

LET'S GO GREEN

Life Skills

- ◆ Healthy Life-Style Choices
- ◆ Comparing Products



CAUTION

We encourage creativity of thought throughout our program. However, please do not allow your students to randomly mix products. Rather, the students should follow the prescribed and previously tested recipes.

Every substance has its own specific chemical properties. By mixing an improper combination (such as vinegar and baking soda), your students will not only cause a large mess for you to clean up, but will model improper and potentially dangerous behaviors. For example, mixing ammonia and bleach produces an extremely toxic gas. To avoid any dangerous situations in their homes, encourage students who desire to "try it at home" to only use reliable recipes.

ADVANCE PREPARATION:

Set up 4-6 *prep stations* around the room. The students will be grouped and then assigned to prepare their products at these stations. Place the necessary materials for this activity at EACH station.

Set up 4-6 *cleaning stations* around the room. The students will be grouped and then assigned to clean these stations in order to compare the products.

Cleaning Station Setup

Each station should have items to clean, such as desks/tables (per your room setup). Divide these items into halves with masking tape.

Students will use the traditional product on one side and the alternative product on the other.

LET'S BEGIN

Group students equally. Assign groups to their stations. Now, what items can you name that are at your station? List student responses on board. Where have you seen these items?

Recently, we've seen that most of the solutions that we use to clean our homes and schools can be hazardous to our health. Today, we are going to see how we can clean our homes or prevent pests without using toxic chemical solutions. All of the items that are on your table can be used to clean a home or to protect it from pests.

KEY CONCEPT:

After creating alternative cleaning solutions, students will compare the validity and reliability of their solutions to that of commercial products.

SUBJECT MATTER OUTCOME:

Students will make safe alternatives to household cleaners and pesticides. They will then compare those solutions to traditional solutions in the areas of validity (do they both clean?) and reliability (does one clean as well as the other?).

TARGETED AGE: 5th Grade

TIME NEEDED: 60 minutes

MATERIALS NEEDED:

- Worksheet 1.3 (1 per group)
- Materials listed below - make sure to have enough for each group (especially measuring/mixing bowls)

- | | |
|---|---|
| <input type="checkbox"/> Sponges | <input type="checkbox"/> White vinegar |
| <input type="checkbox"/> Clean rags | <input type="checkbox"/> Index cards |
| <input type="checkbox"/> Water (warm if possible) | <input type="checkbox"/> Empty, clean spray bottles |
| <input type="checkbox"/> Baking soda | <input type="checkbox"/> Measuring cups/spoons |
| <input type="checkbox"/> Cornstarch | <input type="checkbox"/> Mixing Bowls (Disposable) |
| <input type="checkbox"/> Lemon Juice | <input type="checkbox"/> Markers |
| <input type="checkbox"/> Granulated sugar | |

- Editor's TIP SHEET on "Creating a Column" (1 per student)

FLORIDA SUNSHINE STATE STANDARDS:

- | | |
|------------|------------|
| HE.A.1.2.2 | LA.B.1.2.2 |
| HE.A.1.2.4 | LA.B.1.2.3 |
| HE.A.1.2.5 | LA.B.2.2.6 |
| HE.B.1.2.2 | LA.D.1.2.2 |
| HE.B.3.2.2 | LA.D.2.2.1 |
| HE.C.1.2.1 | MA.B.4.2.2 |
| HE.C.2.2.1 | SC.A.1.2.4 |
| LA.B.1.2.1 | SC.A.1.2.5 |



LESSON ONE: HHPS - HAZARDOUS HOUSEHOLD PRODUCTS

Creating Alternative Solutions

Each group is to create two classroom cleaning products from the alternative products at your station. Your group will create the All Purpose Cleaner and one other product from the list of recipes on this sheet. *Pass out a copy of Worksheet 3.2 for the final group plan.*

Once you've created your products, you will need to come up with directions for use and some clever names for your line of products. You have 20 minutes to mix your products and create the names. *Begin group work.*



Testing Alternative Solutions

Once students have completed group task...Now that you've created your products, we are going to test the All Purpose Cleaner for validity (are the products we just made really able to clean?) and reliability (do the products consistently clean over multiple tests?).

Assign students to their cleaning stations. Half of your cleaning station is going to be cleaned with a commercial cleaning solution. The other half is going to be cleaned with your alternative solution. This will demonstrate validity—it will clean, just like the traditional products.

Remember, you are looking for validity and reliability. Since everyone followed the same recipes, we will be testing reliability as every group performs their tests. But, how will we know if the alternative cleaner cleaned as well as the traditional one? How can we measure this? Who has some suggestions about how we can compare the two cleaners? *Write responses on the board for student reference. Responses may include—how it smells, how it looks (no streaks, no smears, etc.), how it feels before/after it's cleaned.*

Now that we have our test measures, you can begin. You have 15 minutes to test your All Purpose Cleaner. Record your observations on a sheet of paper so that we can compare our findings at the end of the tests. *Allow students 15 minutes to complete this task.*



EXTRA! EXTRA!

LET'S REFLECT

1. What was the most difficult part of making your solutions?
2. Describe the difference between validity and reliability. Why is each important when selecting household products?
3. What steps did you take to test your products for validity and reliability? What errors might have occurred to change the validity or reliability of results?
4. Now that we've tested these solutions, how would you feel about using these products to clean your house?

THINK ALL ABOUT IT!



QUICK FACTS

Below are recipes for four alternative products that will be created for use in your classroom.

Glass & Window Cleaner

Mix 1 teaspoon cornstarch, $\frac{1}{4}$ cup white vinegar, and $\frac{1}{2}$ gallon warm water in a spray bottle. Apply to surface and dry with a soft cloth.

All Purpose Cleaner

Mix 1 cup white vinegar and 1 cup water in spray bottle. Shake well. Spray generously and wipe with soft cloth or sponge.

Air Freshener

Mix 1 teaspoon baking soda, 1 teaspoon vinegar (or lemon juice) and 2 cups hot water and pour into spray bottle.

Ant Trap

Mix $\frac{1}{4}$ cup granulated sugar, $\frac{1}{4}$ cup baking yeast and $\frac{1}{2}$ cup molasses in small bowl. Smear thin layer on index card and place card layer side up where ants travel.



LET'S LINK

Alternative Solutions

- <http://www.eco-labels.org/home.cfm>
- <http://www.care2.com/healthyliving>
- <http://lesstoxicguide.ca/index.asp>
- <http://www.sierraclub.org>

LET'S APPLY

1. Often, there are many products on the store shelf that we can choose from. How can we use this process to determine the best product to choose?
2. Have you ever used a similar process to compare two products to determine which one was better? What did you base your decision on (or what kind of tests did you run)?
3. What are the health advantages of using safer alternatives? How can these products contribute to a healthy lifestyle?
4. Can you think of other types of alternative products you might enjoy researching and creating now that you know some basic and safe ingredients?

IN TODAY'S EDITION...

FROM THE
EDITOR'S DESK

This assignment is part of a series of newspaper-related pieces that each student will include in his/her own Children's Environmental Health Newspaper. At the conclusion of this unit, students will bring the newspapers home to educate parents and other family members about the possible dangers in their own environments.



Have students create a **HEALTHY HOMES** column.



- First they will take on the role of the reader and create 3 or more questions about any information covered in the past three lessons (hazardous household products and/or safe non-toxic cleaners).
- Next, they will take a *Dear Abby* role and answer their own questions. Their answers will be facts, rather than opinion (opinion pieces will come later in the unit).

To aid students in creating the above newspaper pieces, provide them with the Editor's TIP SHEET on "Creating a Column."

Need more ideas? Below are activities that can be integrated into this lesson for a challenge or to provide variety.

- Have students swap a few questions with a friend for a twist.
- Have students research other cleaning products (like animal shampoo) that can be created from alternative products. Then, have them test the products for validity and reliability.
- Have students compile a recipe book of alternative household products.



NOTES:

Squeaky clean

Group Members: _____

Product Name: _____
All Purpose Cleaner

Ingredients/Materials

- 1 cup white vinegar
- 1 cup warm water
- spray bottle



Directions for Use:

Product Name: _____
Glass & Window Cleaner:

Ingredients/Materials

- 1 teaspoon cornstarch
- 1/4 cup white vinegar
- 1/2 gallon warm water
- spray bottle



Directions for Use:

Product Name: _____
Air Freshener

Ingredients/Materials

- 1 teaspoon baking soda
- 1 teaspoon white vinegar or lemon juice
- 2 cups hot water
- spray bottle



Directions for Use:

Product Name: _____
Ant Trap

Ingredients/Materials

- 1/4 cup granulated sugar
- 1/2 cup molasses
- 1/4 cup baking yeast
- index cards



Directions for Use:

