George Washington Carver: Alternative Uses for Everyday Materials

Start where you are, with what you have. Make something of it and never be satisfied."

George Washington Carver

As a lifelong humanitarian, one of the things George Washington Carver realized early on was that just because an object or farm product had a traditional use, it did not mean that there were no alternative uses for the item. This way of thinking became more common at the start of the 21st century.

Suddenly, products like almond milk, fuel efficient ethanol, and bioplastics are materials that are gaining in popularity as production costs continue to decrease and viability continues to increase. People are more aware now than ever before of the impact we have on the Earth. Production of non-biodegradable materials, such as plastic and rubber, along with ecologically damaging fuel sources such as crude oil, is becoming more and more hotly debated. Instead, scientists are continuing to look to the natural world for the products we use and the long-term impact of those products on the Earth.

In the place of some of these materials we have plastics made of vegetable fats and oil, gasoline made from corn, milk made from nuts, etc. But there is a cost to producing these materials. If we ignore the manufacturing process and what impact the conversion of vegetable oil into plastic may have and focus solely on the original plant and the final product, we can see that there is still the potential for trouble.

Today you will be learning about the cost and benefits of these products. You will also be looking at the cost of some of our traditional methods for creating these products.

Instructions:

Create a poster in the format you see below. You will be assigned a topic by your teacher. Regardless of your topic you will answer the questions below.

On a separate sheet of paper each student will answer the following in their own words (you should write one 3-5 sentence paragraph per question):

- **Which method of producing your product would you choose? Why?**
- **Summarize what you learned about alternative methods of producing common materials. Do you think the cost of using these materials is worth the benefit?**

PRODUCT NAME

Original Material

General Information:

1. How was the product originally produced?
2. What was the original use for the product?
3. When did production start?
4. Was the product successful immediately or when did it become highly successful?
5. How much of the product is produced yearly using this traditional method?
6. Is the material biodegradable?
7. How is the material used now?
8. What impact did the creation of this product have on the world?

Pros	Cons
What benefit does this product offer society?	What kind of pollution may be created by this product (air, soil, water)?
How efficient is this product (i.e. how long can it last before being replaced)?	How does access to the source material impact the land?
How much does it cost to produce?	How much does it cost to produce?

Environmentally Friendly Material

General Information:

1. What are the three (if you can find three) primary plants used to make this product?
2. Can you make products with 100% alternative material? (some products can only be a percentage alternative but still depend on the inclusion of original material)
3. How many plants does it take to make a standard amount of this product? (an acre of corn makes 300 gallons of ethanol)
4. When did production of this product using alternative methods begin?
5. How much of the product is produced yearly using this alternative method?
6. What percentage of the yearly production of this product is made using the alternative method?

Pros	Cons
Is the product that uses alternative materials biodegradable?	How long does this product last compared to the original method?
By using this material what pollution decreases?	By using this material what is the impact on land use?
How does a biodegradable product impact the environment when it is left as trash? (i.e. traditional plastic bottle vs. plant based plastic bottle in the ocean)	How does the source material impact other industries (i.e. price of corn)?