Lesson Title: Hazardous Materials Survey

Ohio Standards Connection:

Standard(s):

Benchmark(s): (grades 3-5) Grade 5 Benchmark C Describe Earth's resources including rocks, soil, water, air, animals and plants and the way they can be conserved.

Indicator(s):

Grade(5) Indicator 6 Investigate ways Earth's renewable resources (e.g., fresh water, air, wildlife and trees) can be maintained

Lesson Summary: Conduct a survey of school or home to determine kinds of hazardous materials that are being used.

Estimated Duration: class period

Background: When people think of hazardous waste, they generally think of waste produced by industry. But many of the products in our homes contain **hazardous** substances. Once used, the product is thrown out along with other household wastes, and residual amounts of hazardous substance often remain in the container. These hazardous materials then go to a disposal facility, such as a landfill or incinerator. Sometime, however, people dispose of household hazardous wastes on their own by burning them, dumping them on the ground or into waterways, or by pouring them down a sink, toilet or storm sewer system. These actions have the potential to threaten human health and the environment.

In most cities and towns, if a hazardous substance is poured down a sink or flushed down a toilet, it will flow through the sewer system to a sewage plant. Once there, some hazardous chemical wastes may be removed or treated to make them less harmful. However, for various reasons, toxic substances are not always removed or properly treated, and these substances can be discharged or absorbed into connecting waterways (creek, stream, river or lake). Sometimes in a sewage treatment plant, hazardous wastes kill the living organisms that should be feeding on the harmful bacteria in the organic wastes.

If the waste from a home flows into a septic tank, it will eventually spread out through a drain field with the potential to reach groundwater or nearby waterways. If hazardous substances are dumped on the ground, they can travel to a storm drain, waterway or down into the groundwater. Groundwater can become contaminated when the ground becomes saturated by rainwater.

The act of improperly disposing of household hazardous wastes is similar to illegally dumping industrial hazardous wastes. It is important to properly dispose of household products that contain hazardous substances because they can potentially threaten human health and the environment.

Instructional Procedures:

1. Develop a survey form showing room or area surveyed, hazardous waste found, amount, properly stored (yes or no), still needed (yes/no), can be disposed of

2. Conduct a survey of your home and/or school, using the survey form developed. Check all areas where hazardous materials may be stored.
    a. List all the results together as a class.
    b. Condition (is it properly stored?)
    c. Is it still usable/being used?
    d. Can it be properly disposed of?
    e. Locations where hazardous areas are being stored

3. Use student worksheet as assessment tool.

Extensions:

1. Make alternative, non-toxic products that can be used at home or school. Make recipe cards to take home.
2. Develop a survey form and conduct hazardous waste survey of neighbors. Hand out recipe cards for alternative, non-toxic products.
3. Help advertise household hazardous waste collection days in your community or county (to find calendar of events, check with your county Solid Waste District or Community Service Department).

Materials and Resources:

Use Life Depends on Water website http://www.wviz.org/edsvcs/Water/index.htm to research household hazardous wastes, correct disposal methods and handling information (under Pollution Prevention).

Student worksheet

Water Pollution from Hazardous Wastes Student Worksheet

1. What are some of the hazardous substances that are used in your home?

2. Read a warning label on one of the products. What does it say?

Place a "Y" for yes if the statement is a proper way to use, store, or dispose of hazardous wastes. Place a "N" for no if it is an improper procedure. On the back of this sheet, tell how to correct any and all of the improper procedures.

___1. Jack changed his car's oil and dumped the waste oil in a ditch behind his house.

___2. Janet uses a thick layer of shredded bark mulch instead of herbicides to keep weeds from growing between the shrubs in her house.

___3. Bill uses insecticide to kill every spider and insect that he finds in his garden.

___4. Beth leaves open containers of paint thinner and gasoline in her basement.

___5. Sarah keeps most of her household toxic chemicals locked in a cabinet.

___6. Fred empties a bottle of unknown substance on the ground behind his garage.

___7. Martha has a little floor polish left. She pours it down the sink drain.

___8. James is getting his lawnmower ready for spring. He saves the old gas in the tank and will pour a little at a time into his car gas tank to use it up.

___9. Donna likes trying different hairsprays and has partially used cans on her shelf.

___10. Andrew is getting his pool ready for winter. He has some chemicals left. He decides to store them to use next spring.

___11. Kathy has cleaned her oven with lye-based oven cleaner. When she is finished, she mixes it with water and pours it down the sink.

___12. Tommy has bought a house. In the corner of the garage he finds some Chlordane, Aldrin and Heptachlor and decides to use them on his lawn.

___13. Patsy has found an old can of mineral spirits. She has no use for it, so she spreads it over her driveway.