

Lesson: The Chemicals Around Us



Lesson Objectives:

1. Students will be able to explain health effects and handling instructions for a chosen household product chemical.
2. Students will be able to draw the structural formula and write the molecular formula for that chemical.
3. Students will be able to differentiate between organic and inorganic compounds in a chosen household product.
4. Students will be able to identify functional groups of carbon molecules.

Materials Needed For Lesson:

- A computer with Internet access
- *H.1.The Chemicals Around Us*
- A container with a commonly used household product (for demonstration)

Lesson Time:

45 minutes

Teacher Preparation:

1. Prepare copies of *H.1.The Chemicals Around Us*.
2. Ensure access to computers with an Internet connection.

Lesson Activator

Teacher Directions:

1. Choose a product that your students use often. Hold it up for them and ask them if they ever thought about what was in the product.
2. Start reading some of the chemicals present in the product and some of the health warnings. Introduce the day's activity.

Lesson Activity

Teacher Directions:

1. Have students work individually or in small groups.
2. Distribute *H.1.The Chemicals Around Us* to students.

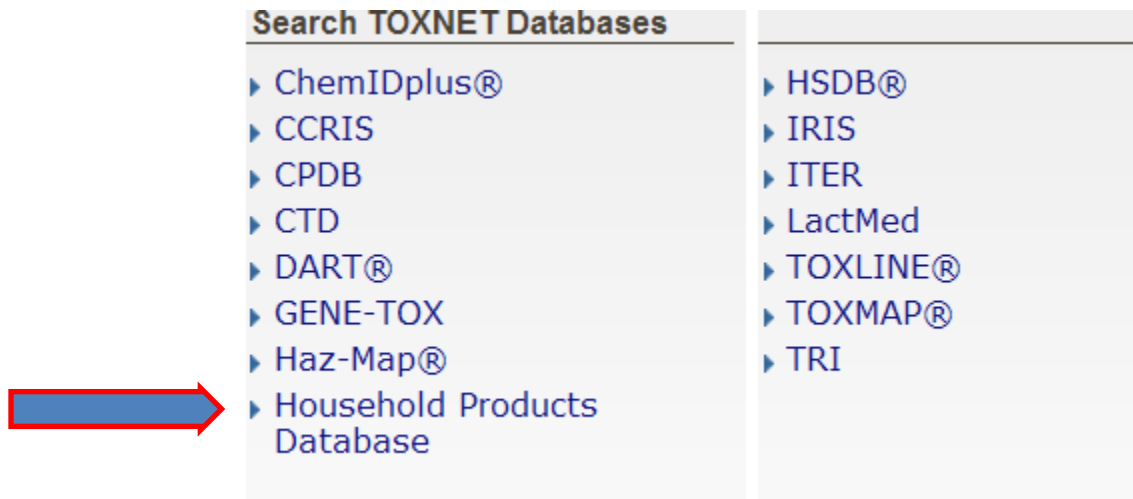
H.1. The Chemicals Around Us

Directions:

1. Type in the web address: <http://sis.nlm.nih.gov/enviro.html>
2. Mouse over the “Search TOXNET® Databases” button.











3. Select the “Household Products Database.”



4. Explore the categories listed and the products in those categories.

What's under your kitchen sink, in your garage, in your bathroom, and on the shelves in your laundry room? Learn more about what's in these products, about potential health effects, and about safety and handling.

 <p>Auto Products</p> <p>Brake Fluid, De-icer, Lubricant, Sealant, and more...</p>	 <p>Inside the Home</p> <p>Air Freshener, Bleach, Cleaners, Toilet Bowl Cleaner, and more...</p>	 <p>Pesticides</p> <p>Animal Repellant, Fungicide, Herbicide, Insecticide, and more...</p>
 <p>Landscape/Yard</p> <p>Fertilizer, Lawn Care, Swimming Pool Products, and more...</p>	 <p>Personal Care</p> <p>Antiperspirant, Hair Spray, Makeup, Shampoo, Soap and more...</p>	 <p>Home Maintenance</p> <p>Caulk, Grout, Insulation, Paint, Putty, Stain, and more...</p>
 <p>Arts & Crafts</p> <p>Adhesive, Glaze, Glue, Primer, Varnish, and more...</p>	 <p>Pet Care</p> <p>Flea & Tick Control, Litter, Stain/Odor Remover, and more...</p>	 <p>Home Office</p> <p>Ink, Toner, Correction Fluid, Electronics Cleaners, Pens and more...</p>

5. Choose one product to explore further and use to answer the questions below.

Questions:

1. The product I chose to research is _____.
2. What are some of the health effects and warnings associated with this product?

3. What are the safe handling/disposal instructions?
4. Did any of the information you found in #2 and #3 surprise you?
5. Scroll to the bottom of the screen where the ingredients are listed. Choose the two chemicals that are in greatest abundance in the product to fill out the chart below. Click the name of the chemical, and then click <http://chem.sis.nlm.nih.gov/chemidplus/> (ChemIDplus). Use the menu on the left to fill out the chart.

	Chemical 1	Chemical 2
Name of Chemical		
Structural formula		
Molecular formula		
Organic or inorganic?		
Functional groups		
Toxicity		

6. What is the difference between an organic and an inorganic molecule?

7. What is the importance of a functional group to the behavior of an organic molecule?

8. Search the database for a similar product. What chemicals in the two products are the same or similar in structure? (You may need to observe the structural formulas to answer this question.)

9. What does your answer to #8 tell you about the properties of these chemicals?