

Activity: Demonstrating Susceptibility



Overview

This demonstration provides students with visual evidence that if two individuals are exposed to the same dose of a chemical, the individual with the smaller body size will have a greater concentration of the chemical in his/her body.

Learning Objective

By the end of the activity, participants will have a better understanding of how susceptibility is different for children and adults.

Audience

Community (adults and youth)

Materials

- Small, clear jar or container
- Large, clear jar or container
- One bottle of food coloring (red is recommended, yellow is NOT recommended)
- Spoon or stirring utensil
- Signs to make activity more visually engaging; tape a picture of a baby/toddler to the small jar or container and tape a picture of an adult to the large jar or container (images can be found in appendix of this activity description)

Duration

15 minutes

Activity Preparation

Fill each jar or container $\frac{3}{4}$ full with water and place in clear view of audience.

Instructions

1. Invite the students to imagine that the containers are the bodies of an adult and a small child. Ask the students how much of the human body is composed of water (approximately 70%).
2. Hold up a bottle of food coloring and invite the students to imagine that the food coloring is a chemical to which these individuals are exposed. Ask the students to provide examples of chemicals they are exposed to in their daily lives.
3. Have a volunteer from the class add three drops of food coloring to each of the containers and stir each solution to disperse the food coloring. Ask the participants how chemicals are distributed throughout our bodies (circulatory system).
4. The smaller container, which represents a small child, will be a darker color compared to the solution in the larger container, representing the adult. Point out

Activity: Demonstrating Susceptibility



to the students that the same amount (dose) of chemical (food coloring) becomes more concentrated in the small child (small container) compared to the adult (large container).

5. After you are done with the demonstration, discuss other reasons why children can be exposed to more chemicals and often higher doses of chemicals (increased contact with environment, increased metabolic rate, consumption of more calories per unit of body weight than adults, increased ratio of surface area to mass, systems are still developing).
6. You may choose to end this activity by showing a copy of a dosage chart from Children's Tylenol (https://www.tylenolprofessional.com/assets/TYLENOL_Pediatric_Dosing.pdf) or another children's medicine. This chart shows that as a child's body weight increases, the dose they should receive also increases.

Evaluation

This activity is designed to help students understand the concept of susceptibility. Reiterate that small children have a higher rate of absorption than adults and are therefore more susceptible to chemicals.

Adapted From

Tox-in-a-Box [TM]: Appendix A, developed by the Community Outreach and Education Program at the University of Washington

Resources and Outreach Materials

<http://nchealthyhomes.com/lead-2/>

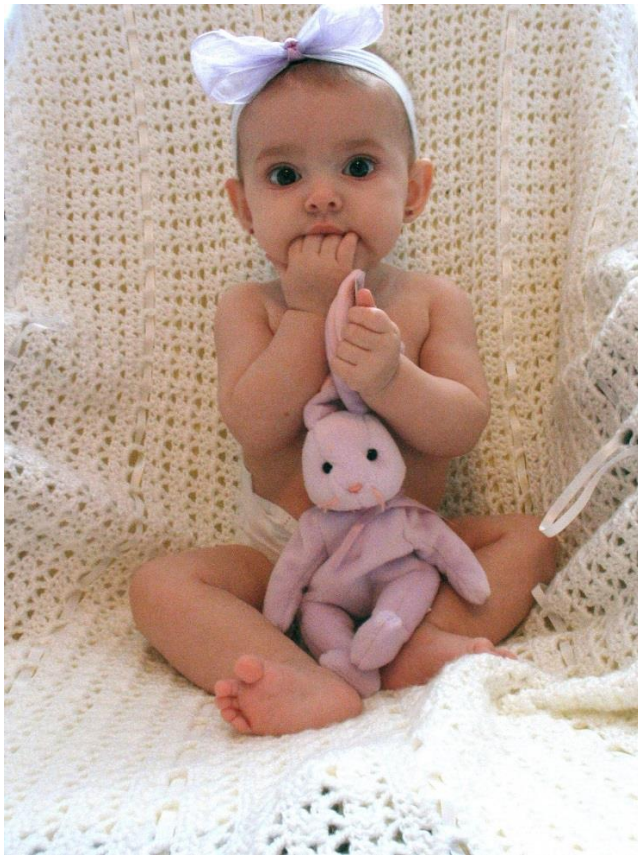
<http://www.cdc.gov/nceh/lead/>

<http://www.niehs.nih.gov/health/topics/agents/lead/>

Activity: Demonstrating Susceptibility



APPENDIX







TYLENOL® Professional Dosing Information for Infants & Children

Note: If possible, use weight to dose, otherwise use age. To arrive at the correct dose, weigh your child before giving TYLENOL®. **A healthcare professional should be consulted for dosing in children under the age of two years.**

Feel better,
TYLENOL®
ACETAMINOPHEN

Always ask your healthcare professional which product is right for your child.

		Your child's weight and age								
		Age 0-3 mos	4-11 mos	12-23 mos	2-3 yrs	4-5 yrs	6-8 yrs	9-10 yrs	11 yrs	12 yrs
Weight		6-11 lbs	12-17 lbs	18-23 lbs	24-35 lbs	36-47 lbs	48-59 lbs	60-71 lbs	72-95 lbs	95 lbs & over
 <p>Concentrated TYLENOL® Infants' Drops Cherry, Grape & Cherry dye-free flavors Active Ingredient: Acetaminophen 80mg (in each 0.8mL) Use only as directed.</p>	0.4mL	0.8mL	1.2mL (0.8mL + 0.4mL)	1.6mL (0.8mL + 0.8mL)	–	–	–	–	–	
	–	–	–	1 tsp or 5mL	1 1/2 tsp or 7.5mL	2 tsp or 10mL	2 1/2 tsp or 12.5mL	3 tsp or 15mL	–	
 <p>Children's TYLENOL® Suspension Cherry Blast, Very Berry Strawberry, Bubblegum Yum, Grape Splash & Cherry dye-free flavors Active Ingredient: Acetaminophen 160mg (in each 5mL or 1 tsp) Use only as directed.</p>	–	–	–	2 tablets	3 tablets	4 tablets	5 tablets	6 tablets	–	
	–	–	–	–	–	2 tablets	2 1/2 tablets	3 tablets	4 tablets	
 <p>Children's TYLENOL® Meltaway Tablets Bubblegum Burst, Wacky Watermelon & Grape Punch flavors Active Ingredient: Acetaminophen 80mg (in each tablet) Use only as directed.</p>	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	
 <p>Jr. TYLENOL® Meltaway Tablets Bubblegum Burst & Grape Punch flavors Active Ingredient: Acetaminophen 160mg (in each tablet) Use only as directed.</p>	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	

tsp = teaspoon*

Important Instructions for Proper Use

- Read and follow the label instructions on all TYLENOL® products
 - Take every 4 hours as needed
 - Do not exceed more than 5 doses in 24 hours
- Do NOT use with any other product containing acetaminophen
- Keep all medicines out of the reach of children
- Do NOT administer adult medicines to children
- *Use only the dosing device that comes with a specific product
- Concentrated TYLENOL® Infants' Drops are more concentrated than Children's TYLENOL® Liquids. The Concentrated Infants' Drops have been specifically designed for use with enclosed dropper.
- Children's TYLENOL® Liquids are less concentrated than Concentrated TYLENOL® Infants' Drops. The Children's TYLENOL® Liquids have been specifically designed for use with the enclosed measuring cup.
- Children's TYLENOL® Meltaway Tablets are not the same concentration as Jr. Strength TYLENOL® Meltaway Tablets. Jr. TYLENOL® Meltaway Tablets contain 160mg of acetaminophen while Children's TYLENOL® Meltaway Tablets contain 80mg of acetaminophen.
- If you have any questions, contact your healthcare professional or call 1-877-895-3665

Take every 4 hours as needed. Do not exceed more than 5 doses in 24 hours.