



**National Institute of
Environmental Health Sciences
National Institutes of Health**

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**K-12 Environmental Health Science
Educational Materials & Resources**

Introduction: K-12 Education at the National Institute of Environmental Health Sciences

The National Institute of Environmental Health Sciences supports an array of environmental health science education activities through a variety of extramural and intramural programs. The purpose of these initiatives is to help individuals better understand the effects and risks to human health from physical and social factors. These initiatives stem from the NIEHS' recognition that the lay community requires greater knowledge about environmental health issues as they are increasingly challenged to make decisions on the risks and benefits of agents that permeate society. In addition, the NIEHS sees these programs as an investment in the future of our society and the environmental health sciences.

Extramurally, there are two programs with a major emphasis in K-12 environmental health science education. NIEHS began the first program, ***K-12 Environmental Health Science Education***, in 1993. There have been three initiatives within the program. The first, Instructional Material Development, supported the creation of instructional materials at all grade levels. These projects provided instructional materials that can be infused into existing curricula and to develop interesting and challenging materials for students. Grantees used a variety of media, appropriate for the intended audience, to address such topics as cell biology, toxicology, risk assessment, scientific process and methodology, and indoor and outdoor air pollution.

The second initiative, Teacher Enhancement and Development, supported projects to develop and implement teacher enhancement and development activities. The goals of this program were to: 1) enhance dissemination, utilization, and effective implementation of materials and curricula pertaining to environmental health science; 2) provide teachers with the disciplinary and pedagogical skills necessary for teaching environmental health science; and 3) link researchers in environmental health science with teachers at the K-12 level. Grantees within this initiative have trained more than 7,500 teachers around the U.S. to incorporate environmental health science education into their classroom.

Finally, the third, and most innovative initiative, Environmental Health Sciences as an Integrative Context for Learning, encourages partnerships between environmental health scientists, educators, and state departments of education with the goal of integrating environmental health sciences within a variety of curricula (e.g. geography, history, math, art). The purpose is to improve overall academic performance as well as enhance students' comprehension of and interest in environmental health sciences.

The second major extramural program, ***Community Outreach and Education Program (COEP)***, is a component of the NIEHS Core Center Program – a program that seeks to enhance environmental health science research by supporting research facilities at research intensive universities. The purpose of COEP is to translate basic research emanating from the Centers into knowledge that can be applied to public health. COEPs



perform this work in a variety of manners, including K-12 environmental health science education. COEPs develop educational curriculum in a vast array of topics, including, basic toxicology, carcinogenesis, nutrition, and cell biology.

Intramurally, NIEHS has two principal programs in K-12 environmental health science education. The first, **BEST** (Bridging Education Science and Technology), is a partnership between NIEHS and local Durham, North Carolina Public schools. The program introduces high school students, predominantly underrepresented minority and economically disadvantaged, to standard molecular biological research technologies used in biological/biomedical science. This program has resulted in motivating students and enhancing their interest in science.

The second program, **Summers of Discovery**, recruits a diversity of secondary and post-secondary students, and teachers to work at NIEHS for a summer. This 10-12 week program exposes students and teachers to environmentally based biomedical research by placing them in a NIEHS research laboratory with one-on-one mentoring under an Institute scientist. In addition to receiving hands-on research experience in the laboratory, participants attend weekly seminars and discussion groups, and presentations by other students.

More information on these programs can be found on the NIEHS web site at:
<http://www.niehs.nih.gov/dert/programs/translat/k12/k12educa.htm>

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About this Document

This catalog is an extensive compilation of educational materials developed by NIEHS extramural grantees. The catalog provides the reader with the following information about the listed curriculum:

1. Title,
2. Format (e.g. booklet, web-based, CD-ROM),
3. Target audience (e.g. elementary, middle or high school students; teachers),
4. Brief description of the materials and
5. URL and contact person for additional information.

Some of the materials listed in this catalog may be viewed and downloaded from the internet. However, in some instances there is a fee associated with the curriculum or a required training. If you have questions regarding a specific material, please contact the person listed in the "Contact Information" column.

Please direct questions regarding this catalog to:

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K-12 Curricular/Educational Materials developed with support from the National Institute of Environmental Health Sciences

Title	Format, Description, and URL	Contact Info
1997 EnviroHealth Link Summer Institute Lesson Plan Binder	<p>Curriculum – Middle school</p> <p>The 1997 EnviroHealth Link Summer Institute provided opportunities for middle school health and science teachers to learn about current environmental health science issues and educational multimedia resources and technologies. Participants received printed copies of lesson plans and activity sheets developed by master teachers to complement workshop lectures and activities. The 15 lesson plans in this binder address a variety of environmental health subjects, including food additives, acids and bases, long-term exposure to environmental chemicals and cancer, water pollution, asthma, and air pollution.</p> <p>http://w.mpt.org/learningworks/teachers/ehl/</p>	<p>Dr. Michael Trush COEP Co-Director Johns Hopkins School of Public Health Center in Urban Environmental Health 615 North Wolfe Street Baltimore, MD 21205 T: (410) 955-2973 mtrush@jhsph.edu P30ES3819 R25ES08234</p>
1998 EnviroHealth Link Summer Institute Lesson Plan Binder	<p>Curriculum – Middle school</p> <p>The 1998 EnviroHealth Link Summer Institute provided opportunities for middle school health and science teachers to learn about current environmental health science issues and educational multimedia resources and technologies. Participants received a binder containing information about the Institute's sponsors and leaders, as well as copies of lesson plans and activity sheets developed by master teachers to complement workshop lectures and activities. The 16 lesson plans in this binder address a variety of environmental health subjects, including asbestos, noise pollution, skin cancer and sun exposure, nuclear radiation, food-borne pathogens, acid rain, lead poisoning, and water pollution. The binder also contains descriptions of Internet and other educational resources.</p> <p>http://w.mpt.org/learningworks/teachers/ehl/</p>	<p>Dr. Michael Trush COEP Co-Director Johns Hopkins School of Public Health Center in Urban Environmental Health 615 North Wolfe Street Baltimore, MD 21205 T: (410) 955-2973 mtrush@jhsph.edu P30ES3819 R25ES08234</p>
1999 EnviroHealth Link Summer Institute Lesson Plan Binder	<p>Curriculum – Middle school and high school</p> <p>The 1999 EnviroHealth Link Summer Institute provided opportunities for middle and high school health and science teachers to learn about current environmental health science issues and educational multimedia resources and technologies. Participants received a binder containing information about the Institute's sponsors and leaders, as well as copies of lesson plans and activity sheets developed by master teachers to complement workshop lectures and activities. The 16 lesson plans in this binder address a variety of environmental health subjects, including electric and magnetic fields, UV radiation, toxic environmental hazards, children's susceptibility to hazardous substances, environmental tobacco smoke, endocrine disruptors and environmental carcinogens, bacteria and microbial resistance to antibiotic agents, biological and chemical weapons, cancer clusters, pesticides and organic farming, and nuclear radiation. The binder also contains descriptions of Internet and other educational resources.</p> <p>http://w.mpt.org/learningworks/teachers/ehl/</p>	<p>Dr. Michael Trush COEP Co-Director Johns Hopkins School of Public Health Center in Urban Environmental Health 615 North Wolfe Street Baltimore, MD 21205 T: (410) 955-2973 mtrush@jhsph.edu P30ES3819 R25ES08234</p>

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2000 BioHealth Link: Questions of Cancer Summer Institute Lesson Plan Binder	<p>Curriculum – Middle school and high school</p> <p>The 2000 BioHealth Link Summer Institute provided opportunities for middle and high school health and science teachers to learn about current environmental health science issues and educational multimedia resources and technologies. Participants received a binder containing information about the Institute's sponsors and leaders, as well as copies of lesson plans and activity sheets developed by master teachers to complement workshop lectures and activities. The 16 lesson plans in this binder address a variety of environmental health subjects, including carcinogenesis, genetic testing, childhood cancer, radon, diet and nutrition, meat, ozone depletion and UV radiation, and artificial sweeteners. The binder also contains descriptions of Internet and other educational resources.</p> <p>http://www.mpt.org/learningworks/teachers/biohealth/</p>	<p>Dr. Michael Trush COEP Co-Director Johns Hopkins School of Public Health Center in Urban Environmental Health 615 North Wolfe Street Baltimore, MD 21205 T: (410) 955-2973 mtrush@jhsph.edu P30ES3819 R25ES08234</p>
Always Ask First	<p>Classroom activity – early elementary</p> <p>Thousands of children are accidentally poisoned every year in the United States. Many of these accidents involve household products and medicines. This booklet for young children provides five different puzzles that reinforce poison awareness.</p>	<p>Mr. Brad Hawkins Outreach Coordinator Vanderbilt University Center in Molecular Toxicology 638 MRB 1 Nashville, TN 37232-0146 T: (615) 936-2179 F: 5) 936-0756 brad.hawkins@vanderbilt.edu P30ES00267</p>
AMES Assay CD-ROM Activity	<p>Classroom activity – Middle school and high school</p> <p>The bioassay is an important tool in determining the mutagenicity, and thus potentially carcinogenicity, of chemicals. This activity, for use as a supplement to the CD-ROM "Essentials of Cell Biology: Toxicology in Action," teaches students about bioassays, mutagenicity, and cancer etiology. It provides an overview of the activity, a student worksheet, and a teacher instruction sheet and answer key. Students use the CD-ROM to find the definitions of key vocabulary terms and answers to questions about bioassays, toxicological principles, mutagenicity, and cancer.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

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Aquatic Toxicology Outreach and Training Pilot Program for Local High Schools	<p>Training materials, students and teachers – High school</p> <p>Agrochemicals linked to toxicity in aquatic organisms are commonly found in the waterways of the Sacramento River watershed, due to both rural and urban applications. This package of training materials was developed as part of an outreach program, "Aquatic Toxicology Outreach and Training Pilot Program for Local High Schools," designed to provide high school science teachers and students with an understanding of the methods used to assess the effects of pollutants on aquatic life. An introductory presentation provides background information on the biology and ecological role of Ceriodaphnia, the species selected for toxicity testing; sources of water pollution; and sampling and testing procedures. Additional training materials include a teacher's manual and classroom handbook for a Ceriodaphnia toxicity testing protocol.</p>	<p>Ms. Rebecca Morrison COEP Coordinator University of California - Davis Ctr for Environmental Health Sciences One Shields Ave. Davis, CA 95616 T: (530) 752-2732 rlmorrison@Envtox.ucdavis.edu P30ES05707</p>
Chemical in My World Curriculum Series: Get the Lead Out!	<p>Curriculum – Middle school and high school</p> <p>Chemicals in My World is an environmental toxicology curriculum for K-12 students, consisting of six lesson plans, each targeted to a different age group. This lesson plan consists of several activities to teach students in grades 6 through 12 about environmental toxicology, lead, and lead poisoning. The goal of the lesson is to introduce a variety of concepts, specifically: 1) the environment and environmental toxicology and related vocabulary, 2) that chemicals are everywhere, 3) natural and synthetic chemicals, 4) the importance of research, 5) threshold and dose-response, and 6) lead and lead poisoning. In order to borrow the full lesson plan kit, which includes written materials and supplies, teachers must receive training, which is provided at no cost by the Wayne State University COEP to local teachers.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
Chemicals and Human Health Website, Environmental Tobacco Smoke and Lung Development Activity: Web Site, Teacher's Guide, and Student Sheet	<p>Classroom activity, Web-based – Middle school and high school</p> <p>Although it is known that environmental tobacco smoke (ETS) is linked to a variety of respiratory health problems, including asthma, respiratory tract infections, and decreased lung function, questions remain about how ETS causes these problems. This classroom activity introduces students to such questions and teaches them about the scientific method and toxicology by examining the methods and results of an actual University of Arizona research experiment to study the effects of ETS on the lungs of mice. The problem set and guide include instructions for carrying out the activity, a set of questions about the methods and results of the University study, as well as a teacher's guide for scoring student answers. The hardcopy materials supplement the Web-based portion of the activity. This Web site contains four sections. The first two describe the experiment's hypothesis and methods, respectively. The third describes how the experimental data are collected and allows students to collect data using pictures of microscope slides produced during the experiment. The fourth section allows students to evaluate alternative interpretations of the data they collected and describes how they relate to the results of the actual experiment carried out by university researchers. Student use the accompanying hard-copy sheets to record their answers.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/exercises.html</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

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Chemicals and Human Health Website, Lung Toxicology Activity: Web Site, Teacher's Guide, and Student Sheet	<p>Classroom activity, Web-based – Middle school and high school</p> <p>Toxicology is a fundamental component of environmental health science. This classroom activity addresses lung anatomy and function, air pollutants, and lung diseases. The problem set includes a handout for students containing a series of questions on these subjects, as well as a teacher's guide for scoring students answers. Students try to answer the questions on hardcopy and then visit the Web site, where they answer the same questions on-line and may view tutorials that provide additional information to assist in deducing the correct answers.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/exercises.html</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Chemicals and Human Health Website, Toxicology Activity: Teacher's Guide and Student Sheet	<p>Classroom activity, Web-based – Middle school and high school</p> <p>Toxicology is a fundamental component of environmental health science. This classroom activity teaches the basic concepts of toxicology and some ways that chemicals affect human health. The problem set includes a handout for students containing a series of questions about toxicological principles and various chemicals and their health effects, as well as a teacher's guide for scoring students answers. The questions are intended to be given to the students prior to their visit to the Web site. Students answer the same questions on-line and may view tutorials that provide additional information to assist in deducing the correct answers.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/exercises.html</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Chemicals in My World Curriculum Series: Eating for Your Health	<p>Curriculum – Middle school</p> <p>Chemicals in My World is an environmental toxicology curriculum for K-12 students, consisting of six lesson plans, each targeted to a different age group. This lesson plan consists of several activities to teach students in grades 6 through 8 about the interactions among environmental toxicants, nutrition, and human health. The goal of the lesson is to introduce a variety of concepts, specifically: 1) the environment and environmental toxicology, 2) that a healthy diet can help protect against the effects of toxicants, 3) the importance of research, 5) the importance of caloric intake and exercising, and 6) the food pyramid and sources of nutrients. In order to borrow the full lesson plan kit, which includes written materials and supplies, teachers must receive training, which is provided at no cost by the Wayne State University COEP to local teachers.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
Chemicals in My World Curriculum Series: Genes, Disease, and the Environment	<p>Curriculum – High school</p> <p>Chemicals in My World is an environmental toxicology curriculum for K-12 students, consisting of six lesson plans, each targeted to a different age group. This lesson plan consists of several activities to teach students in grades 9 through 12 about environmental toxicology, UV light, and DNA mutations. The goal of the lesson is to introduce a variety of concepts, specifically: 1) the environment and environmental toxicology, 2) DNA mutations, 3) altered protein function as a result of mutations, 4) gel electrophoresis, and 5) environmental causes of mutations. In order to borrow the full lesson plan kit, which includes written materials and supplies, teachers must receive training, which is provided at no cost by the Wayne State University COEP to local teachers.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>

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Chemicals in My World Curriculum Series: Plants and Pollution--Lesson Plan for Grades 3-5	<p>Curriculum – Elementary school</p> <p>Chemicals in My World is an environmental toxicology curriculum for K-12 students, consisting of six lesson plans, each targeted to a different age group. This lesson plan consists of several activities to teach students in grades 3 through 5 about the interaction between plants and pollution. The goal of the lesson is to introduce a variety of concepts, specifically: 1) the environment and environmental toxicology and related vocabulary, 2) that chemicals are everywhere, 3) natural and synthetic chemicals, 4) the importance of research, 5) pollution and acid rain, and 6) that chemicals can be beneficial. In order to borrow the full lesson plan kit, which includes written materials and supplies, teachers must receive training, which is provided at no cost by the Wayne State University COEP to local teachers.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
Chemicals in My World Curriculum Series: Where Is the Water?-- Lesson Plan for Grades Pre-K through 2	<p>Curriculum – Elementary school</p> <p>Chemicals in My World is an environmental toxicology curriculum for K-12 students, consisting of six lesson plans, each targeted to a different age group. This lesson plan consists of six activities to teach students in grades pre-K through 2 about water, the water cycle, and water pollution. The goal of the lesson is to introduce a variety of water-related concepts, specifically: 1) that the Earth is composed primarily of water; 2) salt and fresh water; 3) that the supply of fresh water is limited; 4) the hydrologic cycle; 5) how plants, animals, and humans use water; 6) pollution and acid rain; 7) how chemicals can enter and affect plants, animals, and cells; 8) dose-response and concentration; and 9) drinking water treatment. In order to borrow the full lesson plan kit, which includes written materials and all necessary supplies and equipment, teachers must receive training, which is provided at no cost by the Wayne State University COEP to local teachers.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
Cluster Busters: A Game of Disease Mystery Solving - Scenario: Ms. Ima Well (Colon Cancer)	<p>Curriculum – Middle school and high school</p> <p>State health agencies in the United States receive many requests to investigate potential disease clusters, many of which turn out to be false alarms. Cluster Busters is an interactive, role-playing classroom activity that teaches students about the procedures typically used to determine the legitimacy of a potential disease cluster and draws on the principles of epidemiology, risk assessment, and toxicology. This scenario - Ms. Ima Well (colon cancer) - concerns an elderly woman in a Florida town who has colon cancer and noticed that several of her neighbors also have cancer. Supporting printed materials include a teacher's guide, student interview guides and note sheets, and a vocabulary list. Students also use Web-based resources during the activity, including a virtual library, environmental quality office, and medical center, which contain information on population statistics, pollution levels, and medical history. Students carry out standard investigative procedures and use information gleaned from interviews and Web resources to determine whether the cancer rate in the Florida town is statistically significantly greater than that in the national population and judge whether a true cancer cluster may exist.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/exercises.html</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

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Cluster Busters: A Game of Disease Mystery Solving, Scenario: Dr. Wanda B. Better (Infant Pulmonary Hemorrhage)	<p>Curriculum – Middle school and high school</p> <p>State health agencies in the United States receive many requests to investigate potential disease clusters, many of which turn out to be false alarms. Cluster Busters is an interactive, role-playing classroom activity that teaches students about the procedures typically used to determine the legitimacy of a potential disease cluster and draws on the principles of epidemiology, risk assessment, and toxicology. This scenario - Dr. Wanda B. Better (pulmonary hemorrhaging) - concerns a physician in an Ohio town who noticed that a seemingly large number of infants had been diagnosed with pulmonary hemorrhaging and hemosiderosis in recent years. Supporting printed materials include a teacher's guide and student interview guides and note sheets. Students also use Web-based resources during the activity, including a virtual environmental quality office, children's hospital, Housing and Urban Development Office, and Health Department, which contain information on population statistics, pollution levels, building maintenance records, and medical history. Students carry out standard investigative procedures and use information gleaned from interviews and Web resources to determine whether the rate of pulmonary hemorrhaging the Ohio town is statistically significantly greater than that in the national population and judge whether a true disease cluster may exist.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/exercises.html</p>	Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694
CO City Website (with Guide)	<p>Classroom activity – K-12</p> <p>Carbon monoxide is a colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely and is an important air quality consideration, especially in urban areas. This interactive Web-based activity allows students to explore the effects of anthropological activities (e.g., driving during rush hour) and meteorological factors (e.g., temperature, air mixing) on levels of carbon monoxide in the urban atmosphere. Students may adjust the time of day and size of city and see graphical depictions of traffic activity and associated carbon monoxide pollution levels. Supplemental commentary explains the principles behind air mixing and inversion layers. A guide that accompanies the Web site provides an overview of the activity's components, as well as a student worksheet and teacher answer key.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/empact/airinonow/games/inversion-simulation-5-why.html</p>	Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694

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Community Action and the Environment (Video and curriculum booklet)	<p>Curriculum, video – High school</p> <p>This video and its accompanying booklet provide an overview of environmental pollution and ways in which citizens may contribute to the study and alleviation of pollution problems. The video introduces the concept of cancer clusters and describes the ways in which community health concerns, including cancer clusters, should be objectively evaluated. Representatives from Boston-area community-based environmental advocacy and monitoring groups describe their activities and ways in which students can participate. The booklet provides descriptions of and resources for four assignments that reinforce scientific methods for studying environmental problems. The first assignment encourages students to observe their local environment and think about potential sources of pollution. The second introduces the concept of disease clusters and demonstrates the concepts of probability and statistical distributions. The third assignment encourages group discussion of local environmental issues and requires students to learn about local environmental authorities and utilities. The fourth encourages critical thinking about local and global environmental problems. The booklet also includes a list of recommended printed and Internet resources.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Easy Classroom Experiments for the Scientific Researcher	<p>Classroom activity – K-12</p> <p>This booklet compiles plans for a variety of science activities suitable for K-12 students using readily available materials. The booklet includes resources, such as lesson guides for the teacher or researcher and student pages (blank forms, charts, and observation sheets), for a total of 28 activities. Topics include environmental health science, chromatography, acids and bases, solutions of carbon dioxide, density, and surface tension.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
EnviroMysteries: Water + ? = Trouble! (Classroom version)	<p>Curriculum, video – Middle school</p> <p>Through the media and elsewhere, students encounter many issues related to the effects of environmental chemicals and pollutants on their health. This classroom program helps students develop the scientific and health literacy required to evaluate information and make educated decisions about such issues. The program analyzes environmental health and water pollution problems through the voices of a group of high school students. It contains four sections: a drama and three "documentaries." The drama concerns a cholera outbreak in a small coastal town. A group of concerned students works with the local health department to collect and evaluate evidence to determine the cause of the outbreak. The three documentaries, each led by one of the students from the drama, address different water-related environmental issues, including waterborne illness, water purification, the hydrologic cycle, and mercury poisoning. The supplemental Teacher's Guide provides a synopsis of each of the four sections of the video, as well as related activities, experiments, and discussion questions. It also contains instructions for a critical thinking activity that builds on the concepts and skills learned throughout the program.</p>	<p>Available from GPN Educational Media. \$39.95 for video, \$5 for teachers guide. T: 1-800-228-4630 F: 1-800-306-2330 gpn@unlinfo.unl.edu http://gpn.unl.edu R25 ES08234</p>

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Environment and Gene Interactions Cancer Module	<p>Presentation slides – High school</p> <p>While cancer is often the result of a combination of environmental exposure and genetic susceptibility, lifestyle choices can significantly impact one's risk of developing cancer. This presentation, available in English and Spanish, emphasizes this message through a survey of cancer risk factors and provides guidance for interpreting information related to cancer risks. It begins with an overview of toxicological principles, including dose-response relationship and routes of exposure, and then provides a discussion of the process of carcinogenesis and the concept of risk. A variety of important cancer risk factors, including tobacco use, alcohol use, sunlight exposure, diet, exposure to endocrine disruptors, and viral infections, are explored in more depth.</p>	<p>Mr. Don Cook COEP Coordinator Univ. of TX M.D. Anderson Cancer Ctr Ctr for Research on Envir. Disease P.O. Box 389, Science Park Rd. 1-C Smithville, TX 78957 T: (512) 237-9404 F: (512) 237-2990 dcook@sprd1.mdacc.tmc.edu P30ES07784</p>
Environmental Cyber Schoolhouse Website	<p>Curriculum, Web-based – High school</p> <p>The Environmental Cyber Schoolhouse designed to teach middle and high school students about environmental health issues through two different interactive, Web-based stories: Health Quest (about lead poisoning) and Sports Quest (about asthma). Teachers must undergo training before they or their students receive full access to the site. The Health Quest unit follows the story of Maria and her family who learn about lead poisoning at a health fair. Students learn about Maria's environment, the history of lead, symptoms and prevalence of lead poisoning, prevention strategies, and careers in health sciences, with the objective of helping Maria and her family return to good health. The general public may logon as guests on the Health Quest section and view pages containing various articles about lead poisoning issues and links to other useful Web sites.</p> <p>http://www.cyberschoolhouse.org</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu R25ES09881</p>
Environmental Health for Educators (Agendas and brochures)	<p>Teacher training – Middle and high school</p> <p>Health and Environmental Resources for Educators at the University of Washington (HERE@UW), part of the Community Outreach and Education Program for the University of Washington's Center for Ecogenetics and Environmental Health, is a program to design educational materials on environmental health and toxicology for the K-12 classroom. HERE@UW offers a free, two-part course titled Environmental Health for Educators to middle and high school educators of all subjects. During the first part (in August) teachers learn about environmental health issues. During the second part (in May) they share their own lesson plans. This brochures and agendas describe the courses held in 1997, 1998, and 1999.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharp@u.washington.edu P30ES07033</p>

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Essentials of Cell Biology: Toxicology in Action	<p>Classroom activity, CD-ROM – High school and college</p> <p>This interactive, educational CD-ROM encourages students to learn about toxicology and cell biology by seeking answers to questions about the toxic actions of chemicals. Students are tasked with assisting a toxicology professor by answering calls from a variety of citizens who are concerned about the potential health effects and mechanisms of toxicity of chemicals, many of which they are exposed to in and around the home. Students must use resources available in the professor's office to find the correct answers. The resources, some of which have animated and interactive lesson components, include a virtual lab (which provides information about the Ames test for mutagenicity), a computer program on cell biology, a toxicology reference book, and a chemical reference guide. The professor is available to provide guidance. Students receive a maximum of four points for each correct answer.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharpe@u.washington.edu R25ES06938</p>
From Plant to Drug	<p>Presentation slides – Middle and high school</p> <p>The biodiversity of plants provides a wealth of chemicals that may have potentially important pharmaceutical and pesticidal properties. This presentation provides an overview of biodiversity, raises awareness about species loss, and describes the methods for developing drugs from botanical samples. It covers sample collection strategies and techniques for extracting, separating, and analyzing chemicals from plants.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/resources/plant_drug.ppt</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30E0S6694</p>
Get the Lead Out: Your Environment, Your Health!	<p>Presentation slides – K-12</p> <p>Although lead poisoning is preventable, it continues to affect a large number of children. One out of every four children in Detroit is thought to be lead-poisoned. This presentation provides an overview of the historical uses of lead and the routes of exposure in and around the home. It describes the health effects of elevated blood lead levels, including effects on the brain, blood, kidneys, bones, peripheral nervous system, and nutrition. It provides dietary recommendations for mitigating the health effects of lead exposure and eliminating or reducing lead sources around the home.</p>	<p>Dr. Mary Dereski COEP Director Wayne State University Environmental Health Sciences Ctr 2727 Second Ave., Room 4000 Detroit, MI 48201 T: (313) 964-5251 F: (313) 963-1946 m.dereski@wayne.edu P30ES06639</p>
Good Cells Gone Bad	<p>Classroom activity – K-12</p> <p>Arizona has the highest incidence of skin cancer in the United States. This activity teaches students about the cellular changes that lead to cancer. It provides an overview of the prevalence of cancer, cell structure and function, and a classroom activity and worksheet that reinforces lessons about cellular structure and the differences between cancer cells and normal cells.</p> <p>http://swehsc.pharmacy.arizona.edu/coep/goodcells/</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

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Growth and Disease	<p>Curriculum – High school</p> <p>The spread of diseases continues to be an important public health concern in the United States and abroad. Teaching accurate information about the nature and consequences of the growth and spread of disease is essential for helping students protect their own health and the health of others. This lesson aims to provide such information through four learning activities that address the following subjects: the spread of viruses, antibiotic action and microbial resistance to drugs, the spread and control of parasitic organisms, and the probability of contracting diseases. The teaching materials package includes an overview of the entire lesson and a description of the objectives, performance tasks, class structure, procedures, and evaluation of each activity.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Guide to Keeping Laboratory Notebooks	<p>Classroom activity – Middle school and high school</p> <p>The laboratory notebook can be a vehicle for teaching students about science as well as good record-keeping skills, which are applicable in many fields and job situations. This guide outlines the scientific method and recommends a layout for the notebook. Several pages of an example laboratory notebook are included.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Guide to Plating Bacteria Using Sterile Technique	<p>Classroom activity – Middle school and high school</p> <p>Bacteria are useful in a variety of classroom science experiments. This activity teaches the basic laboratory techniques for growing bacteria in Petri dishes. This guide consists of a teacher version and a student version of the instructions.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Health and Safety for Working Teens	<p>Curriculum – High school</p> <p>About 80% of high school students are employed. Teen workers are two to three times more likely than adults to be hurt on the job. This curriculum, provided with free training to Washington state high school teachers, is an integral part of efforts by the Washington Department of Labor and Industries to provide much-needed health and safety training to teenagers. It contains an introductory unit for teachers, plans and materials for four interactive lessons, supplemental handouts, and teacher resources. Lessons and activities focus on identifying hazards in the workplace, strategies for reducing or eliminating these hazards, and safety and child labor laws.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharpe@u.washington.edu P30ES07033</p>

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Hey, Its Your Backyard (Video and Web site)	<p>Curriculum, video, Web site – Middle school</p> <p>This program explores the conflict between consumption and limited resources through a humorous, modern-day parable. Following a typical college student through his day, the program illustrates how his actions and consumer choices can impact his friends, his community, and ultimately the globe. The Web page provides a streaming video of the program, teachers' guide with classroom activities, and an interactive game that allows visitors to assess the environmental impact of their consumer choices.</p> <p>http://www.massinteraction.org/html/environment/index.html</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment	<p>Curriculum, video – High school</p> <p>This curriculum package covers the sources and movement of and methods for studying pollution in the environment, health risks posed by pollution, and methods for limiting health effects. The complete package contains seven programs, each of which consists of a video and written materials. Videos provide oral explanations of concepts, use computer graphics to illustrate processes, and interview university field and laboratory researchers as they demonstrate their research methods. The first three programs introduce students to three environmental reservoirs (groundwater, air, and surface water, respectively) and discuss how each reservoir becomes polluted and the impacts of pollution. The next three programs examine the methods used by scientists to track the sources of diseases, focusing on links between disease and environmental pollution. The final program is a teacher's reference tool and provides additional background and brief lessons on specific scientific concepts.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment, Program 1: Groundwater Pollution	<p>Curriculum, video – High school</p> <p>This program, part 1 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, introduces the concepts of groundwater and groundwater pollution and describes the processes used to identify and clean up groundwater pollution. Using the example of groundwater contamination in the Aberjona watershed in Woburn, Massachusetts, the video steps through the processes by which a particular site may become contaminated and may become a Superfund site. Field researchers discuss various methods for detecting and measuring the migration of pollutants through groundwater. Classroom exercises illustrate the concept of uncertainty due to limited data. Researchers discuss various methods for groundwater remediation and their limitations: pump and treat, bioremediation, and air sparging.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment, Program 2: Air Pollution	<p>Curriculum, video – High school</p> <p>This program, part 2 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, introduces the various kinds and sources of air pollution. The video begins with a brief discussion of combustion chemistry, illustrating how pollutants are formed during combustion. Field researchers demonstrate techniques for collecting ambient air samples and monitoring air pollution levels. They define the concept of particle size, including PM10, and discuss the health effects of particulates, particulate transport and the effect of rain in removing particulates, and the resulting differences in the dominant particulate sizes found in urban, suburban, and rural air.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>

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Human Health, Pollution, and the Environment, Program 3: Surface Water Pollution	<p>Curriculum, video – High school</p> <p>This program, part 3 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, introduces students to the various types of surface water bodies, the concept of watersheds, and the sources and movement of surface water pollutants. The program first focuses on a research project studying the flow of arsenic into the wetlands around a lake. Laboratory demonstrations illustrate some of the principles of fluid mechanics. Field researchers demonstrate techniques for measuring contaminant concentrations in river water. Next, the video addresses the human health effects of surface water pollution, the causes and effects of eutrophication, and water treatment methods.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment, Program 4: Cancer & America's Changing Lifestyle	<p>Curriculum, video – High school</p> <p>This program, part 4 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, addresses cancer from a public health perspective. The video begins with an overview of cancer in the United States and examines changes in cancer rates over time, focusing on lung cancer. Dr. William Thilly, NIEHS Center Director, provides a lesson on the various ways in which mutations arise, cell kinetics, and the process of carcinogenesis.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment, Program 5: Exposure Pathways	<p>Curriculum, video – High school</p> <p>This program, part 5 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, provides an overview of the pathways that chemicals may follow in the environment. The video returns to the example of contamination in the Aberjona watershed Superfund sites (Program 1) and explores how scientists determine whether pollutants migrate from their original dumping sites into drinking water wells. The video introduces the concept of biogeochemical indicators and describes their use in a variety of research applications. Field researchers demonstrate how sediment cores are collected and analyzed. Researchers next discuss the movement of contaminants in groundwater and soil. They describe properties (chemical density, water solubility, and soil particle size) that determine how a contaminant will behave in soil and groundwater, as well as the implications of this behavior for site remediation.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Human Health, Pollution, and the Environment, Program 6: Methods of Toxicology	<p>Curriculum, video – High school</p> <p>This program, part 6 of 7 in the "Human Health, Pollution, and the Environment" curriculum package, introduces students to field and laboratory techniques that are used in environmental toxicology. Field researchers demonstrate air sampling equipment used to collect urban air samples and describe the process for determining the mutagenicity of the air pollutants using bacterial tests. Laboratory researchers provide an overview of the causes of mutations and describe genetic techniques for studying mutations.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>

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Human Health, Pollution, and the Environment, Program 7: Teacher Information Program	<p>Curriculum, video – High school</p> <p>This program, the last of seven in the "Human Health, Pollution, and the Environment" curriculum package, provides teachers with an overview of resources available for teaching environmental health science at the middle school level. The video describes common environmental misconceptions held by the general public and emphasizes the need for promoting scientific literacy. It describes a series of classroom projects and activities for teaching scientific methods and critical thinking and recommends Web sites for additional information and ideas.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>
Hydroville, USA, Challenge Problems for High School Students - Challenge Problem II: An Epidemiology Case Simulation, Version 1.1	<p>Curriculum – High school</p> <p>The Hydroville Curriculum Project consists of four Hydroville Challenge Problems, which are hands-on projects staged in the fictional town of Hydroville, each dealing with a different environmental health scenario - a pesticide spill, a mysterious illness outbreak, an indoor air quality problem, and a water quality problem. The scenarios are based on real-world occurrences and make use of real data. This booklet contains materials for the second of the four scenarios - a mysterious disease outbreak in Hydroville. Students play the roles of scientific professionals and work in teams to determine the cause of the outbreak. They interact with health professionals, analyze samples from buildings, and interview Hydroville residents to formulate an explanation of the outbreak. They present their conclusions at a mock press conference.</p> <p>http://www.hydroville.org/</p>	<p>Molly Bloomfield Hydroville Curriculum Project Director Weniger 119 Oregon State University Corvallis, OR 97331-6506 T: 541-737-8892 Molly.Bloomfield@orst.edu R25ES10721</p>
Hydroville, USA, Challenge Problems for High School Students - Challenge Problem III: An Indoor Air Quality Simulation, Version 1.1	<p>Curriculum – High school</p> <p>The Hydroville Curriculum Project consists of four Hydroville Challenge Problems, which are hands-on projects staged in the fictional town of Hydroville, each dealing with a different environmental health scenario - a pesticide spill, a mysterious illness outbreak, an indoor air quality problem, and a water quality problem. The scenarios are based on real-world occurrences and make use of real data. This booklet contains materials for the third of the four scenarios - a potential indoor air quality problem. Students, teachers, and staff in a newly renovated middle school complain of odors and feeling sick. Students play the roles of consultants and work with air quality professionals to determine the nature of the problem and design and evaluate the cost of remediation options. They present their conclusions at a mock school board meeting.</p> <p>http://www.hydroville.org/</p>	<p>Molly Bloomfield Hydroville Curriculum Project Director Weniger 119 Oregon State University Corvallis, OR 97331-6506 T: 541-737-8892 Molly.Bloomfield@orst.edu R25ES10721</p>

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Hydroville, USA, Challenge Problems for High School Students - Challenge Problem IV: A Water Quality Simulation, Version 1.1	<p>Curriculum – High school</p> <p>The Hydroville Curriculum Project consists of four Hydroville Challenge Problems, which are hands-on projects staged in the fictional town of Hydroville, each dealing with a different environmental health scenario - a pesticide spill, a mysterious illness outbreak, an indoor air quality problem, and a water quality problem. The scenarios are based on real-world occurrences and make use of real data. This booklet contains materials for the last of the four scenarios - a potential water quality problem. Hydroville's annual drinking water report shows that certain pollutants have increased significantly and that trace amounts of trichloroethylene are present. Students try to determine the cause of the problem by reading newspaper articles and interviewing community members. They work with the city council to develop tax measures that will support various remediation efforts. Different student teams select and advocate for different measures. The event concludes with a vote on tax measures.</p> <p>http://www.hydroville.org/</p>	Molly Bloomfield Hydroville Curriculum Project Director Weniger 119 Oregon State University Corvallis, OR 97331-6506 T: 541-737-8892 Molly.Bloomfield@orst.edu R25ES10721
I'm in Charge of My Own Health	<p>Classroom activity, Web site – Elementary school and middle school</p> <p>The Community Outreach and Education Program of the Center for Research on Environmental Disease developed and maintains a Web site, "I'm in Charge of My Own Health," to provide environmental health information to elementary and middle school students and teachers. The central theme of the site is that lifestyle choices, such as diet and sun avoidance, can significantly affect one's health. Students learn about actions they can take to protect their own health, as well as current environmental health research projects and the implications of their results. The site features cartoon characters including Veggie-Mon, Sun Spot and Strawberry Girl who guide students to information pages, science activities, healthful recipes, games, and quizzes. Another feature is a section for submitting environmental health questions to and receiving answers from researchers. For teachers, the site provides information on the subjects and skills covered by each section of the site, a lesson plan, information for obtaining classroom materials, and related educational Web sites.</p> <p>http://www.veggie-mon.org</p>	Mr. Don Cook COEP Coordinator Univ. of TX M.D. Anderson Cancer Ctr Ctr for Research on Envir. Disease P.O. Box 389, Science Park Rd. 1-C Smithville, TX 78957 T: (512) 237-9404 F: (512) 237-2990 dcook@sprdl.mdacc.tmc.edu P30ES07784
Induced Plant Defenses	<p>Classroom activity – Middle school and high school</p> <p>This classroom experiment demonstrates plants' use of chemical defenses to protect themselves in response to physical damage. It helps students learn about biology and environmental science by observing the effects of physical damage to plants on the palatability of leaves to snails. This package of materials includes a teacher instruction sheet, individual and class (pooled) data sheets (with a scoring rubric for the teacher), discussion questions (with answers and a scoring rubric for the teacher), and a student instruction sheet.</p>	Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694

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Isolation of Naturally Occurring Pesticides (Teacher's Guide and Students Sheets)	<p>Classroom activity – Middle school and high school</p> <p>In this classroom experiment, students learn principles of biology, environmental science, and ecology by observing the effects on fruit flies of naturally occurring pesticides, such as those found in various spices and flowers. The teacher's guide provides background information, a list of necessary materials, preparation instructions, and recommendations for variations on the experiment. The student sheets provide instructions and forms for recording results.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
NIEHS Community Outreach and Education Program Resource Center	<p>Web site</p> <p>The Community Outreach and Education Resource Center provides information for and about Community Outreach and Education Programs (COEPs) supported by the National Institute of Environmental Health Sciences (NIEHS). Currently, 28 COEPs, based at universities and laboratories across the United States, are working to translate environmental health research into useful public health applications, including K-12 educational materials. The Resource Center's Web site, to debut in October 2001, will provide a centralized location for COEPs to share educational materials with each other and the public. Many of these materials will be available in electronic format for full-text viewing and downloading.</p> <p>URL TBA</p>	<p>Karalyn Colopy National Institute of Environmental Health Sciences, COEP Resource Center Director kcolopy@asciences.com Tel: (919) 544-8500 2605 Meridian Pkwy, Suite 200 Durham, NC 27713</p>
Nuclear Energy: the Good, the Bad, and the Debatable (Video and curriculum book)	<p>Curriculum, video – High school</p> <p>This video and its accompanying booklet provide an overview of the benefits and risks associated with nuclear power and nuclear science applications. The video begins with an explanation of the concepts of nuclear radiation and fission and define the elements and particles involved. An MIT researcher then provides a tour of the MIT nuclear reactor and describes the research and education purposes that the reactor serves. Next, a Russian scientist describes the Chernobyl accident, including the cause of the meltdown and the immediate and long term health effects on those exposed. The narrator also interviews MIT researchers who describe the current and experimental use of nuclear science in diagnosis and treatment of diseases such as cancer and rheumatoid arthritis. The curriculum booklet includes four assignments designed to help students understand the controversies surrounding the use of nuclear power and formulate their own opinions on the subject. The first assignment guides students in conducting background research on nuclear energy using the Internet. The second assignment helps students learn about the relationship between radiation exposure, or dose, and health effects and asks students to consider whether current government regulations of radiation sources are sufficient. The third assignment requires students to conduct more in-depth research on a nuclear energy issue. The fourth assignment requires students to work in groups to formulate arguments either for or against fictitious plans for a new nuclear power plant. The booklet also includes a list of recommended printed and Internet resources.</p>	<p>Dr. Heidi Nepf COEP Co-Director MIT Envir. Health Sciences Center 77 Massachusetts Ave., Room 48-423 Cambridge, MA 02139 T: (617) 253-8622 mnhepf@mit.edu P30ES02109</p>

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Peak Flow Measurement Demonstration	<p>Classroom activity – K-12</p> <p>A peak flow meter is a common tool used to measure the volume of air that can be expelled from the lungs in a single strong breath. This classroom activity illustrates the use of the peak flow meter, teaches students about airway function, and simulates the effect of constricted airways on peak flow. Students use a peak flow meter to measure peak flow, both under normal conditions and when exhaling through a straw (simulated constricted airways). Students, segregated by gender and according to whether they have asthma, plot their measurements against height and age on group charts. This package of materials includes teacher instructions, background information, and a sample chart of normal peak flow against age, by gender and height.</p>	<p>Ms. Ann Backus COEP Coordinator Harvard School of Public Health Kresge Ctr for Env Health Science SPH1-1207 Boston, MA 02115 T: (617) 432-3327 abackus@hohp.harvard.edu P30ES00002</p>
Race to Find the Cure: Isolation of Chemicals from Plant Leaves	<p>Classroom activity – Middle school and high school</p> <p>Many important pharmaceuticals and other chemicals are derived from plants. This classroom experiment teaches students about the isolation of plant chemicals using chromatography. Students apply different mixtures of spinach extract, beet leaf extract, and food coloring to strips of filter paper; observe the separation of the components of the mixtures; and extract the isolated components from the filter paper using water. This package of materials includes a teacher's guide, student instructions and notes, and discussion questions and answers.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Realtime Air Quality Activity	<p>Classroom activity, Web-based – High school</p> <p>Air quality monitoring can provide information that is important for protecting public health in urban areas. This activity, designed for use in the Tucson, Arizona area, teaches students about air pollution, its health effects, and its relationship to meteorological factors. Students use the Internet to collect real-time data about air pollution (ozone, carbon monoxide, and particulates), weather (temperature, wind, precipitation), and health effects (asthma attacks, visibility), and look for patterns and relationships. The activity includes lessons in the use of spreadsheets and statistics. The materials package includes a teacher's guide, overheads for the teacher's use in introducing the activity to the class, and student instruction sheets. Data come from a Web site of the Pima County, Arizona, Department of Environmental Quality, http://www.deq.co.pima.az.us/drdas/reportmain.asp.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Risk Management	<p>Curriculum – High school</p> <p>Students will encounter many situations in their lives in which they are required to evaluate risk and make decisions based on their analyses. This lesson aims to provide students with the skills necessary to analyze risk and thus make informed choices through four learning activities that address the following subjects: risk management, risk management tasks and careers, cost/benefit analysis of the use of hazardous chemicals, and modeling of hazardous waste exposure. The teaching materials package includes an overview of the entire lesson and a description of the objectives, performance tasks, class structure, procedures, and evaluation of each activity.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

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Risk Management and Health Care	<p>Curriculum – High school</p> <p>An understanding of healthcare management is critical for maintaining one's own health. This lesson aims to build such an understanding through four learning activities that address the following subjects: diagnosis of various illnesses, costs and benefits of disease prevention, healthcare plans and HMOs, and the relative advantages and disadvantages of private healthcare as compared to government-sponsored HMOs. The teaching materials package includes an overview of the entire lesson and a description of the objectives, performance tasks, class structure, procedures, and evaluation of each activity.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Risk Management: Health Risks	<p>Curriculum – High school</p> <p>An understanding of health risks is critical for maintaining one's own health. This lesson aims to help students identify and investigate health risks through four learning activities that address the following subjects: common causes of death, evaluation of personal daily health risks, health risks of substance abuse, and stress and mental health. The teaching materials package includes an overview of the entire lesson and a description of the objectives, performance tasks, class structure, procedures, and evaluation of each activity.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>
Science Workshop Series	<p>Teacher training – Elementary and middle school</p> <p>The Environmental Health Education Program at the Harvard School of Public Health promotes learning about links between human health and the environment. Program activities include workshops on the environment, physiology, and health for K-6 teachers. This notebook contains the agendas, notes, handouts, lesson plans, and background readings given to elementary school teachers at a science workshop series. The series consisted of four day-long workshops, which covered the following subjects: 1) cells, microbiology, and fungi; 2) taxonomy, plants, and animals; 3) the senses, microscopy, sound, and noise pollution; and 4) water, water pollution, and aquatic ecosystems.</p>	<p>Ms. Ann Backus COEP Coordinator Harvard School of Public Health Kresge Ctr for Env Health Science SPH1-1207 Boston, MA 02115 T: (617) 432-3327 abackus@hsph.harvard.edu P30ES00002</p>
The Look-a-Likes	<p>Classroom activity, Web-based – K-12</p> <p>Thousands of children are accidentally poisoned every year in the United States. Many of these accidents involve household products and medicines. This Web site aims to raise awareness among children and adults of the similarities in appearance between many poisonous household substances and edible foods and drinks. Users are presented with a series of photos of pairs of similar-looking household items and are asked to identify the one that is safe to consume. Detailed information about each substance, including potential routes of exposure and first aid guidance, is provided.</p> <p>http://www.toxicology.mc.vanderbilt.edu/lookalike</p>	<p>Mr. Brad Hawkins Outreach Coordinator Vanderbilt University Center in Molecular Toxicology 638 MRB 1 Nashville, TN 37232-0146 T: (615) 936-2179 F: 5) 936-0756 brad.hawkins@vanderbilt.edu P30ES00267</p>

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The Poison House Web Site	<p>Classroom activity, Web-based – K-12</p> <p>Thousands of children are accidentally poisoned every year in the United States. Many of these accidents involve household products and medicines. This Web site reinforces poison awareness among children and adults by engaging them in an interactive game. Users are challenged to identify and locate a wide variety of potentially harmful substances in a picture of a typical home. Detailed information about each substance, including potential routes of exposure and first aid guidance, is provided.</p> <p>http://www.toxicology.mc.vanderbilt.edu/outreach%20web/poison%20house</p>	<p>Mr. Brad Hawkins Outreach Coordinator Vanderbilt University Center in Molecular Toxicology 638 MRB 1 Nashville, TN 37232-0146 T: (615) 936-2179 F: 5) 936-0756 brad.hawkins@vanderbilt.edu P30ES00267</p>
The University of Iowa Environmental Health Sciences Institute for Rural Youth	<p>Curriculum, summer – High school</p> <p>The Environmental Health Summer Institute for Rural Youth at the University of Iowa is a week-long residential program for rural ninth graders. It is designed to expose students to the activities and research in which environmental health scientists participate. This student binder contains practical information about the program, including events schedules, leader contact information, and a description of the research and goals of the Environmental Health Sciences Research Center at the University of Iowa. It also contains chapters describing the goals, aims, products, and individuals involved with each of the Center's research and facility cores, as well as the Community Outreach and Education Core. Additional chapters provide readings to supplement lectures and activities on occupational health, the Devonian Fossil Gorge (a field trip site), and environmental justice. The binder also provides an extensive selection of resources to help in developing and delivering presentations, lists and descriptions of Internet resources, a description of University library resources, program evaluation forms, and a variety of environmental health booklets and brochures from NIEHS and the University of Iowa.</p>	<p>Dr. Shannon Marquez COEP Co-Director University of Iowa Environmental Health Sci Research Ctr 2700 Steindler Building Iowa City, IA 52242-5000 T: (319) 335-4203 shannon-marquez@uiowa.edu P30ES05605</p>
Tobacco Induced Mutations	<p>Classroom activity – Middle school and high school</p> <p>Toxicology is a fundamental component of environmental health science. This classroom activity teaches about the basic concepts of toxicology as well as the scientific method and laboratory techniques by observing the mutagenic effects of tobacco on bacteria. Students prepare plates of bacteria and observe the effects on the colonies of the addition of varying concentrations of tobacco extract. The package of materials includes a teacher's guide, student instructions, student and class (pooled) data sheets, and discussion questions.</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694</p>

Title	Format, Description, and URL	Contact Info
Toxicity Testing with California Blackworms: Alcohol	Classroom activity – Middle school and high school Toxicology is a fundamental component of the scientific study of environmental health. This classroom experiment teaches students about the basic concepts of toxicology, including dose-response and exposure, through observing the effects of a toxicant (ethanol) on the behavior of California blackworms. This teacher's guide provides background information, laboratory instructions, discussion questions, and variations and supplemental activities for conducting the experiment. http://swehsc.pharmacy.arizona.edu/coep/exercises.html	Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694
Toxicity Testing with California Blackworms: Nicotine	Classroom activity – Middle school and high school Toxicology is a fundamental component of the scientific study of environmental health. This classroom experiment teaches students about the basic concepts of toxicology, including dose-response, and exposure, through observing the effects of a toxicant (nicotine) on the behavior of California blackworms. This teacher's guide provides background information, laboratory instructions, discussion questions, and variations and supplemental activities for conducting the experiment. http://swehsc.pharmacy.arizona.edu/coep/exercises.html	Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu P30ES06694
Tox-in-a-Box (Resource kit, Ambassador's guide, and teacher's manual)	Curriculum – K-12 Awareness of the potentially toxic agents in the environment can help students make informed decisions to protect their health and the environment. Toxicology lessons can be enhanced through interaction with toxicologists and other environmental health professionals, who demonstrate the relevance of science to students' lives and future careers. Tox-in-a-Box is a curriculum and classroom resource kit that invited professionals--or "Tox Ambassadors"--can use to teach K-12 students about toxicology. Using demonstrations, discussions, and activities, the curriculum introduces five key principles of toxicology: dose-response, toxicity, exposure, susceptibility, and risk assessment. The kit includes activities, slides, demonstrations, and presenter scripts. The Ambassador's guide accompanies provides the Tox Ambassador with instructions for using the classroom kit, presentation tips, and scripts for teaching five toxicology lessons to each of four grade levels: 1) kindergarten through grade 3, 2) grades 4-6, 3) grades 7-9, and 4) grades 10-12. The teacher's manual provides the teacher with an introduction to toxicology, an overview of the lessons to be presented by the invited toxicologist, and additional resources for incorporating environmental health sciences into their teaching (additional lesson plans, lists of additional curricula and Internet resources, and a glossary).	Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharpe@u.washington.edu P30ES07033

Title	Format, Description, and URL	Contact Info
ToxRAP: Mystery Illness Strikes the Sanchez Household	<p>Curriculum – Middle school</p> <p>ToxRAP is a three-module K-9 curriculum series that introduces students to the principles of toxicology and the processes of risk assessment and risk management. It trains students to use scientific inquiry to answer environmental health questions. This module, Mystery Illness Strikes the Sanchez Household, is targeted towards middle school students (grades 6-9) and focuses on indoor air pollutants like lead-paint dust. Through a series of ten lessons, students learn about the health problems of the Sanchez family, investigate possible environmental hazards that might be causing the health problems, collect data to aid in their investigation, learn about the health effects of lead, develop a hypothesis about the cause of the health problems, evaluate their hypothesis, and learn about lead poisoning treatment and lead-paint clean-up methods. In the end they apply their knowledge to an actual air pollution-related health problem. This curriculum binder contains a brief description of the lessons, lesson plans, background information on risk assessment and management, educational standards addressed in the module, sources for additional information, and a glossary.</p>	<p>Resource Center of EOHSI 170 Frelinghuysen Road EOHSI Room 232 Piscataway, NJ 08854 R25ES06930 R25ES08221 P30ES05022</p>
ToxRAP: The Case of the Green Feathers (Curriculum binder and story book)	<p>Curriculum – Early elementary school</p> <p>ToxRAP is a three-module K-9 curriculum series that introduces students to the principles of toxicology and the processes of risk assessment and risk management. It trains students to use scientific inquiry to answer environmental health questions. This module, The Case of the Green Feathers, is targeted towards early elementary grades (K-3) and focuses on pollen and other biological air pollutants that can aggravate asthma and allergies. Through a series of nine lessons, students learn about pollen and other air pollutants, health effects of exposure to these hazards, and ways to reduce exposure to air pollutants. In the end they apply their knowledge of the health effects of air pollutants to a variety of other situations involving health hazards. This curriculum binder contains a brief description of the lessons, lesson plans, background information on risk assessment and management, educational standards addressed in the module, sources for additional information, and a glossary. The accompanying story book tells the story of a chick who suffers from pollen-related allergies and illustrates how a pair of children uses the process of scientific inquiry to discover the cause of the chick's symptoms and reduce his exposure to pollen.</p>	<p>Resource Center of EOHSI 170 Frelinghuysen Road EOHSI Room 232 Piscataway, NJ 08854 R25ES06930 R25ES08221 P30ES05022</p>

Title	Format, Description, and URL	Contact Info
<p>ToxRAP: What Is Wrong with the Johnson Family? (Curriculum binder and game)</p>	<p>Curriculum – Elementary school</p> <p>ToxRAP is a three-module K-9 curriculum series that introduces students to the principles of toxicology and the processes of risk assessment and risk management. It trains students to use scientific inquiry to answer environmental health questions. This module, What Is Wrong with the Johnson Family?, is targeted towards intermediate elementary grades (3-6) and focuses on indoor air pollutants, especially carbon monoxide. Through a series of nine lessons, students learn about the health problems of the Johnson family, investigate possible environmental hazards that might be causing the health problems, develop a hypothesis about the cause of the health problems, learn about the health effects of carbon monoxide, analyze data and evaluate their hypothesis, and develop ideas about ways to control indoor air pollution problems. In the end they apply their knowledge to a case study based on real events. This curriculum binder contains a brief description of the lessons, lesson plans, background information on risk assessment and management, educational standards addressed in the module, sources for additional information, and a glossary. In the accompanying game, called “What’s in the Air?”, students cooperate to investigate the sources and health effects of a variety of indoor air pollutants, including animal dander, carbon monoxide, cockroaches, dust mites, gases and particles, mold spores, and radon. They use knowledge gained during the game to help identify the possible hazards that might be affecting the health of the Johnson family.</p>	<p>Resource Center of EOHSI 170 Frelinghuysen Road EOHSI Room 232 Piscataway, NJ 08854 R25ES06930 R25ES08221 P30ES05022</p>
<p>University of Rochester Summer Science Academy Laboratory Manual</p>	<p>Curriculum, summer – High school</p> <p>The University of Rochester offers a Summer Science Academy for students entering grades 10 through 12 who are grade interested in biological sciences. This manual contains instructions for introductory exercises in using laboratory equipment, as well as background information and procedures for performing 24 different laboratory experiments and lessons relating to microorganisms, antibodies, genetics, and pharmaceutical research.</p>	<p>Dr. Dina Markowitz COEP Director University of Rochester Medical Ctr Environmental Health Sciences Ctr 601 Elmwood Ave., Box EHSC Rochester, NY 14642 T: (716) 275-3171 F: (716) 256-2591 dina_markowitz@urmc.rochester.edu P30ES01247</p>
<p>University of Rochester Summer Science Camp 1999 – Microorganisms</p>	<p>Curriculum, summer – Middle school</p> <p>The Environmental Health Sciences Center at the University of Rochester offered a 1999 Summer Science Camp for grades 5 through 8, with the theme "Microorganisms." This guidebook provides background information and instructions for 12 laboratory activities relating to microorganisms and other cells.</p>	<p>Dr. Dina Markowitz COEP Director University of Rochester Medical Ct Environmental Health Sciences Ctr 601 Elmwood Ave., Box EHSC Rochester, NY 14642 T: (716) 275-3171 F: (716) 256-2591 dina_markowitz@urmc.rochester.edu P30ES01247</p>

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<p>What's in Our Water? A Water Quality Education Project - Laboratory Manual</p>	<p>Curriculum – Middle school and high school</p> <p>"What's in Our Water?" is a science curriculum enhancement program for middle and high school students. The program consists of lessons and hands-on activities that teach principles of microbiology, chemistry, and ecology in the context of environmental health and the quality of local water sources. Periodically scheduled teacher workshops provide information and training in water quality analysis methods and water-related environmental health issues. This manual, used during the teacher workshop, provides a background discussion about water quality, types of water pollution, and aquatic ecosystems, followed by a teacher's guide for 33 lessons and activities relating to water quality issues.</p>	<p>Dr. Dina Markowitz COEP Director University of Rochester Medical Ct Environmental Health Sciences Ctr 601 Elmwood Ave., Box EHSC Rochester, NY 14642 T: (716) 275-3171 F: (716) 256-2591 dina_markowitz@urmc.rochester.edu P30ES01247</p>
<p>Workplace Ergonomics and Healthy Computing</p>	<p>Curriculum – High school</p> <p>Children and young adults who use computers heavily are increasingly developing repetitive stress injuries yet frequently are not taught about ergonomic issues and work-related injury prevention. This lesson plan, which supplements the Health and Safety Awareness for Working Teens curriculum, introduces the concept of workplace ergonomics, focusing on repetitive stress injuries from computer use. Students explore the work conditions that can lead to injury, injury prevention strategies and exercises, and proper positioning and posture for computer use. Materials include teacher instructions, student handouts, and presentation overheads.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharpe@u.washington.edu P30ES07033</p>
<p>Youth Network for Healthy Communities Teacher's Guide</p>	<p>Curriculum – Middle school and high school</p> <p>Health in communities can be affected by a wide range of environmental factors and hazards. Youth Network for Healthy Communities is a project that makes use of videoconference technology to connect middle and high school students with environmental health professionals. Middle and high school teachers receive training via videoconference in helping students research environmental health issues in their communities. Student presentations resulting from this research are then given via videoconference to university scientists and environmental health professionals at the University of Washington. This teacher's guide contains introductory materials for the teacher, project information and materials, background information about toxicology, a sample of environmental-health related news stories, and a list of environmental health classroom resources.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharpe@u.washington.edu P30ES07033</p>

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My Health My World	<p>Curriculum – Kindergarten – Grade 4</p> <p>The award-winning My Health My World project develops exciting educational materials on environmental issues for elementary grades. Designed to meet National Science Education Standards, these materials promote a deeper understanding of relationships between the environment and health, while conveying the excitement of "doing science". They engage students and families in environmental issues as students learn fundamental physical and life science concepts and acquire problem-solving and decision-making skills. Each of the four completed My Health My World units targets a major environmental health topic and consists of a science adventure storybook, a teacher's guide to activities in science and math, a reading link language arts supplement and an Explorations mini-magazine for students to use with their families at home.</p> <p>Unit One: My World Indoors Unit Two: Water and My World Unit Three: My Home Planet Earth Unit Four: Food and My World</p> <p>http://www.bayloreducationaloutreach.org/</p>	<p>Nancy P. Moreno, Ph. D Baylor College of Medicine 1709 Dryden, Suite 545 Houston, TX 77030 nmoreno@bcm.tmc.edu Telephone: (713) 798-8200 Fax: (713) 798-8201 R25 ES 09259</p>
Unit One: My World Indoors	<p>Curriculum – Kindergarten – Grade 4</p> <p>In this unit, readers meet the main characters of the My Health My World series: two squirrels (cousins) named Riff and Rosie, an old beaver named Mr. Slaptail, and a grasshopper-Chirpen J. Wingfellow, III-who serves as a guide for students and teachers. My World Indoors explores air quality and related issues, including allergies, in the places we live, study and work. The adventure story finds Riff and Rosie observing their neighbor, Mr. Slaptail, dragging a big dark bag down a moonlit road. What could be in that bag? As the mystery unfolds, the cousins discover Mr. Slaptail's cluttered, dusty home is packed full of trash, recycled products and chemical products such as paint and glue. It turns out that he uses this trash to make toys! But this lifestyle creates a contaminated indoor environment. Riff and Rosie help Mr. Slaptail clean up his house, making it a healthier place to live.</p>	<p>Nancy P. Moreno, Ph. D Baylor College of Medicine 1709 Dryden, Suite 545 Houston, TX 77030 nmoreno@bcm.tmc.edu Telephone: (713) 798-8200 Fax: (713) 798-8201 R25 ES 09259</p>
Unit Two: Water and My World	<p>Curriculum – Kindergarten – Grade 4</p> <p>Water and My World provides a fresh perspective on water and why it's important to the well-being of all living creatures. In the adventure story, Riff and Rosie are racing paper boats on Beaver Pond when they encounter many of their neighbors sadly leaving their homes. The marsh and creek have become murky, shallow and downright smelly! What is going on in Beaver Pond that the animals must leave? Riff and Rosie set out to discover the cause of pollution in their water environment. They find that the fertilizer making the nearby park beautiful also is creating a scummy swamp! The cousins work together with their neighbors to make their water livable again. This fun, educational book features colorful and informative science boxes. These highlighted areas discuss health related topics such as fresh water facts, water in the human body, pollutants and water runoff.</p>	<p>Nancy P. Moreno, Ph. D Baylor College of Medicine 1709 Dryden, Suite 545 Houston, TX 77030 nmoreno@bcm.tmc.edu Telephone: (713) 798-8200 Fax: (713) 798-8201 R25 ES 09259</p>

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Unit Three: My Home Planet Earth	<p>Curriculum – Kindergarten – Grade 4</p> <p>My Home Planet Earth focuses on changes in the upper atmosphere, such as global warming, and how the changes may affect life on Earth. In this adventure story, Riff and Rosie can't wait to see what contraption Mr. Slaptail is masterminding now - on his rooftop! However, while helping him complete his solar water heater, an explosion occurs at the local coal mine. Community members rush to the site to find the owner, Beulah Diggerpaw, is trapped inside! How will they get her out? After Beulah is rescued, she announces she will close the mine which fuels most of the energy needs in Bright Water Corners. Now, what will they use for energy? Like all My Health My World story books, this one includes illustrated instructions for a toy used by Riff and Rosie during their adventure, as well as a glossary of health and science terms for student and teacher use.</p>	<p>Nancy P. Moreno, Ph. D Baylor College of Medicine 1709 Dryden, Suite 545 Houston, TX 77030 nmoreno@bcm.tmc.edu Telephone: (713) 798-8200 Fax: (713) 798-8201 R25 ES 09259</p>
Unit Four: Food and My World	<p>Curriculum – Kindergarten – Grade 4</p> <p>The latest My Health My World unit, Food and My World, examines food production, nutrition and food safety with unique activities for students and families. The story book places Curious Riff and Rosie in a new sleuthing situation with Mr. Slaptail. When they receive a strange, urgent note from him asking for their help, they know it must be big mystery, indeed! What could be happening that even Mr. Slaptail can't figure it out? While enjoying sandwiches made with vegetables from Mr. Slaptail's garden, the two cousins learn from their friend that leaves are disappearing from his lettuce plants. What could be happening to the leaves? Where are they going? And who or what is taking them? After a scary night in the garden, the secret is revealed. By the end of the story, Riff and Rosie learn some important lessons about food, plants, and good health.</p>	<p>Nancy P. Moreno, Ph. D Baylor College of Medicine 1709 Dryden, Suite 545 Houston, TX 77030 nmoreno@bcm.tmc.edu Telephone: (713) 798-8200 Fax: (713) 798-8201 R25 ES 09259</p>
Project Greenskate	<p>Curriculum, Web-based – Grades 6 - 12</p> <p>Based on the real-life history of Seattle's Gasworks Park, Project Greenskate is a web-based curriculum that tells the story of an abandoned industrial site that high school students want to turn into a skateboard and roller-blading park. Unfortunately, the site is contaminated with certain common environmental pollutants (lead, PCB, and TPHs). Students investigate potential health concerns surrounding the hypothetical development of the park and report on their findings.</p>	<p>Mr. Jon Sharpe COEP Manager University of Washington Ctr for Ecogenetics and Envir. Health 4225 Roosevelt Way, NE, #100 Seattle, WA 98105 T: (206) 616-2643 F: (206) 685-4696 jsharp@u.washington.edu P42 ES04696</p>

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EnviroMysteries Video and Teacher's Guide	<p>Curriculum, Video – Students Grades 5-9</p> <p>An innovative instructional television program, developed in cooperation with Johns Hopkins School of Hygiene and Public Health, that explores the relationship between our health and the environment in which we live. While informing students of this intricate symbiosis, it also empowers students to take an active role by making well-informed decisions about environmental issues today, in order to protect their own future. Students are introduced to environmental health concepts through the eyes of a young group of television journalists, who are chronicling the local health department's investigation of a waterborne illness.</p> <p>http://www.mpt.org/learningworks/teachers/ehl/</p>	<p>Gail Porter Long, M.A., M., Ed. Maryland Public Television 11767 Owings Mills Blvd. Owings Mills, MD 21117 glong@mpt.org Telephone: (410) 5891-4209 Fax: (410) 581-0980 R25 ES08234</p>
Risks & Choices Staff Development Units	<p>Classroom activities – Middle school teachers and staff development professionals</p> <p>Four units are available for outreach to inservice and preservice middle school teachers. The following topics are available for Download at no cost from www.terrificscience.org/: environmental toxins, hands-on use of the scientific method, risk perception, and water quality. (Click on the "Free Resources" link and go to the Terrific Science Lesson Exchange.) Activity instructions (written procedures, questions, and background information) are included, as well as instructor notes (materials lists, procedure notes, anticipated outcomes, sample calculations, and answers to student questions). Detailed background handouts for participants are also provided.</p> <p>http://www.terrificscience.org/risks/index.shtml</p>	<p>Arlyne M. Sarquis Department of Chemistry Miami University 4200 East University Boulevard Middletown, Ohio 45042 Ph: 513-727-3278 Fax: 513-727-3223 E-mail: sarquiam@muohio.edu R25 ES08192</p>
Risks & Choices Daily Planet	<p>Classroom activities – Middle school students</p> <p>This news bulletin is an interactive learning tool for students that contains relevant and provocative activities that engage Students in real environmental health science issues with experiments and other active learning experiences. This unique resource is intended for teachers to use as a supplement to their existing curricula. Issues are available for download free of charge at www.terrificscience.org/risks/dailyplanet/index.shtml.</p>	<p>Arlyne M. Sarquis Department of Chemistry Miami University 4200 East University Boulevard Middletown, Ohio 45042 Ph: 513-727-3278 Fax: 513-727-3223 E-mail: sarquiam@muohio.edu R25 ES08192</p>
Lead and Reproductive Behavior of Fathead Minnows	<p>Classroom activity & video – Middle School Teachers & Students</p> <p>Students observe the effects of small concentrations of waterborne lead on the reproductive behaviors of fathead minnows and compare to the behavioral effects of lead poisoning in people. Because of the simplicity of the experimental setu, students can suggest additional experiments, e.g., what happens when lead is removed from the water. A videotape accompanies the module showing the normal and abnormal behavior of the fish to help students with their observations. Possible discussion questions, some with important social policy implications, are suggested.</p>	<p>David H. Petering, Ph.D. Department of Chemistry College of Letters & Science University of Wisconsin P.O. Box 413 Milwaukee, Wisconsin 53201-0413 Ph: 414-229-5853 Fax: 414-229-5530 chemdept@alchemy.chem.uwm.edu R25 ES08271</p>

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Frog Development and Exposure to Chemicals	<p>Classroom activity – Middle School Teachers & Students</p> <p>Embryo and tadpole development in <i>Xenopus laevis</i> and <i>Rana pipiens</i> perturbed by either alcohol or lead is observed. Besides presentation of the experimental design, the module has information about chemical and environmental health with references to the abnormal frog problem and related web sites. A summary of likely observations and suggestions for discussion topics are provided. Information is included on general features of development and related concerns about human development and chemicals.</p>	<p>David H. Petering, Ph.D. Department of Chemistry College of Letters & Science University of Wisconsin P.O. Box 413 Milwaukee, Wisconsin 53201-0413 Ph: 414-229-5853 Fax: 414-229-5530 chemdept@alchemy.chem.uwm.edu R25 ES08271</p>
Bioaccumulation of Chemical by Daphnia magna	<p>Classroom activity – Middle School Teachers & Students</p> <p>Bioconcentration of fat soluble chemicals is modelled using <i>Daphnia magna</i> and dilutions of a dye with moderate lipid and aqueous solubility. Partitioning of the dye between octanol and water portrays the concept of substance movement between compartments. Organisms turn red after the dye is added to daphnid suspensions and remain so when the dye is removed from the media. Students learn to calculate and work with concentrations, visualize the accumulation of toxic substances, and become aware of the movement and concentration of substances in nature based upon their solubility characteristics.</p>	<p>David H. Petering, Ph.D. Department of Chemistry College of Letters & Science University of Wisconsin P.O. Box 413 Milwaukee, Wisconsin 53201-0413 Ph: 414-229-5853 Fax: 414-229-5530 chemdept@alchemy.chem.uwm.edu R25 ES08271</p>
Toxic or Not?	<p>Curriculum – Middle School</p> <p>This module focuses on our surroundings and the hazards present in everyday life. The environment is defined and broken into components, and the hazards present in our environment are discussed in terms of means of exposure.</p> <p>http://peer.tamu.edu/curriculum_modules/Environ_Hazard/</p>	<p>Larry Johnson, Ph.D. Texas A & M University Mail Stop 4458 College Station, TX 77843-4458 Ljohnson@cvm.tamu.edu Telephone: (409) 845-2828 Fax: (409) 847-8981 5 R25 ES10735</p>
Cells Are Us	<p>Curriculum – Middle School</p> <p>This "Cells Are Us" module has five instructional units. One is an introduction of the levels of organization in living systems, followed by four other units based on some key aspect of cell function. Rather than discuss cells from the basis of their anatomy (membranes, mitochondria, nucleus, etc.), we thought it more important to emphasize what cells DO and how they do it.</p> <p>The Module is not intended to replace current curriculum. But the units will hopefully provide useful resources and learning activities that will complement and enrich current teaching practices in middle school.</p> <p>http://peer.tamu.edu/curriculum_modules/Cell_Biology/index.htm</p>	<p>Larry Johnson, Ph.D. Texas A & M University Mail Stop 4458 College Station, TX 77843-4458 Ljohnson@cvm.tamu.edu Telephone: (409) 845-2828 Fax: (409) 847-8981 5 R25 ES10735</p>

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Water's the Matter	<p>Curriculum – Middle School</p> <p>This module will focus on five different measurable properties of water. The quality of water is more than just visible observations such as color and odor. Nature (and also man) can cause many changes in a body of water. As a result, a given body of water will have a specific footprint. It will have unique properties when compared to another body of water.</p> <p>Each unit is divided into six sections: Introduction, Objectives, Pre-Test, Lesson Presentation, Activity, and Post-Test</p> <p>http://peer.tamu.edu/curriculum_modules/Water_Quality/</p>	<p>Larry Johnson, Ph.D. Texas A & M University Mail Stop 4458 College Station, TX 77843-4458 Ljohnson@cvm.tamu.edu Telephone: (409) 845-2828 Fax: (409) 847-8981 5 R25 ES10735</p>
Crabby Kathy	<p>Story Book – K-6 grade</p> <p>This book chronicles the experience of a third grade class as they investigate what was bothering their teacher Kathy. The students' investigation was inspired by their introduction to the ToxRAP curriculum. The book was created by the 1998-1999 KMAC Kids (Kids Making A Connection, Health and the Environment).</p> <p>http://www.niehs.nih.gov/kids/kathy/home.htm</p>	<p>Ms. Stefani Hines COEP Director University of AZ, College of Pharmacy Southwest Environmental Health Sci Ctr P.O. Box 210207 Tucson, AZ 85721-0207 T: (520) 626-3692 F: (520) 626-4468 hines@pharmacy.arizona.edu R25ES08221</p>
Chemicals, The Environment and You: Explorations in Science and Human Health	<p>Curriculum – Grades 7 and 8</p> <p>Students explore the relationship between chemicals in the environment and human health, utilizing basic concepts in the science of toxicology. Developed by teachers, this curriculum includes six hands-on activities that will encourage students to think about chemical exposures, dose-response, and individual susceptibility.</p> <p>http://science.education.nih.gov/m2</p>	<p>Office of Science Education National Institutes of Health http://science-education.nih.gov/</p>

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