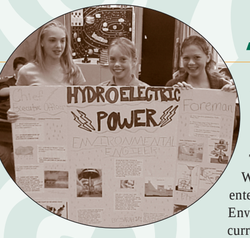

Anthony Wayne students, display their findings during their unit.

"NOT IN MY BACKYARD"

Anthony Wayne Junior High School - Heather Bauer, language arts; Bryan Borcherdt, Science; Toni Hoen, Special education; Anne Palmer, language arts / reading; Student Teacher, Abigail Hillrich

The students at Anthony Wayne Junior High School entered a new and challenging Environmental Health Science curriculum that employs problem-based learning. Given the problem of an energy company wanting to construct a natural gas peaker power plant in a small rural town in Fulton County, Ohio, students investigated and researched the risks and benefits (environmental, economical, social, and political) to this small community.

This investigation led the students down roads that involved propaganda, environmental labs, web research, corporate America, and the needs and concerns of a small rural farming town as students decided what was fair and equitable and what they as adolescents could do to help!

Topics for investigations:

- Examine current needs for energy in the United States as related to the need for peaking power plants
- List governmental regulations and their effect on power plants and the community. (PUCO and EPA)
- Explore the process required to gain approval to build a power plant. (Township, County Commissioners, tax abatement issues etc.)
- Gather information through surveys about citizen's responses and fears about a building a power plant in their community
- Inquire about the operation of the power plant:
  - How does it work?
  - Noise level during operation
  - Number of employees
  - Hours of operation
  - Amount of energy generated
  - Where will energy be used
  - Cost of producing energy
  - Benefits of gas powered power plant
  - Air pollution created
  - Amount of water needed for plant operation
  - Investigate the current water problems in the Metamora area.
  - Examine the safety issues involved with Power Plant operations

Through this learning experience students were involved in the problem solving process while researching and learning about a current environmental concern in their community.

"THE SHINING ODYSSEY"

Rossford Junior High - Renee Abke, science; Kim Linenkugel, language arts / health; Nancy Oberdorf, reading; Sue Thomas, health; student teacher Cristin McClellan, science

The team at Rossford Junior High decided to run their project during the week of March 4 - 8, 2002, which also happened to be the week of proficiency tests. For their project, they brought all 165 8th grade students together in the high school gym. The topic they chose to investigate was household chemicals.

In order to prepare the students for the investigations they were going to perform, they experienced 6 benchmark lessons to provide needed background information and skills. Based on what they learned in the benchmark lessons, the students were asked to determine which cleaners are the best. In order to accomplish this, the students had to design and conduct their own investigation. After conducting their investigations, they had to put together a final project.

Components of Final Project:

- Exploring alternative types of cleaners
- Explaining what potential problems the chemicals in the cleaners can cause
- Explaining how household cleaners can be better labeled

Students at Rossford Jr. High test household cleaners in the locker room of the school.

The groups that put together the best final projects presented at the COSI Toledo Environmental Education Colloquium. The students who presented did a wonderful job, and they really enjoyed the COSI experience.

Field Reports

LOCAL STUDENTS EXCITED ABOUT ENVIRONMENTAL SCIENCE

By Amy Boros - Project EXCITE Program Manager ~ Toledo, OH – May 6, 2002

Students and teachers from all over Northwest Ohio traveled to COSI – Toledo last Spring to display their Environmental Science discoveries. The students and their teachers participated in Project EXCITE and the Maumee River GLOBE Project, both grant funded programs through Bowling Green State University.

The young scientists have been challenged to take charge of their own learning as their teachers have asked them to help investigate problems related to local environmental health issues. Some such problems that the students have encountered are the environmental health of their school buildings, the impact of building power plants in nearby local communities, the effects of urbanization and the use of household and commercial cleaners. One of the groups presenting took great pride in discovering that their art teacher's respiratory illness may be due to the air quality in the basement of their aging building. When the school officials were presented with the student data they readily and promptly moved her room to the second floor. Students realized that more research was still needed and will continue collecting data this year. Other students found similar building health issues in the quality of airflow and ventilation. Exhibiting their work publicly at the colloquium and to their respective school boards was a rewarding experience for these students and gave them a great sense of pride in their accomplishments.

The excitement that comes from taking ownership and solving problems that matter in their daily lives was evident. Such is the nature of problem based learning – the key element being emphasized in the teachers professional development programs being implemented at Bowling Green State University by professors Dr. Jodi Haney and Dr. Chris Keil.

FEATURED IN THE UPCOMING ISSUE:

- FIELD REPORTS
  - "Urbanization" by Springfield Middle School
  - "School makes me Sick, literally!" by Youngstown
- FROM PROBLEM SOLVING TO TAKING ACTION!
- INDOOR AIR QUALITY IN SCHOOL BUILDINGS
- UPCOMING EVENTS

Website Highlight

www.scorecard.org

Scorecard allows the user to gain pollution information for their zip code, such as the location of toxic waste sites. It also explains ways to use this information in anti-pollution campaigns and at public hearings.

Project Team

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WHAT'S INSIDE

www.bgsu.edu/colleges/edhd/programs/excite

Project EXCITE Taking Action

Environmental health science eXplorations through Cross-disciplinary & Investigative Team Experiences

WHAT IS PROJECT EXCITE?

By Dr. Jodi J. Haney, Project Co- Director

Project EXCITE (Environmental health science eXplorations through Cross-disciplinary & Investigative Team Experiences) is a seven-year grant funded through The National Institutes of Environmental Health Science, a division of the National Institute of Health. The primary goal of EXCITE is to use locally relevant EHS topics to engage 4th – 9th grade students in valuable learning experiences across several disciplinary areas. The project reflects current thinking about effective teaching and learning and is aligned with national and state education goals. Specifically, Project EXCITE emphasizes problem based learning, interdisciplinary connections, collaborative learning and the use of technology. Students investigate local EHS issues, explain fundamental concepts and apply the knowledge and skills generated. Potential student success varies in scope, ranging from improved performance on standardized achievement tests through increased environmental social responsibility through culminating service learning projects.

The National Institutes of Environmental Health Science is supporting several other K-12 projects around the country. The overall goal is to increase student interest and knowledge in EHS, create an awareness of EHS career opportunities and to increase public awareness about the impact of environmental agents on human health so that all citizens can lead healthy and productive lives.

School teams consisting of four teachers representing various disciplines and a BGSU student teacher complete two full years of professional development to design, implement, refine, and publish local EHS units utilizing problem based learning strategies. Last year, teams from Akron, Anthony Wayne, Bowling Green, Maumee, Rossford and Springfield participated. Their EHS units dealt with topics such as indoor air quality, chemical exposures, urbanization and radiation. This year, Project EXCITE is actively recruiting six new teams for participation beginning Summer, 2003.

Call for Participants 2003-2005

Project EXCITE is currently taking applications. Benefits for participating teachers include: $1000 stipend, 10 grant funded graduate credit hours, and release time from school, among other benefits.

Guidelines:

- four interdisciplinary team members
- at least one team member should teach science
- other team members can come from any other discipline
- the team, at some point in the school year, should teach the same students (we will work with your school to facilitate this)
- Support from a district administrator

During the two year commitment, teams will jointly design a problem-based learning unit focusing on a locally relevant environmental health topic, implement the unit with their students, and ultimately submit their unit for publication.

The application is available online at : www.bgsu.edu/colleges/edhd/programs/excite/pages/TeacherTeamApphtml.

Or by contacting the program manager at aboros@bgnet.bgsu.edu 419.372.9132.

The application can be mailed, faxed or e-mailed to the program manager by December 10, 2002.

Transform Your Teaching!

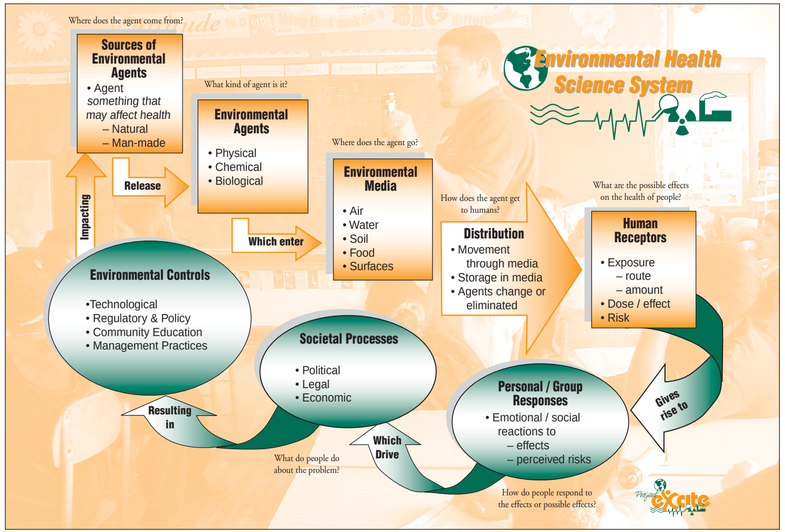
HOW ENVIRONMENTAL HEALTH "WORKS"

By Dr. Chris Keil

Allergies, asthma, disease, cancer! Chemicals, noise, radiation, germs! Air pollution, water pollution, food borne diseases! Smokestacks, tailpipes, runoff!

With all these different aspects of environmental health (EH) how can anyone make sense of it all? It can be intimidating, all the different things that have to be considered when looking at EH issues. To help with this, Project EXCITE scientists and staff have put together a "model" of the processes of EH to help visualize how all the different aspects relate to one another. It can also be used to help guide inquiry and investigation into EH topics.

The basic framework is pretty simple. It starts with the fact that anything that may get into the environment and affect health (environmental agent) has to come from somewhere. So the source of the agent has to be identified. Sources can be natural or man made.



SOURCE

The source emits an agent that we can describe as being chemical (like car exhaust), physical (like noise or radiation), or biological (germs).

SOURCE ⇨ AGENT

The agent then enters what we call an environmental media, a general description of what kind of place the agent will go. It could be into the air, water, soil, or even onto surfaces, like tabletops or even someone's hands!

SOURCE ⇨ AGENT ⇨ MEDIA

A very important consideration in EH is that once in the environment, the agents move around and they may even change. We call this distribution.

SOURCE ⇨ AGENT ⇨ MEDIA ⇨ DISTRIBUTION

After the agent has been transported it reaches the person or people that it might affect. We call these receptors. The process of an agent into a receptor is called exposure. Exposure can be by breathing, eating, drinking, or even through their skin. It is important to know how much, how long, and how often exposures occur. Once inside a receptor an agent might have a health effect. The chances of having a health effect depend on how much agent is in the body. Effects can be mild or severe. They may occur immediately or not come up for awhile. All this about what happens when agents are inside a human is called toxicology.

SOURCE ⇨ AGENT ⇨ MEDIA ⇨ DISTRIBUTION ⇨ RECEPTORS

EH doesn't end there though! Other things take place in communities when people are affected by environmental agents. Even the possibility or concern about what may happen is important to communities and groups. Often people feel angry or afraid. Group responses can prompt them to action.

SOURCE ⇨ AGENT ⇨ MEDIA ⇨ DISTRIBUTION ⇨ RECEPTORS ⇩ GROUP RECEPTORS

Once people begin to feel strongly about an environmental health issue, they can then influence societal processes to try to change things. Societal processes are actions such as lawsuits, law making, protests, product boycotts and other political action.

SOURCE ⇨ AGENT ⇨ MEDIA ⇨ DISTRIBUTION ⇨ RECEPTORS ⇩ SOCIETAL PROCESSES ⇦ GROUP RECEPTORS

Ultimately, the goal of these societal processes is to somehow control the release of the agent from the source. By controlling (reducing or eliminating) source emissions, the overall health of the community and environment will be improved. Controls can be the application of cleaner processes, better pollution removal devices, stricter regulations, changes in management practices, and even educational efforts.

SOURCE ⇨ AGENT ⇨ MEDIA ⇨ DISTRIBUTION ⇨ RECEPTORS ⇩ ⇧ CONTROL ⇦ SOCIETAL PROCESSES ⇦ GROUP RECEPTORS

This model shows a dynamic system for analyzing EH issues and guides critical thinking for further involvement with the issues. Environmental health careers are easily placed along the continuum of the system. For example:

- Environmental Health Scientists asses exposures
- Health Professionals target and treat the effects
- Public Health Professionals educate and communicate with community members
- Governmental Agencies manage and direct policy and economics
- Lawyers involved in legal societal processes
- Engineers implement environmental controls

These are only a small sampling of the careers associated with environmental health.

THE HAZARDS OF HOUSEHOLD CHEMICALS

By Lauretta Swint - Project EXCITE Graduate Assistant

We have learned to keep our houses clean in order to ward off disease and infection. To help us do this we have created a wide variety of cleaning products and disinfectants. The problem is that our zeal to be clean may have gone too far. The cleaner may be more dangerous than the things we are trying to clean up. Many common household products contain alcohols, ammonia, bleach, formaldehyde, and lye. If a person is overexposed to these substances they can cause nausea, vomiting, inflammation and burning of the eyes, nose throat, and respiratory system. Some of these chemicals are linked with neurological, liver and kidney damage, blindness, asthma, and cancer. The potential health risks are minimal if exposure to such chemicals is limited to low levels and for short periods of time. However, we should exercise caution and follow all manufacturers written instructions when using the following products:

- Aerosol spray products–including health, beauty and cleaning products
- Chlorine bleach
- Commercial bathroom and kitchen cleaning products
- Commercial rug and upholstery cleaners
- Indoor air foggers (for the removal of pests)
- Insect/rodent repellent

Many ordinary household products, such as cleaning fluids and garden-care products, are considered hazardous materials. The majority of poisonings reported in the U.S. to children under the age of five take place *in the home*. A typical American home contains 25 to 50 pounds of hazardous household waste, which may include cleaners, paints, chemicals and pesticides. These may be poisonous, corrosive, highly flammable, or even explosive. Check labels on all you use. When hazardous materials are disposed of improperly, they can be a threat to your health through leakage into the environment. Using alternative products will decrease future environmental contamination as well as reduce immediate risk to human health.

Achieving a level of cleanliness which is both hygienic for children as well as aesthetically pleasing for adults without using hazardous household cleaners and disinfectants is not as difficult as it sounds. You can either make your own household cleaners and disinfectants from a variety of common, less toxic household ingredients, or you can purchase less toxic commercial brands in stores. There are a number of less toxic alternatives such as Earth's Best, Seventh Generation, Earthrite, Earth Friendly, Bio Kleen, Life Tree, Shaklee and Dr. Bronner's which can be found at organic and natural grocery stores, co-ops, and many larger conventional stores.

References:

http://www.healthhouse.org/tipsheets/cleaning.htm
http://www.checnet.org/household_facts/cleaners.shtml
http://www.urbanoptions.org/nontoxic/Nontoxic.htm

Homemade household cleaners:

Tub and Tile Cleaner: Mix 1 and 2/3 cup baking soda, 1/2 cup liquid soap, 1/2 cup water, and finally, 2 tbs. vinegar. Then apply, wipe, and scrub.

Carpet Cleaner: To absorb big spills, spread cornmeal all over the spill. Wait 15 minutes, and then vacuum. For stains, put 1/4 cup biodegradable liquid soap with 1/3-cup water into a blender to make a foam. Put the foam on the stain and rub. Finish up with a splash of vinegar.

Window Cleaner: Put 2-tbs. vinegar per 1 qt. water in a spray bottle.

Disinfectant: Make a solution of 3 tbs. liquid soap, 2 cups water, and 20-30 drops of tea tree oil, which is a natural disinfectant.

Drain Cleaner: Pour about 1/2 cup a baking soda down the sink. Then add at least a cup of vinegar. Put the cover over the drain. Finish up by rinsing the drain with a mixture of boiling water and salt. You might have to repeat the procedure.

Multi-purpose Cleaner: 1 tsp. Borax, 1/2 tsp. washing soda, 2 tbs. vinegar or lemon juice, 1/4 to 1/2 tsp. vegetable-oil based liquid soap (like Murphy's or Dr. Bronner's), 2 cups very hot tap water.

Stain Remover: Rub light stains with a damp cloth sprinkled with Cream of Tartar.

Disinfectant Scouring Powder – 1 cup Baking Soda, 1/4 cup borax. Mix in a bowl, dampen sponge, and scoop up cleanser.