REMOVING AND PREVENTING OCEAN MICROPLASTICS

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PHASE 1: CLEANUP

In order to combat the increasing amount of microplastics in the ocean, the use of both human and robotic solutions will be necessary to clean the ocean. This mission will focus on cleaning up plastics in the garbage patches that formed from ocean currents driven by wind since that is where most plastic accumulates. Using NASA data from hundreds of buoys placed around the world, scientists can determine where the garbage patches are moving and to determine where people need to go to clean up the affected areas. Using two specialized robots, these machines will use GPS to navigate to the affected areas and begin extracting microplastics from the ocean. The submarine robots will have an underwater vacuum inside them to collect the plastics around them. Once collected, they will be moved to a storage container with a filter to trap the microplastics while allowing the saltwater to pass through freely.

PHASE 2: PREVENTION

Using specialized dams to collect plastic from rivers can be a great step in to preventing ocean microplastics. Scientists discovered that, "over a quarter of the plastic waste that goes into the ocean every year likely comes from just ten rivers" (Ocean Portal). Yangtze, for example, is the river that releases the largest amount of plastic waste. Using specialized dams on these rivers that collect floating plastics while allowing marine life to pass through can help stop the creation of microplastics. Another solution is using a bacteria called Ideonella sakaiensis, which contains a specialized enzyme called α/β-hydrolases that is capable of degrading PET plastic. According to Plastics Insight, "More than half of world’s synthetic fiber and bottles demand is fulfilled by PET plastics." If this type of bacteria was to be used in a large scale, factory type setting, humans could biodegrade large amounts of PET plastic in a matter

CONCLUSION

While reducing, reusing, and recycling are excellent ways of lowering the amount of plastic waste, people still need to find other creative solutions in order to stop plastic from reaching the ocean and creating more microplastics. Using both humans and machines to remove microplastics can be an effective and environmentally friendly solution to clean the ocean. In addition, focusing on cleaning plastic waste that has not reached the ocean yet is just as important which is why the use of dams on polluted rivers can greatly reduce the creation of future microplastics.

REFERENCES


LOCATING

CLEANING

RIVER DAMS

IDEONELLA SAKAIENSIS

REFERENCES