Welcome to the Urban and School IPM Resource for Teachers and Kids in Grades K-6!

Why Should We Teach About Integrated Pest Management?

Integrated pest management (IPM) is "real-world" science in action. IPM involves using knowledge about pest biology and habitats to choose the best combination of common-sense practices to keep pests under control. In greenhouses, fields, yards, and inside homes and schools, IPM uses a series of steps that result in making pest management decisions that control the pests with the least effect on people, pets and the environment.

Pests are everywhere. Everyone has had experiences with pests. Have you been bitten by mosquitoes or horse flies? Has your garden been overrun by weeds or eaten by insects? Have head lice ever spread through the school? Have you ever had a reaction to poison ivy? Whether it is insects and diseases that attack plants, weeds that invade yards or fields, or cockroaches and rats that can get inside our houses and schools, all students have had experiences with pests. By learning about IPM, students get to use science in a context they can relate to.

About This Resource

We have designed this resource as a flexible tool for teachers of kindergarten through sixth grade. We use the topic of integrated pest management in the school and home as a theme to engage the students in multidisciplinary learning in science, math, art, social studies, language arts and health. Through these activities students use skills ranging from reading and writing to problem-solving and analytical thinking.

This resource provides the opportunity for educators in formal and informal settings to use IPM as the real-world theme in which to engage in scientific and interdisciplinary learning. In the

Goals of This Resource

- To stimulate students to think critically about the world and community around them.
- To help protect children's health through increased awareness and behavioral changes related to the safe management of pests.
- To show students how to use science, judgement, and decision-making in a real-world, hands-on setting.
- To increase awareness of the hazards of pests and pesticides and how our actions can lessen these hazards.
- To provide a tool to use in connection with community IPM and school IPM education efforts.
- To show students how their actions, behaviors and choices can impact their environment and community.
- To provide an opportunity for fun, exciting, science education that is relevant to students in urban and all communities.
- To provide an opportunity for students to communicate with the entire school and create an exciting teamwork atmosphere towards integrated pest management in their school.

following pages we provide teachers with background information, hands-on activities, worksheets and resources to help teachers engage the students in real-world learning.

There are many ways to use this resource in the classroom. While some of the lessons build on previous learning, most of the lessons can stand alone. IPM can be used as a theme in the classroom for a whole year or individual activities can be selected as enrichment to regular classroom activities. For example, inspection and monitoring activities can be done weekly, monthly or as often as desired to provide continuity throughout the year and show how things change over time.

We recommend that you use these classroom activities in combination with IPM in the school. In Michigan, IPM is required in all schools. Many other states have mandatory or voluntary school IPM programs, and federal legislation requiring IPM in schools may be on the horizon. (For more information on IPM in your state, see EPA's National School IPM Directory at http://www.epa.gov/reg5foia/pest/ipm/index.html)

Successful IPM programs in schools require participation and behavior changes by everyone who uses the school. Involve the principal and administrators. Talk with other teachers, food service workers and custodians. If the IPM manager is not on staff, but from a Professional Pest Control Company, it is a great idea to invite this person to meet with you and/or the class.

The enthusiasm of the kids that develops by doing the activities found in this resource guide will foster an awareness of how they influence their surroundings, will create a feeling of "ownership" of the building, and can help create overall enthusiam by everyone in the building. From our experience, the students take their responsibilities in these endeavors very seriously. For example, several 4th grade students were shocked at seeing potato chip bags in a fellow student's locker. "Don't you know that will attract pests!" they said.

The Urban Pesticide Misuse Problem

The presence of pests in the home is an issue of major concern in many communities throughout the country. More information is being learned every year about the link between cockroaches and asthma and other health risks created by pests. The stigma associated with having pests in the home, and the dislike and fear of pests, have contributed to homeowners resorting to desperate measures in an attempt to control them. This desperation has resulted in the misuse of pesticides and potentially dangerous exposure of pesticide residues to homeowners and their families.

In 1999, Michigan State University received a grant from the U.S. Environmental Protection Agency (EPA) Region 5 and the Michigan Department of Agriculture (MDA) to establish community IPM working groups in three urban, low-income areas in Michigan. These groups would address pesticide and pest issues in the community and develop educational programs to meet the

Why is IPM in Schools and Homes Important?

The public's concerns about health and environmental risks associated with chemicals are increasing, particularly when children are involved. As the public becomes more aware of the health and environmental risks pesticides may pose, interest in seeking the use of equally effective alternative pest control methods increases. Children are especially vulnerable to chemicals, as well as the health hazards posed by pests. It is important that we make the environments where children spend their time at as safe as possible.

It is in everyone's best interest to reduce exposure to potentially harmful chemicals. Integrated pest management provides a safer alternative to scheduled spraying of pesticides for pest control. In many cases, long term management of pests can be achieved without using any pesticides by following IPM principles.

needs of each community.

The premise behind this project was that preventing pesticide misuse starts with engaging a community and gathering groups of people to communicate and provide input to solve a problem. Schools are a focal point for many urban communities, thus it makes sense to use schools and, by extension, children, parents, and administrators, as a conduit for educating the surrounding community about pesticide misuse, and effective and affordable methods of indoor pest management.

This project collaborated with the Michigan Department of Agriculture and several urban community groups to develop an outreach program that links classroom curricular activities with a broader community educational program using members of the community to implement and deliver outreach programs. We wrote this resource to bring the concept of IPM into the classroom and link what the children were learning with needs in their home and community.

Resources

There are many great resources available to teachers and schools to learn more about pests, pesticides and IPM. There are also many curricular resources that can be used to supplement IPM activities in the classroom. The following links also appear on the MSU Pesticide Education Program website.
http://www.pested.msu.edu/CommunitySchoolIpm/school.htm

IPM in Schools Resources

The National School IPM website

-Sponsored by EPA and maintained by the University of Florida, this is the number one resource site for school IPM.
http://schoolipm.ifas.ufl.edu/

Pest Control in the School Environment: Adopting Integrated Pest Management

The U.S. Environmental Protection Agency, Office of Pesticide Programs, 1993. (EPA 735-F-93-012)
-Provides a simple overview to IPM in schools
In html: www.epa.gov/oppfead1/cb/csb_page/publications/
To order: phone: 1-800-490-9198, or order online www.epa.gov/ncepihom/ordering.htm

IPM for Schools: A How-to Manual

Daar, S., Drilk, T., Olkowski, H. & Olkowski, W. 1997. The United States Environmental Protection Agency, Region 9.
-A comprehensive resource that outlines in detail all the steps to creating an IPM Program in your school, and has specific sections on the management of key school pests such as ants, cockroaches, and yellowjackets.
In pdf: http://www.epa.gov/region09/toxic/pest/school/index.html

IPM Technical Resource Center for IPM in Schools and Daycare Centers

-Funded by EPA, region 5, this center provides information, assistance and links for IPM in schools in EPA, Region 5 (Wisconsin, Minnesota, Indiana, Illinois, Ohio and Michigan)
http:/www.entm.purdue.edu/entomology/outreach/schoolipm/ipmfront.htm

The National Directory for School IPM

-Maintained by EPA region 5, this site lists activities relevant to school IPM on a state-by-state basis, along with contact information for each state.
http://www.epa.gov/reg5foia/pest/ipm/index.html

IPM Institute of North America, Inc. website

-A site maintained by this non-profit group, containing many links and other information related to IPM in schools and agriculture.
http://www.ipminstitute.org

Wisconsin's School Integrated Pest Management Manual

Stier, J., Delahaut, K., Pellitteri, P. & Becker, B. 2000. UW-Extension.
-Outlines the steps for implementing IPM in schools and on school grounds, and includes forms and tips on controlling the most common pests.
In html: http://ipcm.wisc.edu/programs/school/

Classroom Resources

Pennsylvania State University School IPM Education Resources

-The premier clearinghouse for IPM curricular resources, this website includes a comprehensive searchable database on teaching resources related to IPM as well as lessons and links.
http://http://paipm.cas.psu.edu/schools/schoolEduc.htm

Join our Pest Patrol

Minnesota Department of Agriculture, 2000.
-Excellent resource and activity sheets on IPM targeted to upper Elementary students (activity sheets and teacher information in pdf format.)
http://www.mda.state.mn.us/ipm/IPMPubs.html
or call: 651-297-3217

The Insectiganza of Excitement

4-H Cooperative Curriculum System, 1997.
-A 4-booklet set of entomology activities. Purchase the entire set or individual books based on grade level. (for fee only)
Available from the University of Minnesota Extension Service
To order, call: (800) 876-8636
Or order online: http://www.extension.umn.edu/units/dc/item.html?item=06883

University of Florida's Best of the Bugs Website

-This site provides links to websites judged by entomologists at the University of Florida to be the best that the web has to offer on insects. Excellent sites for teachers and kids.
http://pests.ifas.ufl.edu/bestbugs/

Purple Loosestrife Project K-12 Educational Materials

Purple Loosestrife Project, Michigan State University
-Comprehensive and creative lesson plans and resources for K-12. Project focusses on Purple Loosestrife as an invasive species and biological control methods to control it. Classroom tested and aligned with Michigan Curriculum Benchmarks.
http://www.msue.msu.edu/seagrant/pp/html/what_s_new.html

Florida 4-H Bug Club

-An excellent website for kids from the University of Florida. The site provides lesson plans, games, and a lot of information for kids about insects.
http://bugweb.entnem.ufl.edu/bugclub/

Using Live Insects in Elementary Classrooms

Center for Insect Education Outreach, University of Arizona, 1997.
-K-6 curriculum which includes 20 lesson plans that utilize insects to teach all kinds of concepts to young learners. Includes activity sheets, fact sheets, and rearing sheets on the insects used. (free on website)
http://insected.arizona.edu/uli.htm

Katerpillars (& Mystery Bugs) Website

University of Kentucky Entomology Department
-This site is fun and educational for younger kids. It includes activities and links to teaching resources, including lesson plans for field and classroom experiments.
http://www.uky.edu/Agriculture/Entomology/ythfacts/entyouth.htm

The Quest for Less-Activities and Resources for Teaching K-6

United States Environmental Protection Agency, Office of Solid Waste, 2000.
– An excellent complete resource guide on natural resources, waste management, recycling, composting, source reduction and landfills. The Quest for Less provides hands-on lessons and activities, enrichment ideas, journal writing assignments and other educational tools and skills relating to reusing, reducing and recycling waste. (free government publication)
In pdf: http://www.epa.gov/epaoswer/osw/kids/quest/index.htm
To order: Call: 1-800-490-9198, or online at http://www.epa.gov/ncepihom/ordering.htm

Yucky Roach World Website

Discovery Communications
- A great kid-friendly site about roaches. Includes IPM techniques to keep them away.
http://yucky.kids.discovery.com/noflash/roaches/

index.html

The K-8 Aeronautics Internet Textbook
Cislunar Aerospace, Inc., 1997.
-K-8 activities and lessons on aeronautics. The insect section of the lesson plans contains many creative lessons for Elementary and Middle school students on insect flight. Developed by Cislunar Aerospace, Inc. in cooperation with University of California, Davis with funding from NASA.
http://wings.ucdavis.edu/Curriculums/Insects/index.html

EPA Student/Teacher Websites
-The main EPA site for teacher resources, student assistance and kids education. Provides links to lessons, activities and resources from all the divisions in EPA.
http://www.epa.gov/epahome/students.htm

EPA Office of Pesticide Programs Student Website
- Student website with links to interactive activities and information on pesticides, pesticide safety and the environment.
http://www.epa.gov/pesticides/kids.htm

Pesticide Safety Bingo
The United States Environmental Protection Agency, Region 6.
-Lesson plans, bingo cards, and information on pesticide safety and IPM in urban areas for grades K-6.
http://www.epa.gov/region6/6pd/bingo/index.htm

Pests Have Enemies Too: Teaching Young Scientists About Biological Control
Jeffords, M.R. & Hodgins, A.S. 1995. Illinois Natural History Survey, Champaign, IL, special publication 18.
-Excellent resource guide and lesson plans for middle school students on biological control. (for fee only) *To order:* call (217) 333-6880
http://www.inhs.uiuc.edu/chf/outreach/MidSchool.html