Introduction

Children today will be exposed to more chemicals over their lifetimes than any previous generation. Technological advances have increased the number of chemicals and toxins that are accessible to children. However, the risks of environmental hazards can be greatly reduced by teaching youth and families how to identify and remove dangers, and create safe environments in their homes and schools.

Environmental health refers to the well-being of a person based on the health of the surrounding environment. As teachers and caregivers, it is important that we provide the healthiest environment possible for children. While environmental conditions affect everyone, these effects pose a much greater risk for children.

There are several factors why children are more affected by these hazards. First, the organ systems of a child are still developing. Exposure to environmental health hazards, such as hazardous household products, mold, lead, radon, air pollution, and asthma triggers, interferes with organ development. In proportion to their weight, children eat, drink, and breathe in more than adults. This means that they are exposed to more toxins than adults in the same environments. Increasing their susceptibility to these hazards is the fact that children are more likely to be on the same physical level as these environmental hazards. Young children like to crawl around and are prone to put things in their mouths as they investigate their world.

Although these hazards can have serious and sometimes fatal effects, most of them can be easily avoided and/or removed. Through a series of inexpensive and often simple steps, we can ensure that children’s environments are safe and healthy.

By teaching children about the environmental hazards that may exist around them, youth will learn to recognize the warning signs of these environmental hazards before the risks become serious. Children can use this information in their own homes and help reduce the risk of family members being exposed to environmental health hazards. With this knowledge, children will learn how to keep themselves safe, as well as those around them.

Experiential Learning

4-H has adopted a process that allows youth to learn through a carefully planned “doing” experience that is followed by leader-led discussion using purposeful questions. The experiential learning model by Kolb (1984) as modified by 4-H includes five specific steps:

DO: Participant(s) experience the activity– perform or do it.

REFLECT: Participant(s) share the experience by describing what happened.

Participant(s) process the experience to determine what was most important and identify common themes.

APPLY: Participant(s) generalize from the experience and relate it to their daily lives.

Participant(s) apply what they learned to a new situation.

When this model is used, youth both experience and process the activity. They learn from thoughts and ideas.
about the experience. Each step contributes to their learning.

Providing an experience alone does not create experiential learning. Experiences lead to learning if the participant understands what happened, sees patterns of observations, generalizes from those observations, and understands how to use the generalization again in a new situation.

Benefits for youth participating in the experiential learning process, no matter what the individual learning style, include:

- learning from each other by sharing knowledge and skills
- working together, sharing information, and evaluating themselves and others
- taking responsibility for their own learning
- relating experiences to their own lives
- sharing what they learned with others

The most important outcome of an experiential learning process is that participants show they have gained new knowledge and practiced the life skill and project skill targeted.

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**Targeting Life Skills**

Life skills are those competencies that assist people in functioning well in the environments in which they live. Youth development professionals are concerned with helping youth become competent in the life skills that will prepare them for transition to adulthood.

Helping youth meet their basic needs and develop the competencies important to their immediate and future success is the role of the youth development professional. The 4-H curriculum focuses on developing skills that are healthy and productive for both youth and their communities.

Each environmental health lesson plan will identify the skill(s) within the four quadrants—head, heart, hands or health—with age-appropriate lesson content and experiences to teach these skills.

The key life skills to be gained throughout this lesson series are the ability to make healthy lifestyle choices and the improved communication skills that will come from producing the *Headlines for Health!* newspaper.
Headlines for Health Project

Overview
Throughout this unit, youth will learn about some environmental hazards that can have serious effects on people, plants, and animals. A series of six lessons covers hazardous household products, mold, lead, radon, air pollution, and asthma triggers.

Each Lesson Plan contains the following sections:

The Sidebar:
Each lesson plan provides you with important information before the activity. Here you will find:

- Key concept
- Subject matter outcome
- Targeted age group
- Time needed
- Materials needed
- Advance preparation notes

Let’s Begin
Provides a detailed section that tells you exactly how to facilitate the lesson topic activities. The Blackboard illustrates various parts of the activity such as a concept map or a diagram.

Extra! Extra! Think all about it!

Look for the EXTRA!! Icon in each activity plan for guided reflection and application questions relating to the skills and practices.

Extra! Extra! Think all about it!

Quick Facts
Quick facts provides Background Basics information for easy reference during the activity.

In the Next Edition
Headlines for Health challenges youth to transform the knowledge they gain from this unit into a comprehensive newspaper with a variety of articles and features relating to environmental health. Each lesson culminates in one or more pieces for inclusion in the children’s environmental health newspaper.

Several components of a daily newspaper will be used to help youth process, reflect on, and apply the information. Fact sheets have been included with each lesson to help youth understand the components of successful newspaper writing.

Fact Sheets include:
- In the News
- News Reporting
- Anatomy of an Article
- Writing a Feature Story
- Creating a Column, I & II
- Creating an Editorial
- Using Graphics and Advertising
Headlines for Health Lesson Profile

Lesson 1: HHPs

**ACTIVITIES:**

1. Clean Sweep
2. Scavenger Hunt
3. Clean Green
4. AD-vantageous Cleaners

**Activity 1: Clean Sweep**
The first environmental danger is hazardous household products or HHPs. During this activity, youth will learn what words to look for to determine if something may be hazardous. Next, youth will use concept mapping to compile examples and groups of HHPs. They will apply this knowledge during a take-home activity by looking for similar products in their own homes on a scavenger hunt.

**Activity 2: Scavenger Hunt**
The Scavenger Hunt worksheet will guide students in listing the amount and type of household products they find in their own homes. Once youth return with the results of their scavenger hunts they will break into groups in order to analyze the findings. Through discussion and discovery, each group will create both a 3D and 2D bar graph of their results. Then, each youth will create their own bar graph representing the classroom totals. This graph is the first piece for the environmental health newspaper.

**Activity 3: Let’s Go Green**
This activity focuses on alternative cleaning solutions. After being placed into groups, youth will receive a recipe card with ingredients to make a safe alternative to a store bought cleaner or pesticide. The groups will first make the alternative cleaner or pesticide then test the validity and reliability of their new products against a store brand in a predetermined testing area in the classroom. Youth will then use the testing results to respond to questions from “readers” of the newspaper’s Healthy Homes column.

**Activity 4: AD-vantageous Cleaners**
Youth will use the results from their alternative solutions to practice advertising. Youth begin this activity by finding advertisements from print sources that they find effective or non-effective. Using a concept map, the class will list reasons why these ads were successful or unsuccessful. The group will discuss the six media questions and learn how to think critically about advertising. This information will guide youth as they create newspaper advertisements for the alternative products they produced in Lesson 1, Activity 3.

Lesson 2: Mold

**ACTIVITIES:**

1. What’s Growing On?
2. Moldy Advice

**Activity 1: What’s Growing On?**
Lesson 2 focuses on mold. To learn about molds, youth will grow some of their own. Before starting the activity, youth will make predictions about which foods provide the best environment for mold growth. Each youth will use a small jar to grow his/her own mold garden. Over a period of 1–2 weeks, youth will observe the mold growth, tracking the progress of the mold’s development in sketches. Students will create a graphic display of mold growth to be included in their newspaper.

**Activity 2—Moldy Advice**
Youth will learn about ways to detect and prevent mold and the health problems associated with mold growth. After several rounds of the game Moldy Memory, youth will discuss with a partner different ways to categorize the facts from the game. After class discussion on the facts about mold, students will write a hypothetical question about a mold problem they are having. Then, they will randomly choose a question written by one of their class-
mates from a container. They will respond to the question in the Healthy Homes column from Lesson 1, Activity 2.

**Lesson 3: Lead**  
**ACTIVITIES:**

1. The Lead Scenario

**Activity—The Lead Scenario**
In Lesson 3 youth will examine the causes and hazards of lead poisoning. This activity begins by splitting youth into small groups. Each group will be given a mystery scenario dealing with a lead problem. They will first create a short skit portraying the scenario. After each group has presented its skit, the class will try to figure out what all the skits have in common. Youth will choose one of the skits to include in their newspapers as an Entertainment Review of the skit, a Home Helper advice column, or a Dear Doctor column.

**Lesson 4: Radon**  
**ACTIVITIES:**

1. Sherlock “Radon” Holmes

**Activity—Sherlock “Radon” Holmes**
Lesson 4 focuses on the dangers of radon. In this lesson, youth work in pairs to gather information about radon. When pairs have collected enough information for an article, they will each write a feature story and create an accompanying graphic. Both will go into their newspaper.

**Lesson 5: Air Pollution**  
**ACTIVITIES:**

1. Pollution Solution

**Activity—Pollution Solution**
The fifth environmental hazard is air pollution. Youth begin this activity by making “pollution catchers” to test on school grounds. After twenty-four hours or longer the catchers should be collected for results. The youth will put the catchers in order from the cleanest to dirtiest locations and make a list for their newspapers. Have youth inspect the “catchers” with magnifying glasses to really see all of the air pollution they caught. The lists that the youth create should include a short description about the list. The list will accompany a feature article on classroom findings.

**Lesson 6: Asthma**  
**ACTIVITIES:**

1. Asthma Triggers, M.D.
2. Asthma Attack

**Activity 1—Asthma Triggers, M.D.**
The final environmental hazard is asthma triggers. Youth begin by each performing a demonstration of what it’s like to have asthma. If possible, have a classroom youth with asthma share their personal stories. Youth will then break into groups to discuss possible asthma triggers and various solutions to reduce triggers. Youth will write an editorial taking a position on an asthma-related issue for inclusion in Headlines for Health.

**Activity 2—Asthma Attack!**
Youth put themselves in the same mindset as someone with asthma by analyzing various scenarios. Following a teacher demonstration and class discussion, youth will break into groups to discuss possible solutions for the asthma scenarios presented to them. Students will conclude this activity by creating a Dear Abby type of column to be included in their newspaper.

**Background Basics**

**Hazardous Household Products (HHPs)**
**ACTIVITIES:**

1. Clean Sweep
2. Scavenger Hunt
3. Clean Green
4. AD-vantageous Cleaners

Today’s children will be exposed to more chemicals over their lifetimes than any previous generation. Did you know:

- According to the EPA, every 13 seconds poison centers throughout the U.S. receive a call about someone being exposed to a poison. Forty percent of those cases involve a child under three years old.
According to the EPA, the average home can accumulate as much as 100 pounds of household hazardous waste in the basement, garage, and storage closets.

According to the American Association of Poison Centers, more than half of the over two million poisoning incidents each year involve children under six years of age.

Household cleaners and pesticides commonly found in homes and schools contain a number of toxic chemicals. These products are a major source of volatile organic compounds (VOCs). These gases are emitted from both liquids and solids and include a variety of chemicals which can have short or long-term health effects. These dangerous gases can build up in homes and buildings.

From disinfectants and window cleaners to paints and pesticides, chemical-based products can be dangerous if used or stored incorrectly. Common examples of hazardous household products (HHPs) include:

- **Paint Products**
  - paint thinner and remover, oil based paints, stains, varnish, turpentine

- **Cleaning Agents**
  - bleach and other disinfectants, furniture polishes and waxes, drain openers, oven cleaners, laundry detergents, degreasers and spot removers, septic tank cleaners, shoe polish, toilet bowl cleaners

- **Car/Auto-Related Products**
  - antifreeze, oil, batteries, gasoline, engine additives, windshield washer fluid, waxes, and cleaners

- **Hobby/Recreation Supplies**
  - photo developer chemicals, marine paints, lighter fluid, electronic equipment cleaner, pool chemicals, painting supplies

- **Pesticides**
  - bug killers, weed killers, mold and fungus killers, chemical strips, insect repellants, mothballs, flea products, pool cleaners, yard and house insect foggers, rodent baits

Hazardous chemicals enter the body in 3 primary ways.

- **Absorption**
  - many cleaners leave behind toxic chemical residue, which can be harmful to living tissue like skin.

- **Ingestion**
  - by touching a surface that has been exposed to chemicals and then putting that hand in their mouths, children may ingest toxins.

- **Inhalation**
  - many HHPs give off unhealthy fumes and VOCs which can irritate the eyes, nose, and lungs.

Some of the health problems associated with exposure to VOCs include eye, nose, and throat irritation; headaches; loss of coordination; nausea; and potential damage to the liver, kidneys, and central nervous system. To keep children safe from HHP poisonings, follow these basic steps:

- **Keep all chemical products locked up and out of reach.**
- **Use products in well-ventilated areas to reduce risks from prolonged exposure.**
- **Keep all products in their original containers.**
- **Teach children how to read labels on cleaners and pesticides before using them.** Look for words like:
  - Caution
  - Warning
  - Flammable
  - Danger
  - Harmful
  - Poison

These words indicate that the products are considered dangerous.

The law requires these products to be used only for the purpose listed on their labels.

There are alternatives to these dangerous products. Homemade cleaning products can cost less than their chemical-based counterparts, while maintaining high levels of effectiveness. You can also find alternative products that are labeled environmentally safe in local stores. Brands such as Seventh Generation, Simple Green,
and SunBrite produce products that are safe for the environment.

**Mold**

**ACTIVITIES:**

1. What’s Growing On?
2. Moldy Advice

Mold is a type of fungus that produces spores to reproduce. These spores circulate through the air and may land on surfaces favorable for growth. For mold to grow, three things must be present: warmth, moisture, and food.

Mold spores can thrive and reproduce on almost any surface as long as moisture is present. Ways to detect mold growth are to:

- Check for moldy odors.
- Look for water stains or discoloration on the ceiling, walls, floors, and window sills.
- Inspect bathrooms and other rooms for standing water, water stains, or mold.
- Check air conditioning and refrigerator drip pans.

Molds produce several types of irritants and allergens (things that can cause allergic reactions). In some cases, they also produce potentially toxic substances called mycotoxins. Exposure to mold can result in allergic reactions, asthma, and other respiratory complaints, such as:

- coughing, sneezing, wheezing and/or difficulty breathing
- nose and throat irritations
- nasal or sinus congestion
- runny nose
- infections
- watery, red, or burning eyes
- sensitivity to light
- dermatitis (skin rash or irritation)
- headache
- fatigue

There are a few ways you can prevent or remove mold once it has been identified.

- Clean and dry any damp or wet building materials and furnishings within 24–48 hours of getting wet.
- Fix the source of water problems, such as leaks.
- Clean mold off hard surfaces with water and detergent; be sure to dry completely.
- Possibly, replace absorbent materials, such as ceiling tiles, carpets and wallpapers that are moldy.
- Check the mechanical room and roof for unsanitary conditions, leaks, or spills.
- Remove spots or stains from floors immediately, using the flooring manufacturer’s recommended techniques.

Use care when cleaning to eliminate excess moisture and ensure that cleaned areas are dried quickly. Do not install carpeting in areas where there is a perpetual moisture problem (i.e., by drinking fountains, by classroom sinks, or on concrete floors with leaks or frequent condensation).

**Lead**

**ACTIVITIES:**

1. The Lead Scenario

Lead is a toxic metal that was used for many years in a variety of different products in and around our homes and schools. There are four main sources of lead exposure for children. They include:

- lead-contaminated dust (leading cause of lead poisoning)
- deteriorating lead-based paint
- lead-contaminated soil
- old lead water pipes

In the US leaded gasoline emissions were deposited in the soil near highways and busy roads and continue to affect many family yards. It is estimated that thousands of old lead pipes continue to serve as water service lines in older US cities.

The U.S. has made significant progress in eliminating sources of lead in recent years.

- The use of leaded gasoline was phased out during the early 1990s.
Leaded plumbing solder and lead solder on food cans were both banned during the 1980s. Lead-based paint was banned in 1978. However, today there are still about 38 million homes that contain lead paint—about 40% of all U.S. housing.

Exposure to lead can lead to a variety of health problems. These problems include:

**Low-to-moderate exposure:**
- behavioral problems
- learning difficulties
- slowed or stunted growth
- impaired hearing

**High levels of exposure:**
- kidney damage
- intellectual disability
- seizures
- comas
- death

Since their brain and nervous systems are still developing, children who are younger than 6 are especially at risk for suffering from lead poisoning.

Lead poisoning is difficult to detect because similar symptoms are often linked to less serious illnesses such as the flu. A child with lead poisoning may have stomachaches, headaches, irritability and loss of appetite. The only way to be sure about lead poisoning is to be tested by a medical professional.

Removing lead is not hard, but it can be time-consuming. The first step is to use a High-Efficiency Particulate Air (HEPA) filtering system to remove loose particles from the area. A vacuum with this type of filter traps the lead particles inside the vacuum, rather than releasing them out of the back like most vacuums. After vacuuming, use a wet method of cleaning. This step uses three buckets of hot water. The first bucket should contain a detergent designed to clean lead, the second two buckets should contain rinse water. After dipping the mop or sponge into the first bucket, scrub the area vigorously. Then dip the mop/sponge in the second bucket of rinse water, and finally in the third bucket, to make sure it is clean before returning to the detergent.

### Radon

**ACTIVITIES:**

1. **Sherlock “Radon” Holmes**
   Radon is a radioactive element that can be found in well water, building materials, and the rock beneath buildings. It is a colorless, odorless gas that can be extremely toxic and harmful.

   Radon comes from the radioactive decay of radium and is also used in cancer treatments and radiography. Radon gas breaks down into radioactive particles. Breathing in these particles causes them to become trapped in your lungs and can lead to lung cancer. Radon is the second leading cause of lung cancer in the United States. Radon is not currently believed to cause other respiratory diseases, such as asthma.

   Since there are no immediate symptoms from radon exposure, it is important to test your environment. Experts recommend that all frequently used rooms at or below ground level be tested by a store-bought radon test. These tests come in a variety of forms, are inexpensive and easy to use, and are available at many home improvement and hardware stores.

   First, use a short-term test in the area with suspected radon. If those test results show a reading of 4piC/L, then a long-term follow-up test should be performed. If the test results indicate a high radon reading, a qualified radon mitigation contractor should be brought in to fix the problem.

### Air Pollution

**ACTIVITIES:**

1. **Pollution Solution**
   Air pollution is defined as anything put in the air by man that can interfere with the health, comfort, and/or safety of any living thing in that environment. Although most people think of air pollution relating to the outside environment, it is possible to have indoor air pollution as well.
Air pollution can be harmful, causing health problems and diseases in some people. Symptoms from pollution may include:

- burning eyes and nose
- itchy, irritated throat
- breathing problems

Some of the chemicals found in polluted air can have serious effects on a person’s health. These chemicals include carbon monoxide, carbon dioxide, chlorofluorocarbons, lead, nitrogen oxide, and sulfur dioxide. Some of these chemicals can cause:

- cancer
- birth defects
- brain damage
- injury to lungs

Repeated exposure to certain air pollutants can even lead to death.

Air pollution not only harms humans, but also has serious effects on the environment.

- The protective ozone layer above the Earth has been substantially thinned due to air pollution.
- Plants, water, and animals can all be harmed by pollution.
- Air pollution can damage buildings, statues, and other structures.

There are many steps a person can take to lessen his/her personal contribution to air pollution. Here are a few tips to get you started.

- Limit driving
  - carpooling, walking, or riding the bus can make a big impact.
- Limit dry cleaning
  - the chemicals released in dry cleaners have a big impact on the amount of air pollution in an area.
- Conserve energy
  - we release less harmful chemicals into the air and help keep air pollution levels down when we conserve energy.

- Consume fewer products. “Reduce, reuse, and recycle” plays a big part in decreasing the amount of air pollution introduced into the environment.

**Asthma**

**ACTIVITIES:**

1. Asthma Triggers, M.D.
2. Asthma Attack

Asthma triggers can be defined as anything that sets off or starts an asthma attack. Common triggers include:

- Allergens
  - dust mites (microscopic bugs that live in dust), molds, pollen, animal dander, and cockroaches.
- Airborne irritants & pollutants
  - chalk dust, cigarette smoke, scented products like perfumes and cosmetics, cleaning solutions, fresh paint, and gasoline.
- Exercise
  - strenuous physical activity may be dangerous for asthmatics.
- Weather
  - cold or dry air as well as extreme heat or humidity.
- Respiratory Tract Infections
  - colds, flu, and other respiratory conditions.

Asthma triggers usually cause symptoms that come on suddenly but are not long-lasting. When someone with asthma is affected by one of these triggers, his/her airway reacts by getting narrower, reducing airflow to the lungs. This can cause symptoms such as wheezing, coughing, chest tightness and asthma attacks. Asthma attacks can be deadly, so it is important to avoid these triggers as much as possible. The most effective way to rid the area of asthma triggers is to keep your environment clean. Dust mites live in bedding, furniture, and carpet. Since classrooms are often full of carpet, furniture, and stuffed toys, it is important to wash these things in hot water as often as possible. Vacuuming the furniture and carpet is extremely helpful in eliminating dust mites.
**Pets**
Pet skin flakes, urine, and saliva can also trigger asthma. It is important to keep pets away from children with sensitivities and to vacuum regularly.

**Pests**
Droppings and body parts of insects can trigger asthma. Cockroaches are especially harmful because allergens can be found in their saliva and feces. It is important to keep all areas clean to reduce the likelihood of these pests. Tips to remove pests include:

- Make sure food is stored in airtight containers.
- Clean all food crumbs or spilled liquids immediately and wash dishes as soon as you are done using them.
- Keep counters, sinks, tables, and floors clean and clear of clutter.
- Fix plumbing leaks and other moisture problems.
- Seal cracks and other openings around or inside cabinets.
- Remove piles of boxes, newspapers, or other hiding places for pests.
- Store trash in containers with lids that close securely.
- Do not use over-the-counter bug spray, since these products can sometimes aggravate a sensitive child’s asthma.

**Resources**

**4-H Resources**
Fact Sheet: Targeting Life Skills: [http://edis.ifas.ufl.edu/pdffiles/4H/4H24200.pdf](http://edis.ifas.ufl.edu/pdffiles/4H/4H24200.pdf)

Fact Sheet: Experiential Learning Model: [http://edis.ifas.ufl.edu/pdffiles/4H/4H24300.pdf](http://edis.ifas.ufl.edu/pdffiles/4H/4H24300.pdf)

**Hazardous Household Products**
[http://www.epa.gov/pesticides/](http://www.epa.gov/pesticides/)

[http://www.ohiou.edu/ehs/Tip_household_cleaners.htm](http://www.ohiou.edu/ehs/Tip_household_cleaners.htm)

[http://www.epa.gov/indoor-air-quality-iaq](http://www.epa.gov/indoor-air-quality-iaq)

**Mold**
[http://www.epa.gov/asthma/](http://www.epa.gov/asthma/)
[http://www.epa.gov/mold/](http://www.epa.gov/mold/)

**Lead**
[http://www.epa.gov/lead/](http://www.epa.gov/lead/)
[http://www.nsc.org/issues/lead](http://www.nsc.org/issues/lead)

**Radon**
[http://www.epa.gov/radon/](http://www.epa.gov/radon/)
[http://www.epa.gov/indoor-air-quality-iaq](http://www.epa.gov/indoor-air-quality-iaq)

**Air Pollution**
[http://courses.dce.harvard.edu/~environment/AP_Sources_Health_Effects_12_01_2004/sld003.htm](http://courses.dce.harvard.edu/~environment/AP_Sources_Health_Effects_12_01_2004/sld003.htm)

**Asthma Triggers**
[http://www.epa.gov/asthma/](http://www.epa.gov/asthma/)

The Headlines for Health curriculum package was developed by Joy Jordan, 4-H Curriculum Specialist; Susan Williams, Grant and Project Manager; and Hyun-Jeong Lee, Extension Housing and Home Environmental Specialist with the assistance of Elize Cruz, Jessica Kochert, and Erica Rodriguez, UF/IFAS Department of Family, Youth and Community Sciences.
The 4-H Motto
To make the best better.

The 4-H Creed
- I believe in 4-H Club work for the opportunity it will give me to become a useful citizen.
- I believe in the training of my HEAD for the power it will give me to think, plan and to reason.
- I believe in the training of my HEART for the nobleness it will give me to be kind, sympathetic and true.
- I believe in the training of my HANDS for the ability it will give me to helpful, skillful and useful.
- I believe in the training of my HEALTH for the strength it will give me to enjoy life, resist disease and to work efficiently.
- I believe in my country, my state and my community and in my responsibility for their development.
- In all these things I believe, and am willing to dedicate my efforts to their fulfillment.

The 4-H Pledge
I pledge my head to clearer thinking, my heart to greater loyalty, my hands to larger service, and my health to better living. For my club, my community, my country and my world.

Visit the 4-H website for more information: http://www.florida4h.org.

Headlines for Health was made possible by a generous grant from the United States Environmental Protection Agency (EPA). For more information on these hazards and additional information on ways to protect human and environmental health, please visit http://www.epa.gov.