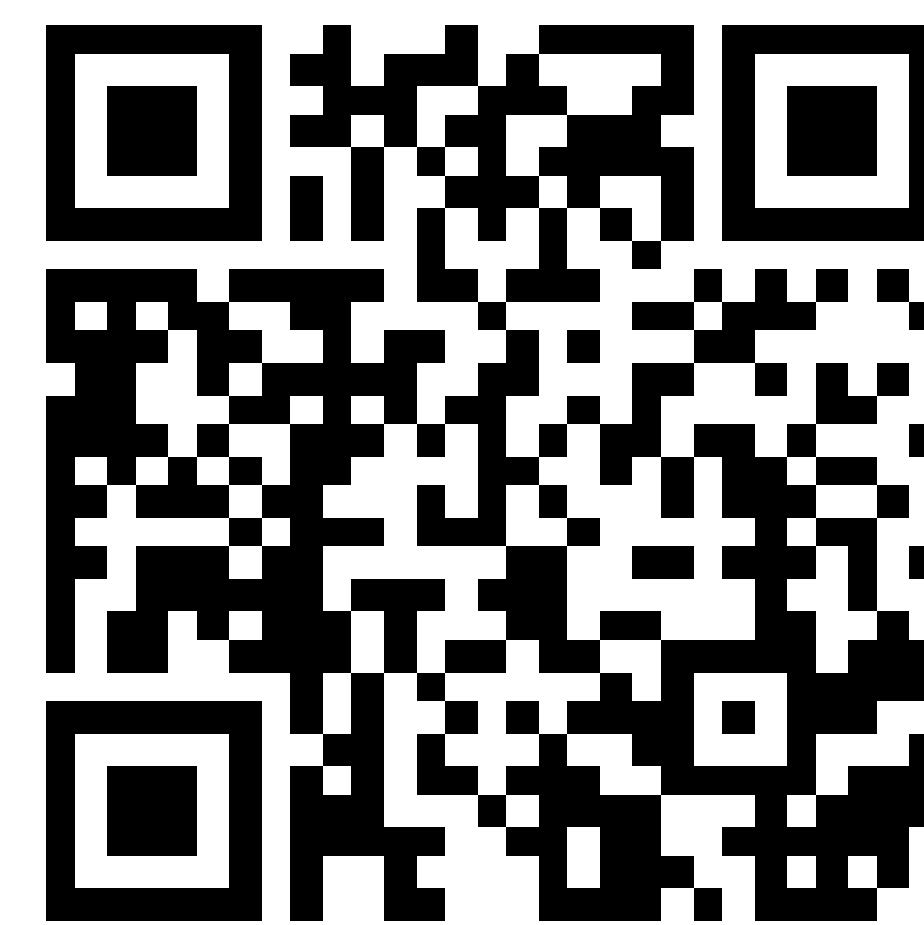
- Economy
- Communities based on tourism, reaction, and seafood industry <sup>[4]</sup>
- Cleanup efforts
- BPA (Mortality Rates)
- Developmental issues, birth defects, infertility, linked to cancer <sup>[4]</sup>
- Prevention
- Purification of water, recycling
- Employment
- Recycling programs increasing job opportunity

### Indirectly

- Educational Attainment
- Polluted areas → \$\$
- Access to Healthcare
- Pacific Islanders



*"If you really think the environment is less important than economy, try holding your breath while you count your money."*  
Dr. Guy McPherson



## How it Impacts Pharmacy

- Overall sickness caused by chemicals creating an influx in need for healthcare
- Growth in area of pharmacokinetics of BPA
- Drug Research
  - Adverse effects



## Determinants of Health

- Individual Behavior Choices
- Recycling and reusing, donation to funds to help in efforts to cleanup trash, and volunteering
- Policy
- Recycling Policies
- Safe Drinking Water Act
- Free Trash Sea Alliance: companies including Nestle, Coca-Cola, Procter & Gamble, Bank of America, and the World Wildlife Fund commit to making their products "ocean-friendly" <sup>[10]</sup>

## What is the Great Pacific Garbage Patch?

*Gyre: a system of circular ocean currents formed by the Earth's wind/current patterns and the forces created by the rotation of the planet* <sup>[5]</sup>

**Plastic is not biodegradable. However, over time it breaks down into tiny particles that are as small as a few millimeters. These are known as microplastics. These small pieces of plastic are far more dangerous than the large bottles and bags we think of when it comes to plastic.** <sup>[6]</sup>

### The Naked Eye

- Satellite imagery does not show a giant patch of garbage like we think <sup>[11]</sup>
- It would take a country to go bankrupt to clean it up <sup>[5]</sup>

### "Plastic Soup" <sup>[11]</sup>

- Contains the large pieces of garbage mixed with the tiny pieces of microplastics
- Largest numbers of plastic collect in "gyres"
- Ocean currents collect the plastics like a circulating vortex

### Pacific Ocean Garbage Patch

- Twice the size of Texas <sup>[3]</sup>
- 7 million tons of weight <sup>[3]</sup>
- Roughly 9 feet deep <sup>[3]</sup>
- 6 times more plastic than plankton (which is the largest food source for sea animals) <sup>[3]</sup>
- 93% of Americans age 6 and up test positive for BPA <sup>[7]</sup>
- Personal Costs:
  - Cigarettes, plastic bottles, cans, etc
  - Health visits for at-risk pregnancies, fertility consults
  - Water purification systems
- Community Costs:
  - Plastic waste causes \$13 billion yearly in financial damage to marine ecosystems <sup>[8]</sup>
  - Recycling costs
  - Educational Programs on recycling

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