

Hazards on the Homefront – middle and high school

3-3-08

Goals – Students will:

1. Learn what “household hazardous products” are – what are the common products that teens will encounter?
2. Learn the health and environmental concerns with HHP
3. Learn safe handling including dangerous mixes, proper use, ventilation, proper protection, proper storage
4. Learn how to read the label on actual product examples
5. Learn how to choose safer products by playing a game
6. See by their own demonstration that less-toxic alternatives are effective

Need

- 30 sample products (several each representing signal words and hazards)
- Household product label reading sheet (handout)
- Try for Yourself (handout)
- toxic-free bingo key (handout - they can keep)
- toxic-free bingo cards, laminated, 2-sided
- bingo hazardous product paper slips in envelope
- 1-2 containers of Comet – tape to cover holes; in plastic bag
- 1 spray bottle with water
- 1-2 containers of baking soda (may leave a box if teacher would like to use)
- 1-2 ¼ teaspoons for measuring baking soda, Comet if possible
- 30 damp sponges
- 15 small wipe-off boards (or use Bingo cards, or use desks)
- 15 crayons
- chocolates for rewarding Toxic Free Bingo winner(s)
- Follow-up at home, 4 ideas (handout)
- HazoHouse flyers
- poss. Healthy Home Companion booklet, but most will get during personal care class
- Mr Yuk stickers (1 sheet of stickers/student)
- Recipe cards
- teacher evaluation and SASE envelope

Sequence

Put sample products (or pairs) at each student’s place.

Intro (2 minutes)

“Stand up if...(exposure)” (2 minutes)

Describe exposure routes (2 minutes)

Label reading using product pairs and worksheets (15-18 minutes)

Go over signal words

Go over hazards

Go over precautions

Which is the safer product to use?

Alternatives – Play Toxic-Free Bingo (8 minutes)

Disposal – hand out HazoHouse flyer (3 min)

Test effectiveness of alternative product (12-15 minutes)

Wrap up – stand up if... (good things) (2 min)

Hand out take-action optional homework

Script for Intro

Today we're going to talk about household hazardous products. These are common chemical products such as the cleaners, car products, and pesticides you see on your desks, that can be hazardous to your health, even when they are used properly. These products can also harm the environment – they can pollute water and harm fish, pollute the soil, kill butterflies and bees, and also harm our pets. More than 70,000 chemical compounds are used in the United States. Every year 500 to 1000 new chemicals are introduced to the marketplace.

As a young person, you are vulnerable to the effects of hazardous chemicals because your bodies are still developing and growing. Things like hair dye, nail polish, spray paint, glues, and car products are all examples of hazardous products that could harm you.

We want to help you avoid the most toxic products in the first place, and so we're going to learn how to read labels, we'll play a game to learn about safer products, and at the end you'll each test whether a safer cleaner works as well as a more hazardous cleaner.

To get an idea of what we're talking about, and what you might already use, I'm going to ask you some questions. If the answer is yes, please stand up (*or raise hand*), then sit down again.

What are HHW; Routes of Exposure

Stand Up If...

- you (or someone in your household) have used a bug spray to kill bugs
- you work on cars
- you have used an aerosol (spray can) to clean the oven, toilet, counter, or shower
- you have ever gotten a headache from using a cleaning product
- you have broken a mercury thermometer (has silver inside)
- you ate dirt as a little kid
- you use rubber cement or model glue
- you use spray paint
- your house has been painted or remodeled
- you have had your nails done at a nail salon

Thank you, can sit down. So those are some of the ways you get exposed to hazardous chemicals. All of us - even if you didn't stand up - have been exposed to hazardous chemicals – we just can't avoid them. A study called "Pollution in People" tested ten people in Washington for chemicals in their blood, hair and urine for toxic chemicals like mercury,

lead, and pesticides (see <http://www.pollutioninpeople.org/results>) . Everyone had at least 26 different toxic chemicals, and some had as many as 39. The chemicals are ones known or highly suspected of causing reproductive problems, or learning problems, cancer. These were not people who had been exposed to chemicals by working in a factory or on a farm, and they didn't live in the middle of an industrial area – the toxins got in their bodies from everyday living and household products.

Some of this exposure comes from breathing in products – *hold up aerosol* – such as the bug spray, cleaners, glues, and paint. It can also be from getting on your skin – such as from automotive products or personal care products. Or from eating (ingestion) – from biting your nails (things get stuck under them), eating after working on a project without washing up, or directly eating such as dirt or glue. Think about this¹ – you're having a picnic outside, and there are bees buzzing around. You grab a wasp spray from the garage and spray it in the air; you follow the bee down across the table and onto the grass. Now you eat your fried chicken and potato salad. You have just been exposed to pesticides by:

- Breathing in the aerosol spray of the pesticide. It's very hard to avoid the tiny particles in aerosols, they go deep into your lungs and then into your bloodstream.
- Eating pesticides you sprayed onto your food.
- You didn't wash your hands before eating, so you may have gotten some of the spray on your skin. Your skin absorbs many chemicals and they are spread throughout your body.
- When you walk inside later, you are tracking pesticides in on your shoes. Studies of house dust show high levels of pesticides, and also lead and arsenic from old pollution sources, that stay clinging to carpet for years.

What do you already do, or could do, to avoid all this exposure? [Have the students come up with their own ideas/suggestions]

- Don't use the pesticide
- Find a safer way to discourage bees (trap, cover food, have birds around)
- Wash your hands before you eat.
- Wear gloves, long sleeves, face protection etc when using hazardous chemicals.
- Take off your shoes when you go inside.

Signal Words; Health Effects; Proper Use (15 minutes)

Does anyone have an idea of how you could avoid purchasing hazardous products when you go to the store? (read the label)

Yes – there's a law (called the Federal Hazardous Substance Act, which is administered by the Consumer Product Safety Commission), that says a hazardous product must have certain information on the label.

So now we're going to learn how to read labels to find the safest products. **HAND OUT DATA SHEETS (these are 2-sided with experiment on back) put on overhead if**

¹ Other scenarios: You are spraying cleaner in the oven and you go to answer the phone. (Bite nails, grab some chips; next person to use phone also gets it on their hands). Or, the playing fields around your school have been sprayed. When you walk home you cut across the lawn. You don't take your shoes off inside and later are lying on the rug playing a game. The spray has been tracked into the carpet where it will not degrade for a long time.

available to show how to check off columns – We handed out products to all of you that are in pairs. One is more hazardous than the other. We are handing out data sheets for you to fill in with information from your product label – we will explain how to fill it out. If you get done early you can swap and do your neighbor’s product in the second column.

Signal word – Danger, Warning or Caution – this is on the front. Danger is for products that are extremely flammable (catch fire easily), corrosive (eats away at living tissue); or toxic (poisonous). Warning and Caution are used interchangeably on cleaning products and other household products that have moderate to low hazards. The signal words are required to be on the front by federal law.

Main hazards - Description of what the hazard is, such as Vapor Harmful, Flammable, etc.

Precautionary Statements - These tell you how to avoid the hazard, such as USE ONLY IN A WELL-VENTILATED AREA or KEEP OUT OF REACH OF CHILDREN.

Other things on a good label:

1. List of ingredients. They are listed from largest amount first to smallest amount last.
2. Your products should also have safe handling and storage information, first aid information, and how to contact manufacturer.
3. Note that not all products are correctly labeled.

STUDENTS FILL OUT SHEETS FOR BOTH PRODUCTS assistant can go around to help students who seem confused

Ask a few pairs to report on which product they thought is more dangerous, what else they filled in on sheets, discuss pointers below as they come up.

Raise your hand if you have a product that says Danger. (Call on the 3 people who have the products below and ask:) Can you tell us what your product is? What is the hazard? Read us the precautions.

- a. **Rubber cement** - have student read warning on rubber cement label warning – hazard is Flammability – also long-term health (Health Label). Has additional signal word “Poison.”
 - i. Note that products are labeled for immediate effects – not long term (ie cancer, birth defects).
 - ii. What is a “well-ventilated area”? Is it a big room, like the gym? A bathroom with the fan on?
- b. **Fuel system cleaner** – hazard is Flammable, Toxic, Irritant. How can you protect yourself if you are using this on your car? (Use it outside; wear a face mask; wear gloves. Inside garage, open garage door and a window if there is one, put a fan in window pulling air out. Floor fan pushing air out.)
- c. **Gunk Carb Clean** – hazard is toxicity, flammability, irritant. Note “Environmentally responsible, biodegradable” and earth symbol in contrast with Danger. Example of greenwashing, not an environmentally safe product.

Raise your hand if you have a product that says Warning and Caution – these are the moderately hazardous products. What is the hazard?

- d. **Aerosol deodorant** – hazard is Flammable, also toxic, avoid excessive inhalation (chemical pneumonia); huffing – intentionally concentrating the contents can cause brain damage, hearing loss, even “Sudden Sniffing Death” – heart attacks from too much adrenalin – even the first time they are tried. It’s not safe to inhale helium as a party game, either (helium replaces oxygen and you get asphyxia; the pressure from commercial helium canisters can burst lungs; or you can fall and hit your head).
- e. (or **solvent-based liquid paper** – toxic, huffing danger)
- f. **Slug bait** – hazard is Toxicity – EPA number. 4-5 tsp of slug bait fatal to a dog, 1/10 tsp if eaten should be treated.
 - i. Does anyone have a product with an EPA Registration number? It will be in tiny, tiny print. This is for pesticides – the Environmental Protection Agency regulates anything designed to kill – whether it’s insects, rats, plants, bacteria, or mildew. The pesticide signal word system is a little different, because Warning is more toxic than Caution. You will find this on some bleach, cleaners (Lysol, 409 because they kill germs), and paints, as well as on pesticides like the slug bait.
- g. **Marker with ASTM** nontoxic label – less hazardous.

Raise your hand if you have a product withOUT a signal word. (If no-one responds, look around at who has these products and prompt)

- h. Hairspray, alcohol etc – Personal care products are regulated by a different agency, the Food and Drug Administration, and they do not use the danger-warning-caution system. They will often have some safety information, but not to the same degree as on cleaning and home repair products.
- i. Some products may have very toxic ingredients that are not hazardous until combined, such as in aerosol waterproofing cans, that have caused deaths from people breathing them in. (if using overheads – have one of fact sheet or article on this story) Always try to find alternative to aerosol – next best is to use outside – use with a mask – have ventilation at least.
- j. Thermometer example – some products contain hazardous ingredients and the label may have been on the original box but is not on the product (talk about mercury, what else it is in, fluorescent example)
- k. Some products are either old or badly labeled, or were not labeled for resale.
- l. Pine sol is in an apple juice jar, unlabeled – example of a very dangerous look-alike – and why you should never store hazardous products in food containers or unmarked containers.
- a. Note – never mix different cleaning products yourself at home. One of the biggest no-no’s is mixing chlorine bleach and ammonia. Does anyone know what would happen if you did that (raise hand)? Creates a toxic gas that could make you pass out. Really dangerous. Many cleaning products contain either bleach or ammonia so you shouldn’t mix prepared cleaners.

Does anyone have a product with a Mr Yuk sticker? Why would this be useful? Does anyone have little brothers and sisters at home, or relatives that visit with little kids? We will hand these out at end of class, for you to take home and put on hazardous products, making sure they are stored up high out of reach of kids, too.

Does anyone have a question about their product and how it's labeled?
Anyone want to share anything that is interesting on your label?
How can the signal word help you when you are shopping?

Alternatives

You've seen some products that are safer and do the same or similar job to a more hazardous product, such as the glue stick and mouse trap. Now to practice those and learn some others you could use at home, we're going to play a game called "Toxic-Free Bingo."

2. Hand out Toxic-Free Bingo key (teacher or intern could also collect product into tub) (these are also 2-sided with homework on back)
3. Go over one example so they get it.
4. Hand out the bingo cards.
5. Explain that the object of the game is for them to find all the safer substitutes to the products you will call out. When they find the correct substitute, they should mark the box on their card with the nontoxic marker. It is okay to use the bingo key.
Winner gets chocolate.
6. When someone gets 4 across in a row, or up and down, or on the diagonal, call out Bingo.
7. To select product to call out, reach into box or jar with hazardous product on slips of paper.
8. Make sure the Bingo winner's answers are correct.

The bingo keys are for you to keep, to refer to at home for some easy safer alternatives, and also because we have an optional homework assignment on the back. But we need to collect the laminated cards – don't worry about wiping off the marker, we will do that later.

(Assistant collect bingo cards – but not crayons) Keep the crayons, you will need them later.

(Assistant cleans off bingo cards with scrubby sponge)

Disposal

Think about what happens when you throw out a hazardous product. Raise your hand if you know where your garbage goes. (WARC, Roosevelt Landfill)

Hazardous household products should not go in the regular trash. They can harm the garbage collectors, explode in the truck, and make all the garbage poisonous. They also shouldn't be poured down the drain – does anyone know why? It's illegal to dump hazardous product such as motor oil down a storm drain.

Raise your hand if you've heard of HazoHouse.

This is the free place to take hazardous waste set up at the Waste and Recovery Center (better known as the dump although nothing has been "dumped" or landfilled there since 2000). It's in Lacey (easy to get to off I-5 at the Hawks Prairie exit) to properly dispose or recycle old, unwanted household hazardous waste. (Hand out HH flyer at end) We will give you this flyer to take home so you and your parents can see what can be brought to HazoHouse and when it's open. The county also sets up temporary HHW collection events called the WasteMobile for people that live far from the Waste and Recovery Center. The next one is (date, location).

See for Yourself - Effectiveness Testing

The next thing we're going to do is for you to see for yourself whether a less-toxic product can do the job of a more hazardous product. Working in pairs, you will do a mini experiment to test a surface cleanser on your desk (or on Bingo card or wipe-off board). You will compare whether Comet with bleach works as well or not as baking soda to clean crayon off a surface.

GO OVER INSTRUCTIONS STEP BY STEP

1. Hand out damp sponge to each student, one set of instructions per pair and wipe-off board or have them clear desks.
2. First you will need to come up with a hypothesis – which cleanser do you think will work better?
3. Designate one person to be the record-keeper, who will need a pen or pencil. You will need to count and measure each step so you are fair in this experiment.
4. Next, using a crayon, draw a line down the middle of the wipe-off board/desk
5. Draw a smiley face or simple design on each side (same person do both sides with same crayon).
 - We come around and sprinkle a little Comet cleanser on the LEFT side and the same amount of baking soda on the right side.
 - Using the green scrubby side of your damp sponge, start to clean off the left side, counting how many back-and-forth or circular motions you have to make before it is clean.
 - Repeat on the right side with the second damp scrubber.

After a few minutes (go around to help if there seems to be confusion), ask them to please put down the supplies. Choose one pair from each test type to report on how well the alternative worked, any other comments.

Ask everyone to be seated.

Wrap Up

To wrap up, I'm going to ask you 9 more questions and see if today's lesson sunk in. Stand up (and sit each time, don't stay standing) if...

- when you clean a mirror, you will try using vinegar and water
- when you clean counters, You will try baking soda .
- You know which signal word means the most hazard – caution, warning, or danger
- You know what HazoHouse is.
- You will read labels to look for the signal words.
- You will pull weeds instead of using a weed killer
- You will use a fly swatter instead of a bug spray.
- You will bring home the handouts from this class so an adult in your house can take unwanted HHW to HazoHouse.
- You will put the Mr Yuk stickers we will hand out to put on hazardous products in your house, to protect little kids that might live there or visit.

- If you stood up more than 4 times. COUNT HOW MANY KIDS ARE STANDING – this is for evaluation.- assistant can make note of this as well as how many total kids are in class

Great – good for you!

Hand out homework and explain.

I'm going to collect your crayons and sponges and all the other supplies on your desks – please help put those in the right bins – and we will hand out these booklets with great information on how to have a healthy home.

Thank you!

Hand out Healthy Home Companions and/or
HazoHouse flyers
Recipe Cards
Mr Yuk stickers

evaluation and SASE to teacher