



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
2009 Volume V: Green Chemistry

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## **Experiencing Positive Relationships with Managing the Environment**

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by Stephanie Johnson

This unit will explore the natural function of trees and simulate what they do through chemical experimentation. There will be several ways to accomplish this. First, we will look at how we contribute to waste. This will be through using the Ecological Foot printing tool. This concept is a resource tool that measures the usage of natural products and resources by an individual. This tool will assist with giving my students ownership for their responsibility to the environment. Secondly, we will look at trees and how they help the environment. Then we will explore composting through a family involvement activity.

The concept of Green Chemistry was created to assist chemists with being mindful of their environment when creating different elements or solutions. We will model as a chemist would do by creating and preventing waste. The subject green chemistry has twelve principles. In this unit, we will focus on three. The first one is it is better to prevent waste than to clean up after it is formed. The second one is chemical products should be designed to preserve efficacy of function while reducing toxicity. The third one is design chemicals and products to degrade after use: Design chemical products to break down to innocuous substances after use so that they do not accumulate in the environment. One of the laws that have assisted with this is the Clean Air Act. This act also would like to prevent waste at its source. To assist with preventing waste at its source, I will be teaching my students about pollution through the topic of trees. Pollution first of all comes in many forms and has assisted in hurting the environment by causing problems such as the green house effect. Pollution will be discussed and ways to help prevent it. There are several strategies to reduce air pollution. Trees help trap these pollutants and planting trees is a way of combating air pollution. Some countries have it so that you may donate a tree in a person's honor such as Trees for Israel. This unit has interactive activities and field trips. It has a literature component with several informational texts. The texts help make this unit a very lively study.

(Developed for Science, grade K; recommended for Science, grades K-3)

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