Plastic Beaches: Urban Communities and Marine Pollution

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UN Sustainable Development Goals

- **Life Below Water**

  - This goal is significant because marine ecology is a staple of life on earth. Imbalances in the marine and aquatic world have lasting effects that can be felt across the globe.

The Issue

- **“Dilution is the solution to pollution.”**
  - pollution is only dangerous in high quantities, argo, the best way to deal with pollution is disperse it across a larger area like the ocean.
  - This philosophy has aquatic brought marine habitats to their limit

- **Cities are contributing to marine pollution**
  - primarily through runoff and ineffective waste management systems
  - Runoff is “Run off is defined as the part of the precipitation, snowmelt, or irrigation water that appears in uncontrolled surface streams, rivers, drains or sewers”

Urban Involvement

- “For a long time the pollution potential of urban runoff was negligible compared to other sources such as industrial effluent discharge, leachate from dumps and landfills, and other historically significant sources of pollution.” (EPA, 1983)

- Population density contributes to the issue
  - “When it rains, it pours”

The Types of Aquatic Pollutants Found in Cities

- Metallic pollutants
- Plastics
- Industrial chemical residue

Ineffective Waste Management

- Many possible defects
- Doesn’t account for the various types of waste produced
- Poor urban communities can’t afford effective waste management systems

Example

- Sewage systems that are easily overwhelmed

The Repercussions

- **Economic**
  - Marine pollution can be disastrous for many seaside economies. Seaside economies are defined here as economies that are largely dependant on marine and seaside based goods and services i.e fishing, beach resorts and other such attractions
    - The Syringe Tide of 1987
    - 40% of tourist revenue (Narvaez, 1987)
    - $$$$

- **Public Health**
  - Some vectors for marine waste also affect drinking water quality. Low income communities can't afford proper water treatment.
    - The Flint Michigan Crisis (Carmody, 2016)

Solutions

A cost effective waste management system that focuses on runoff pollution would be ideal.

- A series of absorption experiments was conducted in order to assess the ability of three mulches to remove several of the heavy metal ions typically encountered in urban runoff. (Jang, Seo, & Bishop, 2005)

- Porous Cement was a solution introduced by the Nationwide Urban Runoff Project (NURP) in their 1983 report on urban runoff. This solution is effective because it's only slightly more expensive than normal concrete.

Thank You