

# Chemicals - R - Us

## Second Quarter Project Chemistry I Honors

"Gee, how did you make that?" You don't hear this question much because the United States is a consumer-oriented society. If we need something, we go out and buy it. We don't understand about the raw materials needed or the manufacturing process involved in a product. If it looks good, we buy it.

It didn't used to be that way. Cosmetics, toys, jewelry, etc weren't mass produced and marketed, they were made by shopkeepers or in cottage industries. The person making the object knew all the ins and outs of his or her product, not only its physical attributes, but also chemical attributes and safety considerations.

This quarter you and a partner are going to create a cottage industry and manufacture a small amount of product: enough to give holiday gifts to everyone in this class and also enough to send out for product testing by some canny chemists in another state.

Your job is as follows:

**Step 1: Choose your partner and your product.**

Possible products are as follows:

- a. Personal grooming products such as soap, shampoo, detergent or cold-cream
- b. Polymers such as glue, GAK, slime, superballs
- c. Energy emitting products such as cold-paks, hot-paks, light sensitive paper and glow-sticks
- d. Electroplated objects with copper or silver
- e. Photographs

Research its origin, history and qualities that make it a desirable product.

**Step 2: Receive a "recipe" for your product.**

(Alternatively, present one to your wonderful teacher for consideration)

Research the physical and chemical characteristics of raw materials and products. Determine all safety considerations in the manufacturing process. List desired qualities found in your product.

**Step 3: Analyze your product's "recipe".**

Write and balance the chemical reaction involved in the production of your product. Determine the type of chemicals involved. Determine any

potential hazards or disposal concerns of by-products. Devise ways to “test” those desired qualities of your product.

Step 4: Begin Project Trials.

Try out your recipe. Test the resulting product. Refine the recipe. Test it again. Refine and then test for a third time. This is how it’s done in real life. The product is not put on the market until it is acceptable by the public.

Step 5: Mass Production.

Count the number of students in your class. Multiply by 3 (for those out-of-state experts and for your comparison tests) Determine how much of each raw material you need. Be sure to take into account your % yield. Give your supply order and equipment request list to your teacher, who will miraculously procure (hopefully) all the supplies you need. Divide your final recipe by 2. Make half, then the other half (just in case you goofed on your estimations). Package one third for export (by UPS). Keep one third for testing and package the last third for individual holiday gifts for your classmates.

Step 6: Presentation.

You are to make a formal presentation to the class, explaining your manufacturing process, the qualities of your product, problems you encountered along the way and how you resolved them.

Step 7: Testing.

After receiving the same products from the other class, we now have 2 brands of each product. Using the tests created, determine which product is “best”. Send a report to the “out of state” experts.

Step 8: Evaluation and Discussion

A most interesting discussion: Do the “experts” agree?