



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
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## **It's All about Plastic, Everywhere...**

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by Jane Gerughty

We live in a plastic paradise. I have fond childhood memories of hula hoops, Frisbees and SuperBalls. There are several colonies of plastic flamingos in my neighborhood. Our lives are enhanced by contact lenses, synthetic carpeting and Tupperware. When the Titanic sank in 1912, virtually nothing was plastic. Now, our heads are protected by plastic helmets, our foods are sold in plastic packaging, many of our consumer products are plastic. IV bags are even plastic. Not long ago we depended on leather, silk, horn, glass and shell. We used to drink water from the tap or from water fountains. Since the 1940s our demand for materials has been met for the most part by plastic: nylon, plastic bottles, packaging, furniture, building materials, linoleum. The list is endless.

Plastics are derived from chemicals which are by-products of oil and natural gas refinement. They have a long life cycle. They don't decompose well if at all. Few are recycled. Most of the material which is processed for recycling is actually down-cycled or made into other products like carpets or clothing. In a single generation, plastics have become a dominant feature of our modern lives. Plastic is amazing and versatile. But, are we aware of the environmental impact it may have to us now and in the future?

In this unit, the history, chemistry and waste stream of plastic is explored through activities designed for secondary students. The students will evaluate plastic they come in contact with, they will make a polymer, they will investigate a thermoplastic and design a plastic up-cycle project to get them thinking about the plastic waste stream.

(Developed for Biology, grades 9-12, and AP Environmental Science, grades 11-12; recommended for Science, grade 8, and Biology and Environmental Science, grades 9-12)

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