Environmental Health in Child Care: 
Trainer’s Guide 
version 1 
(Last updated 2/15/2013)

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Suggested Citation


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NOTE TO TRAINER

This Trainer’s Guide is part of a Toolkit intended to accompany the *Environmental Health in Child Care* Training Module. The Toolkit includes a Trainer’s Guide to leading training sessions, a Slide Presentation, and materials for participants’ packets.

A related Toolkit, *Environmental Health in Child Care: Lead*, is also available on the NTI Resources Website.

For more information about using the NTI materials, please read “Guidelines for Using the NTI Curriculum Materials,” available in the “Curriculum” section of the NTI Resources Website (accessed by entering your NTI username and password at [http://sakai.unc.edu](http://sakai.unc.edu)).
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PREPARATION CHECKLIST

Curriculum Materials:
Download the following from the “Curriculum” section of the NTI Resources Website:
☐ Environmental Health in Child Care Training Module
☐ Environmental Health in Child Care Trainer’s Guide
☐ Environmental Health in Child Care Slide Presentation
☐ Training Checklists

Preparation:
☐ Read the Environmental Health in Child Care Training Module.
☐ Read the Environmental Health in Child Care Trainer’s Guide.
☐ Review the Environmental Health in Child Care Slide Presentation:
   ☐ Customize slide #2 to include your name, agency, and the date of your training.
   ☐ Print the slides as overheads or load the slide presentation onto your laptop, USB drive, or a CD. Save or print a back-up copy of the presentation as well.
   ☐ Create a participant’s packet (one per participant) per copyright guidelines:
   ☐ Copy activities, worksheets, and the evaluation form provided in this Trainer’s Guide under “Materials for Participant’s Packet”.
   ☐ Copy the Slide Presentation as a handout.
   ☐ On a flip chart sheet, write out the Overview of Training Session to display in the training room (you may prefer to leave off the estimated time and training technique).
   ☐ On a flip chart sheet, write out the Training Objectives to display in the training room.
   ☐ See “Training Implementation and Logistics Checklist” (located in the document titled Training Checklists) for set-up tasks to do the day of the training.
   ☐ Copy the “Environmental Topics of Special Interest to Child Care Staff: Key Points & Preventive Actions” tip sheets under “Materials for Participant’s Packet.” Consider printing the pages on card stock if you plan to use them again. You may need to make multiple copies to ensure that you will have one for each trainee.
   ☐ Think about answers to the Integrated Pest Management Case Scenario. You may want to jot down your ideas on your copy of the handout to use as you guide the trainee’s discussion. Consider how trainees might apply the knowledge shared in the presentation in a real-life child care facility in your geographic area.
   ☐ Other: ________________________________________________________________

Equipment and Supplies:
☐ See “Equipment and Supplies Checklist” (located in the document titled Training Checklists) for general supplies
☐ Laptop, slide presentation, and LCD projector or overhead projector
☐ Flip chart sheet for posting Overview of Training Session
☐ Flip chart sheet for posting the Training Objectives
☐ Other: ____________________________________________________________________
OVERVIEW OF TRAINING SESSION

Below is an overview of the topics covered in this session.

<table>
<thead>
<tr>
<th>Estimated Time</th>
<th>Topic</th>
<th>Training Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-15 minutes</td>
<td>Registration</td>
<td>-----</td>
</tr>
<tr>
<td>prior to session¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optional²</td>
<td>partners/small groups</td>
</tr>
<tr>
<td></td>
<td>Introductions/Icebreaker</td>
<td></td>
</tr>
<tr>
<td>5 minutes</td>
<td>Overview of Training Session and Objectives</td>
<td>slides/overheads</td>
</tr>
<tr>
<td></td>
<td>Opening: Children’s Vulnerability to Environmental Hazards</td>
<td>large group</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Presentation: Air Pollution</td>
<td>slides/overheads</td>
</tr>
<tr>
<td></td>
<td>Activity: Air Pollution Worksheet</td>
<td>small group</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Presentation: Pests and Pesticides</td>
<td>slides/overheads</td>
</tr>
<tr>
<td></td>
<td>Activity: Case Scenario – Integrated Pest Management</td>
<td>small groups</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Presentation: Drinking Water Contamination</td>
<td>slides/overheads</td>
</tr>
<tr>
<td></td>
<td>Activity: Environmental Topics of Special Interest Tip Sheets</td>
<td>individual/large group</td>
</tr>
<tr>
<td>5 minutes</td>
<td>Closing: The Role of the CCHC</td>
<td>large group</td>
</tr>
<tr>
<td></td>
<td>Learning Assessment: Web of Knowledge</td>
<td>large group</td>
</tr>
<tr>
<td>5 minutes</td>
<td>Evaluation of Trainer</td>
<td>individual</td>
</tr>
</tbody>
</table>

**Estimated Total Time:** Approx. 1 hour and 25 minutes³

¹ Not included in total time.
² Not included in total time. Develop activity based on participants’ training needs.
³ Add additional time if group guidelines and/or group facilitation methods need to be addressed at the beginning of the session, or if you decide to include any additional activities. For more information, see NTI’s Building Curriculum Development and Training Skills Training Module.
## TRAINER’S OUTLINE

### Introductions/Icebreaker

<table>
<thead>
<tr>
<th>Time</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Technique</strong></td>
<td>Large group</td>
</tr>
</tbody>
</table>
| **Instructions** | - Show slide # 3. (Slide #1 is not printed here. It should be displayed as trainees enter the room. Slide #2 should be displayed as you introduce yourself.)  
- If there are a large number of trainees, divide them into small groups or ask them to find a partner.  
- Ask them to introduce themselves to each other, sharing their name, agency, and one thing they do at home or at work to improve the air or water quality or to reduce the amount of pesticides used.  
- If time allows, once they have done this with their partners/small groups, have them come back to the larger group and introduce their partners. |
| **Talking Points** | **Introductions**  
- Let’s break into partners/small groups.  
- Once you’ve found your partner/small group, take turns introducing yourself to each other/the group. Each person should share their name, agency, and one thing they do at home or at work to improve the air or water quality or to reduce the amount of pesticides in the indoor environment. |
| **For More Information** | See NTI’s *Building Curriculum Development and Training Skills* Training Module for ideas about introductions and icebreaker activities. |
| **Notes**         |          |
## Overview of Training Session and Objectives

<table>
<thead>
<tr>
<th>Time</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Technique</strong></td>
<td>Slides/overheads</td>
</tr>
</tbody>
</table>
| **Supplies** | - Flip chart sheet with Overview of Training Session written on it  
- Flip chart sheet with Training Objectives written on it |
| **Instructions** | - Direct participants’ attention to the posted Overview of Training Session.  
- Show slide 4. |

### Talking Points

**Training Objectives**
- Let’s look briefly at the Overview of today’s training session so that you will know how we’ll be spending our time together today.
- In planning this session, I developed several training objectives. By the end of the session, I’d like you to be able to:
  - Describe why children are vulnerable to environmental hazards
  - Identify leading health risks to children
  - List ways to prevent and manage exposure to hazards, and
  - Know how child care health consultants can promote a healthy child care environment.

### For More Information

See NTI’s *Building Curriculum Development and Training Skills* Training Module to learn more about training objectives.

### Notes
Opening: Children’s Unique Vulnerability to Environmental Hazards

<table>
<thead>
<tr>
<th>Time</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Slides/overheads</td>
</tr>
<tr>
<td>Instructions</td>
<td>Show slides 5-7</td>
</tr>
</tbody>
</table>

Factors Influencing Effects of Toxins on Human Health
There are four factors that influence the effects of toxins on human health. They are:
- Amount or degree of exposure to the toxin
- Duration of exposure
- Toxicity or strength of toxin
- Organism factors, such as age, sex, and health status of the person exposed

Children’s Vulnerability
However, for a number of reasons, children are uniquely vulnerable to exposure to environmental toxins. Children ingest residue from toxins the same way that adults do, however, certain characteristics of infants and young children increase the amount and duration of their exposure to the same toxins.

- Developmental Characteristics and Lifestyles
  - More Contact with the Ground – Infants and young children spend a large portion of their time closer to the ground than adults. As a result, they have more exposure to toxins that are applied to or settle on floor, carpeting, grass, and playground surfaces. Also, breathing zones for children are typically in the one to two foot range, where heavier chemicals are present.
  - More Time Outdoors – Children spend relatively more time outside than adults and are likely to be active in the outdoors, requiring heavy breathing. Children also breathe frequently through their mouths, bypassing nasal filtering. As a result, children are more susceptible to air pollutants.
  - More Hand to Mouth Activity – Young children explore the world orally, significantly increasing their opportunity for direct ingestion of pollutants.
  - Less Varied Diet – Children’s diet is less varied than that of adults. For example, before age one the diet of infants is comprised largely of breast milk or formula. If the breast milk or formula contains contaminants, children will have a greater exposure because the foods constitute a larger proportion of their diet.
- **Children’s Biological Immunity**
  - **Higher Metabolic Rate** – Because children are physically smaller than adults, their metabolic rate is higher. As a result, they breathe more rapidly and take in proportionally more oxygen. They also consume more food and water relative to their size than adults, so they get a greater proportionate dose of any pollutants available in air, food, or water.
  - **Higher Rate of Absorption** – Children absorb the pollutants they breathe and consume at a rate higher than that of adults.
  - **Less Able to Excrete Toxins** - Because children’s metabolic systems are still developing, they are less able to counteract toxic effects than adults.

- **Children’s Sensitive Periods of Rapid Organ Development**
  - During infancy and early childhood, the organs are rapidly developing. Exposure to toxins during the time an organ is developing may have drastic effects on the outcome of that development.

**For More Information**
See the *Children’s Unique Vulnerability to Environmental Hazards* section in NTI’s *Environmental Health in Child Care* Training Module.

**Notes**
Presentation: Air Pollution

<table>
<thead>
<tr>
<th>Time</th>
<th>10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Slides/overheads</td>
</tr>
</tbody>
</table>
| Instructions | • Show slides 8-15.  
• Direct participants to the “Air Pollution” worksheet in their Participant’s Packets. Tell trainees that they should fill in the blanks and answer the questions as you cover the material on air pollution. Then, review the worksheet before the next topic. |

**Outdoor Air Pollution**
Outdoor air quality is influenced by chemicals and particles from sources such as factories, power plants, dry cleaners, cars, buses, trucks, agricultural activities, and windblown dust. If a child care facility is close to industrial or agricultural sites or highways additional pollutants may be present.

- There are 189 known air pollutants, most notably: ozone (smog), breathable particulate matter, lead, sulfur dioxide, carbon monoxide, and nitrogen oxides. However, only a few air pollutants are regularly monitored in assessments of air quality.

**Indoor Air Pollution**
- Indoor air quality drew increased attention in recent years due in large part to improvements in housing construction. Improvements to reduce energy costs also reduced airflow between inside and outside. As a result, indoor air pollutants are more likely to become trapped and accumulate to unhealthy levels. Also, new synthetic materials used in furnishings, building construction, and everyday household products introduce additional contaminants into the indoor environment.

- The Environmental Protection Agency (EPA) and the U.S. Consumer Product Safety Commission (1995) warn that air within homes and other buildings is often more seriously polluted than the outdoor air in even the largest industrialized cities. This information, coupled with evidence that children spend as much as 90% of their time indoors means that children’s exposure to indoor air pollutants may be 2-5 times higher, and sometimes 100 times higher, than their exposure to outdoor air pollutants (U.S. Department of Health and Human Services, 2000; EPA, 2002a).
Talking Points

Acute Health Effects of Air Pollution Exposure
- The immediate effects of exposure to air pollution are often respiratory disorders. Principal symptoms are watery eyes, burning sensations in the eyes, nose and throat, nasal congestion, chest tightness, difficulty breathing, irregular breathing, coughing, and wheezing. Other signs are headaches, dizziness, weakness, fatigue, and chest pain (American Academy of Pediatrics, 1999).
- If any of these symptoms are reported, respond immediately.
  - Identify suspected pollutants.
  - Remove or decrease exposure to the suspected pollutants.
  - If pollutant is indoors, increase ventilation. Open doors and windows to the outside.

Chronic Health Effects of Air Pollution Exposure
Air pollution is also associated with more serious, long-term health problems such as asthma, cancer, and respiratory infection.

Asthma
- Asthma is the leading serious chronic illness of children in the U.S.
- In 2006, an estimated 6.8 million children under age 18 (almost 1.2 million under age 5) had asthma, 4.1 million of which had an asthma attack. Many others have "hidden" or undiagnosed asthma (American Lung Association, 2008).
- Children with asthma have sensitive airways in their lungs that are easily inflamed, producing a chain of events that make it difficult to breathe.
- Indoor and outdoor air pollutants are “triggers” to the onset of asthma attacks and increase the severity of asthma inflammation. The most common triggers for asthma are:
  - Dust mites, molds and mildew, animal dander, pets and pests (e.g., cockroaches, mice, rats), smoke from cigarettes, wood fires, and charcoal grills; fumes from household cleaners, paints, perfumes, gasoline, and art supplies with odors.
## Talking Points

<table>
<thead>
<tr>
<th>Chronic Health Effects of Air Pollution Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer</strong></td>
</tr>
<tr>
<td>▪ Exposure to tobacco smoke is considered the leading cause of lung cancer.</td>
</tr>
<tr>
<td>▪ Radon is the second leading cause, accounting for 10% of all cases (EPA, 2002a). Radon is a radioactive substance, and particles breathed into the lungs continue to release radiation as they further decay.</td>
</tr>
<tr>
<td>▪ Particulate matter from asbestos and combustion activities, such as wood and coal burning, is also associated with lung cancer, along with chest and abdominal cancer. Recent evidence suggests that long-term exposure to even ordinary everyday levels of metropolitan particulate air pollution is associated with increased risk of lung cancer and heart and lung disease (Pope et al., 2002).</td>
</tr>
<tr>
<td><strong>Respiratory Infections</strong>: In addition to environmental tobacco smoke, nitrogen dioxide, other fumes and particles from combustion appliances (kerosene heaters and gas or wood stoves) are associated with a higher frequency of respiratory infections in young children (EPA and CPSC, 1995).</td>
</tr>
<tr>
<td><strong>Cognitive Performance</strong>: Myhrvold, Olsen, and Lauridsen (1996) measured 800 students’ health symptoms and their ability to concentrate under different levels of classroom air pollution. (Again, CO₂ was used as a general indicator of indoor air pollution.) They found that in classrooms where CO₂ levels were high, students showed significantly poorer concentration and reported more health symptoms. The authors concluded that indoor air quality can have a major impact on students’ academic performance.</td>
</tr>
</tbody>
</table>

## Notes
### Talking Points

#### Detecting Air Pollution
- Symptoms can be useful indicators of *indoor* air pollution problems (AAP, 1999). The acute effects of air pollution (respiratory symptoms, headaches, nausea, and dizziness) are also symptoms associated with common illnesses such as colds and flu. The key to detection is that symptoms usually abate when the toxic exposure is eliminated. It is important to note the time and place where symptoms occur and how many children are affected. If a number of children are displaying symptoms while playing in an area in which the carpets were recently cleaned, and the symptoms clear up when the children go outside, air pollution associated with the cleaning activities may be the cause.
- In larger metropolitan areas, local radio stations, TV news programs, and newspapers provide regular updates on *outdoor* air quality conditions. In more rural areas, state and local health departments and regional Environmental Protection Agency offices are good sources of information.

### Preventing and Managing Air Pollution Exposure
- The two primary methods for preventing and managing indoor air pollution problems are:
  - Removal or reduction of the source of pollution.
  - Increasing ventilation.
- Air filters should only be used in addition to and never as a replacement or substitute for the other two methods.

### For More Information
See the *Air Pollution* section in NTT’s *Environmental Health in Child Care* Training Module.

### Notes
## Activity: Air Pollution Worksheet

<table>
<thead>
<tr>
<th>Time</th>
<th>10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Partner or small group</td>
</tr>
<tr>
<td>Supplies</td>
<td>One “Air Pollution” worksheet for each trainee</td>
</tr>
</tbody>
</table>
| Instructions | • Show slide 16.  
• Trainees should have been completing the “Air Pollution” worksheet during the presentation. Give trainees two minutes to work with a partner to complete the worksheet, then pull the whole group together to review the sheet. |

### Talking Points

**Activity: Assessing Indoor Air Quality**

Did you hear some of the answers to the questions on the worksheet during the presentation on air pollution? I’d like you to take five minutes to work with a partner to complete the worksheet. After 5 minutes, we will come back together to compare our answers.

### For More Information

See the Air Pollution section in NTI’s Environmental Health in Child Care Training Module.
Presentation: Pesticides and Pests

<table>
<thead>
<tr>
<th>Time</th>
<th>10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Slides/overheads</td>
</tr>
<tr>
<td>Instructions</td>
<td>Show slides 17-28</td>
</tr>
<tr>
<td>Talking Points</td>
<td>Pests and Pesticides</td>
</tr>
</tbody>
</table>

- Usually when we think of pesticides, we think of sprays, powders, or granules that kill insects. The EPA definition is much broader.
- 84% of households used at least one pesticide product in the last year, though as little as 1% of pesticides applied indoors reach the targeted pests (AAP, 1999).

Sources of Pesticides

- Children are exposed to pesticides throughout the indoor and outdoor environment. They consume water and foods that have pesticide residues, and they breathe contaminated air, especially indoors if pesticides are used in schools and homes. Children are also exposed to pesticides through skin absorption and unintentional poisoning.
- Pests in and around child care facilities can cause physical damage to structures and present a health risk to children and staff. Pests such as mice, rats, and cockroaches can cause and trigger asthma, carry diseases, and contribute to poor indoor air quality. However, treatment of these pests with chemical pesticide sprays, aerosols, foggers, and pellet baits pose additional, potentially more serious, threats to children’s health.
Talking Points

**Routes of Exposure Indoors**
Generally, indoor environments have a higher concentration of pesticides than outdoor environments because some pesticides are used indoors and other are tracked indoors from outside soil on shoes and pets. Because children spend so much time indoors at home and at childcare, and because pesticides do not break down quickly indoors, efforts should be made to minimize pesticide exposure. Most homes contain an average of 6 pesticide products and 98% of homeowners use pesticides at least once during the year. Common indoor pesticides include:

- Cockroach sprays and baits
- Rat and other rodent poisons
- Flea and tick sprays, powders, and pet collars
- Kitchen, laundry, and bath disinfectants and sanitizers
- Products that kill mold and mildew
- Head lice shampoos
- Insect repellents

**Routes of Exposure Outdoors**
Due to commercial spraying practices, children who live and play in or near agricultural sites, golf courses, or power lines are at higher risk of exposure to pesticides in the air, dust and soil. Even at home, young children are exposed to pesticides, herbicides, and fertilizers used on lawns and in gardens. Young children are at greater risk because their crawling and play behaviors make it more likely that they will ingest pesticide residues from their hands. Even on playgrounds, where wood is treated with wood preserving pesticides such as chromated copper arsenate (CCA), children are at risk to pesticide exposure.

**Acute Health Effects**
Acute effects of pesticides range from irritation of the eyes, nose, and throat, mild dizziness, nausea, and vomiting, diarrhea, headaches, skin rashes, to severe illness and death (AAP, 1999). More severe reactions usually result from massive doses in accidental poisoning, chemical spills, inappropriate application, or prolonged exposure.
**Talking Points**

**Chronic Health Effects**
Damage to the nervous system, reproductive system, endocrine system, immune system, cancer, chronic injury to the lungs, liver, and kidneys, and birth defects have all been linked to pesticide exposure. For children specifically, pesticides have been associated with brain cancers and childhood leukemia (AAP, 1999). Long term effects of pesticides depend on the toxicity of pesticide itself, the length of exposure, and the amount of exposure.

**Integrated Pest Management**
- Integrated Pest Management (IPM) is a holistic approach to long-term pest control. It relies on both chemical and non-chemical methods. The goal of IPM is to utilize the pest control alternatives that are least toxic to people and the environment, and to use the least amount of treatment necessary in the management of any given pest problem. By understanding the pest’s needs and life cycles and monitoring for pest presence, control tactics are targeted at the most effective time, place, and amounts to prevent pest build up.
- Pesticide treatments are given only as needed and as a last resort when less toxic treatments have been ineffective.
- Spot treatments are given in place of broad applications of pesticides.
- Treatments are chosen and timed to be least hazardous to non-target organisms.

**IPM Strategies for Indoors**
- Repair screens and caulking around windows to prevent pests from entering.
- Vacuum up the eggs of fleas before they hatch.
- Keep the kitchen clean and free of food and crumbs.
- Monitor sticky traps to find new infestations quickly.
- Use physical means to control pests, such as fly swatters.
<table>
<thead>
<tr>
<th>Talking Points</th>
<th>IPM Strategies for Outdoors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Avoid lawn care practices that rely on herbicides and insecticides.</td>
</tr>
<tr>
<td></td>
<td>• Choose plants suited to the soil and climate of the site so that fungicides, herbicides, and insecticides are less necessary.</td>
</tr>
<tr>
<td></td>
<td>• Avoid applying pesticides around the perimeter of the building.</td>
</tr>
</tbody>
</table>

There are many things a CCHC can do to help minimize exposure to pesticides in the child care setting.

**IPM Policy**
• The CCHC might educate the staff about Integrated Pest Management, and if they choose to move in that direction, help develop a policy for pest control management. The policy might require:
  ▪ Appointing a designated person to serve as Integrated Pest Management coordinator.
  ▪ Implementing a protocol for staff and caregiver/teachers to report pest problems.
  ▪ Development of protocol for monitoring key areas to inspect for pests (roaches, mice, fleas) by using sticky traps and for pest management control.

**Educate Staff about IPM**
• The CCHC can play a significant role in educating building occupants about IPM protocols in place and their roles in pest management.
  ▪ Educate staff about steps they can take to reduce conditions that might attract pests, e.g., no standing water, no foods stored in classroom, clean-up spills and crumbs, etc.
  ▪ Encourage staff to keep trash receptacles clean with snug-fitting dumpsters away from the building.
### Talking Points

<table>
<thead>
<tr>
<th>Secure the Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>The CCHC should also encourage measures to deny pests access to the facility. Staff should ensure window screens are in good repair, sweep under doors, remove trees, shrubs, and wood piles in close proximity to the building, and repair any openings in the foundation, siding, or roof.</td>
</tr>
</tbody>
</table>

### Be Knowledgeable

The CCHC should also understand state laws. In most states, it is illegal for teachers or other non-licensed personnel to apply pesticides of any kind in a school or child care facility. Encourage child care staff to only hire pest-control contractors who use IPM techniques.

### Choosing and Using Pesticides

- If the child care staff chooses to use pesticides, the CCHC might help them make choices to reduce toxicity of the product and to reduce children’s exposure to the product. It is recommended that child care staff select the pesticide with the least toxic active ingredients.
- Also consider the likelihood of exposure given the form of pesticide that is chosen. Aerosols and foggers are inherently more risky due to the likelihood they will be used frequently, may be inhaled, leave residues, and may be accidentally handled by children. Boric acid dust puffed into wall voids or gel baits for cockroaches are much less risky, regardless of the chemical components. Choose products that are least likely to be breathed, ingested, or touched.
- The lethal potential of a product is expressed on the container through the use of one of three words: Caution (least toxic/hazardous), Warning, or Danger (most toxic/hazardous). Encourage child care facilities to avoid products labeled “Warning” or “Danger.”
- If products are to be used, read and follow all label instructions carefully. If possible, apply products when children are not present. Before application begins, know:
  - Purpose of the product
  - Location for application
  - Quantity to be applied
  - Frequency of application
  - Method of application,
  - Time-delay prior to reentry of treated areas.
### Talking Points

**Chemical Application File**  
The facility should maintain a chemical application file whenever any pesticides are applied at child care facilities. This file will contain, at the minimum, the application date, diagram of treatment location, copy of the product consumer information sheet or Material Safety Data Sheet (MSDS), copy of the letter of notification to parents, and description and date of all non-chemical means of remediation used prior to using chemical remediation. This information should be kept in the chemical application file for a minimum of 2 years.

*Additional recommendations regarding pesticide use can be found in the “Managing and Preventing Exposure in Child Care Facilities” handout in your participant’s packets.*

### For More Information

See the *Pests and Pesticides* section in NTI’s *Environmental Health in Child Care* Training Module.

### Notes
### Activity: Environmental Topics of Special Interest

<table>
<thead>
<tr>
<th>Time</th>
<th>10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Individual and small group</td>
</tr>
<tr>
<td>Supplies</td>
<td>An “Environmental Topic of Special Interest” sheet for each trainee</td>
</tr>
</tbody>
</table>

**Instructions**
- Show slide 29.
- Direct trainees to the “Environmental Topic of Special Interest” sheets in their Participant’s Packets. Ask each trainee to choose one topic sheet and read their sheet silently.
- After a few minutes, lead a group discussion by asking the group to stand. Ask each person to share one or two items from the sheet that they read with the large group. You can ask for volunteers to do this or just go around the room until everyone has had a chance to participate. After sharing the recommendations on their sheet, the trainee may then sit down.
- *(Trainer: When you are asking trainees to do something physically demanding, such as standing, always let them know that they may opt not to participate in the physical aspect of the activity. For example, in this activity let trainees know that standing is optional.)*

**Talking Points**
- Please find the “Environmental Topic of Special Interest” sheets in your Participant’s Packets. I’d like everyone to choose one of the topics. Once you’ve selected your topic, read that sheet silently to yourself. Take five minutes to do this.
- When you have finished reading your sheet, please stand up. I’d like you to volunteer to share with the group two things that you learned by reading your sheet. Once you’ve shared your two things, you may sit down.
- There are a lot of things that child care facilities can do to improve the environment for children and staff. As a child care health consultant, you might not do these things yourself, but you might provide the education, policy development, and resource referrals necessary to ensure that hazards are appropriately managed.
Presentation: Drinking Water Contamination

<table>
<thead>
<tr>
<th>Time</th>
<th>10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Overheads/slides</td>
</tr>
<tr>
<td>Instructions</td>
<td>Show slides 30 to 35</td>
</tr>
</tbody>
</table>

**Talking Points**

**Sources of Drinking Water Contamination**

Even though the United States has one of the safest water supplies in the world, hundreds of biological agents (such as bacteria, viruses, and parasites) and thousands of chemicals are found in fresh water supplies.

- **Public Water Supplies** – In most cases, contaminants in public water supplies are at levels that do not pose immediate threats to public health. Serious drinking water contaminations do occur, but they are infrequent and usually of short duration.

- **Well Water** – Private wells are not federally regulated and must be maintained by the homeowner. “Contamination of well water may occur if the well is shallow, in porous soil, old, poorly maintained, near a leaky septic tank or downhill from agricultural fields or intensive livestock operation” (AAP, 1999).

**Routes of Exposure**

Children are exposed to water pollutants by drinking contaminated water, eating raw foods irrigated or rinsed with contaminated water, eating fish or shellfish from polluted water, or through skin exposure from swimming/wading in polluted water (AAP, 1999).

**Health Effects of Exposure**

- Acute reactions to water pollutants are usually due to microbial contaminants such as bacteria and viruses and may include vomiting or diarrhea. Long term exposure to some pollutants, may cause gastrointestinal problems, skin irritations, cancer, reproductive and developmental problems, and other chronic health effects.

- The most prominent symptom of waterborne illness is mild gastroenteritis with diarrhea. An outbreak of such symptoms in a child care facility may indicate water contamination.
### Talking Points

#### Detection of Drinking Water Contamination
Accurate detection of water contamination requires professional expertise. Any suspected water contamination should be reported to state health and environmental agencies and to the water supplier. Private wells should be tested at least annually (AAP, 1999).

#### Preventing Exposure to Contaminated Water
- **Public Water Supply:** CCHCs can read the Consumer Confidence Report to learn whether the water system meets all drinking water standards. This report is available from the local water supplier, and is also available online at: [www.epa.gov/safewater/dwinfo.htm](http://www.epa.gov/safewater/dwinfo.htm).
- **Well Water:** CCHCs can work with the child care director to draft a policy that provides for regular testing of private well water to meet federal, state and local standards. Urge facilities to consider using a water filter certified by an independent, nonprofit, health and safety product certifier, such as NSF International.

#### Other Water Concerns
- Maintain a safe water supply available for emergencies.
- Check with the EPA ([http://www.epa.gov/waterscience/fish/](http://www.epa.gov/waterscience/fish/)), and state health, environmental, and conservation departments regarding any fish advisories related to water pollutants such as polychlorinated biphenyls (PCBs) or mercury in fish in the local area.
- Encourage child care staff and all community members to take used motor oil to a recycling center. If motor oil drains into a storm sewer or is placed in the trash, it can leak into lakes, rivers and wells. Just one pint of used motor oil can expand over great distances and cause adverse effects to human health and the environment.
- Draft a policy that provides for proper disposal of toxic trash. For example, batteries contain lead and mercury. Some common cleaners also contain substances that contaminate water. Many communities have special collection sites for these items.
| Talking Points | • Prohibit disposal of chemicals into septic systems, dry wells, storm water drainage wells, or other shallow disposal systems that discharge to ground water.
• Find out what the local community is doing to protect its water source and get involved. Work with schools, civic groups and others to start a protection program. |
| For More Information | See the *Drinking Water Contamination* section in NTI’s *Environmental Health in Child Care* Training Module. |
| Notes |  |
Closing: The Role of the CCHC

<table>
<thead>
<tr>
<th>Time</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Large group</td>
</tr>
<tr>
<td>Instructions</td>
<td>Show slides 36 and 37</td>
</tr>
</tbody>
</table>

Talking Points

**The Role of the CCHC**
- The CCHC can play an important role in mitigating child and staff exposure to environmental hazards in the child care environment. The CCHC must be familiar with preventive actions, the *Caring for Our Children* (CFOC, 3rd edition, 2011) standards, and federal, state, local regulations relating to environmental health in child care. Specifically, the CCHC must:
  - Learn about environmental risks in their state and county.
  - Know how to link to experts willing to work with child care staff.
  - Understand and communicate key environmental health concepts to child care staff.
  - Remain sensitive to the perspective and needs of the child care staff regarding environmental issues and recommendations.

- The CCHC can help the child care staff to:
  - Identify and prioritize the most critical environmental hazards.
  - Establish policies for managing these hazards.
  - Develop strategies for implementing the policies.

For More Information

See the Introduction, The Role of the CCHC section in NTI’s Environmental Health in Child Care Training Module.

Notes
# Learning Assessment

<table>
<thead>
<tr>
<th>Time</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Technique</strong></td>
<td>Large group</td>
</tr>
<tr>
<td><strong>Supplies</strong></td>
<td>A ball of yarn or string</td>
</tr>
<tr>
<td><strong>Instructions</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - Show slide 38.
  - Ask the group to stand in a circle. The trainer will ask for a volunteer to start with the ball of string and say one thing they learned about environmental health during the training. When the volunteer has done this, she will hold on to the end of the yarn, then toss or roll it to the next person. The next person will say one thing they learned about environmental health, hold on to their bit of yarn, and toss the ball to the next person. By the time everyone has spoken, there will be a large web of yarn. |

### Talking Points

**Activity: Web of Knowledge**

Let’s take a few minutes before we end to review what we learned today. We’re going to create a web of knowledge with all the things that we now know about environmental health.
## Evaluation

<table>
<thead>
<tr>
<th>Time</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Technique</td>
<td>Individual</td>
</tr>
</tbody>
</table>
| Instructions | • Show slide 39. (Placeholder slide not printed here.)  
• Ask participants to complete the “Evaluation of Trainer Form” at this time.  
• Inform participants that the evaluations are anonymous.  
• Explain that the evaluation results provide you with information about the effectiveness of the training and that information collected from the evaluation will be used to improve the training.  
• Allow participants 5 minutes to complete the evaluation.  
• Collect forms. |
| Talking Points | Evaluation  
Please take 5 minutes to complete the Training Evaluation in your participant’s packet. |
| Notes |  

MATERIALS FOR PARTICIPANT’S PACKET

Activities
On the next few pages you will find the worksheets and handouts referenced in this Trainer’s Guide. The Air Pollution Worksheet, the Integrated Pest Management Case Scenario, and the Environmental Topics of Special Interest to Child Care Staff: Key Points and Preventive Actions Tip Sheets may be printed and included in a participant’s packet or as handouts to be distributed to the group. The answer key for the Air Pollution Worksheet is for the trainer to use. You may wish to white out the existing page numbers and write in your own, or you may print each activity on different colors of paper for easy reference by your participants.

Evaluation of Trainer
The “Evaluation of Trainer Form” at the end of this material should be printed and distributed to each participant for feedback on various aspects of your training.

Cover Page
The cover page may be printed and used as a cover page for the activities, slide handout, evaluation form and any additional materials you wish to provide as part of a participant’s packet. If your participant’s packet contains several activities and handouts, you may want to create a table of contents to guide participants through the materials.
ACTIVITY: Environmental Health in Child Care Settings, Air Pollution Worksheet

Instructions: Listen carefully as the trainer is speaking. See if you can find the answers to the questions and fill in the blanks below. At the end of the presentation on air pollution, you will have a few minutes to work with a partner or small group to review the answers. Then we will come together to discuss.

1. There are 189 known air pollutants. _________ and _________ are known air pollutants.

2. _________, _________, and _________ are acute health effects of exposure to air pollution.

3. _________ is the leading serious chronic illness of children in the U.S.

4. List three common “triggers” for asthma.

5. What is the leading cause of lung cancer?

6. Where can you find updates on outdoor air conditions?

7. The two primary methods for preventing and managing indoor air pollution problems are:
   •
   •
ACTIVITY: Air Pollution Worksheet, Answer Key

Instructions: Listen carefully as the trainer is speaking. See if you can find the answers to the questions and fill in the blanks below. At the end of the presentation on air pollution, you will have a few minutes to work with a partner or small group to review the answers. Then we will come together to discuss.

1. There are 189 known air pollutants. (ozone (smog), breathable particulate matter, lead, sulfur dioxide, carbon monoxide, and nitrogen oxides) are known air pollutants.

2. (watery eyes, burning sensations in the eyes, nose and throat, nasal congestion, chest tightness, difficulty breathing, irregular breathing, coughing, wheezing, headaches, dizziness, weakness, fatigue, and chest pain) are acute health effects of exposure to air pollution.

3. (Asthma) is the leading serious chronic illness of children in the U.S.

4. List three common “triggers” for asthma.
   (Dust mites, molds and mildew, animal dander, pets and pests (e.g., cockroaches, mice, rats), smoke from cigarettes, wood fires, and charcoal grills; fumes from household cleaners, paints, perfumes, gasoline, and art supplies with odors)

5. What is the leading cause of lung cancer?
   (Exposure to environmental tobacco smoke)

6. Where can you find updates on outdoor air conditions?
   (In larger metropolitan areas, local radio stations, TV news programs, and newspapers provide regular updates on outdoor air quality conditions. In more rural areas, state and local health departments and regional Environmental Protection Agency offices are good sources of information.)

7. The two primary methods for preventing and managing indoor air pollution problems are:
   • Removal or reduction of the source of pollution
   • Increasing ventilation
ACTIVITY: Integrated Pest Management – A Case Scenario

Instructions: Read the case scenario below and answer the questions.

The Board of Directors of New Leaf Child Care and Development Center is discussing the facility’s pest problems. The Board, however, is very divided on what pest management approach to use. Some Board members believe an Integrated Pest Management (IPM) approach (which uses non-toxic measures, improved maintenance and sanitation to decrease pests’ access to food, water, and hiding places) is the best method. Others are vehemently opposed and believe these are weak and ineffective measures. One Board member who is opposed to IPM has a daughter with severe asthma and believes something needs to be done right away. He believes the chemicals used to control the pests may be more toxic, but they will rid the facility of the pest problem for good. The Board cannot reach a decision. It is suggested the Director consult with you and get back with them as soon as possible.

What are the main issues in this situation?

How would you respond to the Director?

How would you balance the concerns of all board members?

How would you respond to this situation in terms of:

   Advocacy?

   Policy development?

   Health education/training?

   Resource and referral?
ENVIROMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Art Materials

Key Points
- Art activities are a key component of any child care program, allowing children to express themselves creatively.
- Some art materials contain chemicals such as metals (e.g., lead), solvents (e.g., turpentine), and dusts or fibers (e.g., asbestos) that are hazardous if inhaled, absorbed, or swallowed. Lead may be found in artist’s paints. Lead and other toxic metals can also be found in pastels, pigments, inks, glazes, enamels, and solder (AAP, 1999).
- Most risks from art materials can be eliminated by carefully selecting materials that are safe for use by children. The product label provides key information.
- When products are labeled “nontoxic” it means that the product has passed the short-term toxicity test required by the U.S. Department of Environmental Protection Federal Hazardous Substance Act (FHSA) but does not mean it passes the long-term toxicity test.
- The Labeling of Hazardous Art Materials Act (LHAMA) supplements the FHSA requiring manufacturers of hazardous art materials to: 1) determine the potential for chronic long-term health hazards and, 2) place appropriate warning labels on those products found to pose such chronic long-term effects.
- Arts and crafts materials imported or sold in the United States are required by the LHAMA to meet the American Society of Testing Materials (ASTM) D-4236 regulations for chronic long-term health hazards. It is illegal to sell an art product in the US that does not have this statement on its label. It is important to note that this statement does not mean the product is safe, rather it has been certified by a toxicologist that the label information provides adequate information for safe use (Arts, Crafts, and Theatre Safety [ACTS], 2000).
- Product seals are not required by law. These seals identify a company or group such as the Arts and Creative Materials Institute (ACMI) whose toxicologist certified the product (ACTS, 2000). The ACMI seals are the AP (approved product – nontoxic even if ingested), CP (certified product – are nontoxic even if ingested and meet or exceed quality standards of material, workmanship, working qualities, and color), and Health Label (no health labeling required) [AAP, 1999].

Preventive Actions
- Choose products that have the following on the label:
  - Nontoxic
  - Conforms to ASTM D-4236 statement
  - Clearly marketed for children
  - No hazards or precautionary statements
- Certified or approved product seals indicate the company ACMI has tested the product and it contains no materials in sufficient quantities to be toxic or injurious even if ingested.
- Obtain and read the latest Material Safety Data Sheet (MSDS) by contacting the product manufacturer and check for toxic ingredients. For more information, contact a toxicologist, or the US Poison Control Center at (800) 222-1222, which will route the call to the nearest poison center.
- Always follow the precise directions and precautions on the packaging label carefully. 

5.2.1.4
- Choose materials designed not to create dusts, sprays, vapors, or fumes which can be inhaled, or which result in excessive skin contact. For example, it may be safer to buy supplies in premixed or liquid formulations instead of powder forms to reduce exposure to dusts. Use water-based products instead of oil-based, keeping in mind to read the label and look for materials identified as safe for children.

- Equip craft areas appropriately:
  - Use work surfaces that are hard and smooth for easy and thorough cleaning
  - Ventilate areas where arts and crafts activities are conducted
  - Store materials safely
  - Protect against exposure (e.g., wear aprons, don’t allow food and drink in the art area, and have children wash their hands after doing arts and crafts)
  - Use age-appropriate products

- Supervise children closely. For example, some children are attracted to fruit-scented markers and may try to eat them.
- Educate staff to the possibility that some children may have special vulnerabilities to certain art materials (such as children with asthma or allergies).
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Cleaning Products

Key Points
- Many common cleaning products and household products contain volatile organic compounds (VOCs), organic solvents that easily evaporate into the air. Furniture cleaners and polishes, floor cleaners and polishes, oven cleaners, household cleansers, carpet shampoos and disinfectants are a few examples.
- Short-term effects include eye, nose and throat irritation, and headaches. Long-term exposure can cause loss of coordination; nausea, and damage to liver, kidneys and the central nervous system. Some VOCs can cause cancer in animals and are suspected of causing cancer in humans.

Preventive Actions
- Buy the least harmful product available. Choose products labeled “Warning” or “Caution” since these are less harmful than those labeled “Poison” or “Danger.”
- Always use household products only for their intended purpose and according to the manufacturer's instructions. Don’t mix up “extra-strength” batches.
- Use the product in a well-ventilated area.
- When not in active use, all chemicals used inside or outside should be stored in a safe and secure manner in a locked room or cabinet, fitted with a child-resistive opening devise, inaccessible to children, and separate from stored medications and food.
- Keep household products in their original containers so that safety information and directions for use are always with the product.
- Avoid excessive use. If possible, do not apply products when children are present.
- Keep storage of cleaning agents separate from food. Cleaning agents that must be stored in the same room with food shall be clearly labeled and kept separate from food items in locked cabinets. Cleaning agents shall not be stored on shelves above those holding food items. Cleaning agents and food items shall not be stored on the same shelf.
- Reduce the need for these products by:
  - Quickly attending to spills and stains, and removing food wastes promptly.
  - Using alternative (use ingredients such as vegetable-based liquid soap, baking soda, and vinegar) or less toxic products. Remember while alternative or less toxic products are safer, they are not all non-toxic. Use the same precautions as with other cleaners. An important consideration when making your own cleaners is to store them in unused, store-bought containers (never put them in old food containers) and label them carefully. List each ingredient amount, directions, intended use and date made.
  - Using a multi-purpose cleaner so that you do not need to have a different product to clean each surface in your house. Choose a cleaner without antimicrobial agents. By keeping sanitizers & disinfectants out of cleaners reduces their toxicity as well as reduces the amount of disinfectant chemical used (City of Santa Monica, 1998).
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Compact Florescent Lightbulbs (CFLs)

Key Points
- CFLs use about 75% less energy than regular lightbulbs. They are available in different sizes, shapes, wattages, fitting almost any fixtures indoors or outdoors (Center for ReSource Conservation).
- A CFL bulb contains about 3-5 milligrams of mercury; covering about the tip of a ballpoint pen (Center for ReSource Conservation).
- Mercury vapor from broken bulbs can escape into the air affecting the central and peripheral nervous systems, human eyes, kidneys lungs, skin, and spinal cord.
- Mercury is tasteless and odorless; you won’t know if you are being contaminated.
- No mercury is released when the bulbs are intact or in use.

Preventive Actions
- Make an emergency Mercury Exposure Kit prior to buying CFLs:
  - Phone number of your local, county or state health department
  - U.S. Poison Control Center number: (800) 222-1222
  - Phone number for local professional help to clean-up mercury
  - Eye droppers
  - Index cards
  - Duct tape
  - Single use disposable gloves
  - Paper towels
  - Bottled water
  - Plastic bags: (4-5 Ziploc-type and trash bags that are 2-6 mm. thick)
  - Flashlight
  - Scissors or carpet cutting device with safety cover
  - Labels for hazardous materials in accordance with state regulations
- Mercury lamps should not be used for lighting in the interior of buildings unless provided with special bulbs that self-extinguish if the outer glass envelope is broken.5.2.2.3
- CFLs can be used in open fixtures allowing airflow around outdoor fixtures.
- Always screw or unscrew the bulb by its base (not the glass). Never forcibly twist the CFL into a light socket.
- ENERGY STAR® qualified CFLs have a warranty. If the bulb fails within the warranty period, return it to your retailer.
Clean-up After a Mercury Spill:
- Immediately remove children and pets from the area.
- Open a window and leave the room for 15 minutes or more.
- Call your local/county health department. Inform them of the mercury exposure.
- Contact professional help if the spill is more than a thermometer’s worth of mercury.
- Do not vacuum or use a broom to clean up the broken bulb on any surfaces.
- Do not wear gold jewelry while cleaning up. The mercury can permanently discolor it.
- Put on the single-use disposable gloves. Do not use bare hands.
- Double (plastic) bag all clean-up and mercury contaminated materials for proper disposal.
- **Hard Surfaces:** Collect mercury beads using an eyedropper or index cards. Duct tape will collect small pieces. Wipe the area with damp paper towels and place in the plastic bag. Remove gloves. Wash your hands.
- **Soft Surfaces** (*rugs, upholstery, bedding*): Do not try to soak up mercury with a towel or rag. Cut out or remove the affected area since mercury can split into tiny beads and never be detected.
- Take used/broken bulbs and mercury contaminated materials to a household hazardous waste drop-off location. (EPA, 2008c)
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Noise

**Key Points**
- Although few studies have been done to estimate children’s exposure to noise, noise affects hearing and can result in physiologic effects such as sleep deprivation and undesirable cardiovascular effects, and psychological effects such annoyance, interference with activity, and headaches, tiredness, and irritability (AAP, 1999).
- It is likely that children are routinely exposed to more than the noise exposure of 70dBA (dBA is the measure of sound pressure) recommended as an upper limit by the EPA. Examples of sounds at 70dBA include vacuum cleaner, nearby freeway traffic, noisy party, and TV audio (AAP, 1999).

**Preventive Actions**
- Block noise from the outside: use double windows, weather stripping on doors and windows, and seal air leaks. Dampen the sound around the building with landscaping such as a dense barrier of trees and shrubs.
- Reduce a room’s “echoing” qualities by adding absorbent surfaces and by varying ceiling and furniture heights.
- Reduce sources of loud noises (e.g., toys that make loud noises; lower the volume on computers and radio/tape/CD player when in use; use headphones with caution – set the volume level so that normal conversation can still be heard).
- Separate quiet and noisy areas when designing play areas.
- Introduce a pleasing background sound to help offset noise and make the direct sounds from children and activities less noticeable.
- Introduce acoustic pleasure (e.g., hang wind chimes) inside as well as outside an open window.

(Adapted from Olds [2001] and AAP [1999].)
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Plastics

**Key Points**

- Phthalates (pronounced “tha-lates”) are a class of oily chemical compounds used in plastic to improve flexibility and durability, and they are widely used in plastic children’s toys (California Childcare Health Program, 2008).
- Polyvinyl chloride (PVC), commonly known as vinyl, is a soft, flexible vinyl used in many products, such as toys, shower curtains, and pipes. PVC can be softened with phthalates. Phthalates plasticizers account for more than half the weight of some flexible PVC products. About 95% of phthalates produced are used in PVC.
- Objects that may contain phthalates include teething rings, rubber squeeze toys, rattles, bibs, or soft plastic books. They are also used in plastic food-storage containers (including bottles and sippy cups) and in personal care products, such as shampoos and baby powders and lotions, as well as medical equipment (Turner Toys, 2005).
- Studies on animals link phthalates to cancer, hormonal disruption, and birth defects (AAP, 2003).
- Exposure to the toxic additives in PVC plastics can occur through chewing or sucking, normal hand-to-mouth behaviors, and through the release of these chemicals into air and dust as the products age (Alliance for a Healthy Tomorrow). Children also risk exposure to the dangerous chemicals in plastics through baby care products applied to their skin.
- PVC products also commonly contain lead (and other metals such as cadmium and organotins) which acts as a stabilizer but can break down over time and migrate to the surface of used toys and other vinyl products (Healthy Child Healthy World, 2008).
- Lead damages the nervous system, leading to decreased learning ability and behavioral deficits. It is also a reproductive toxin and a carcinogen.
- Polycarbonate (Lexan) is used extensively in food-contact utensils, including baby bottles, sports water bottles, food containers, and tableware. It is commonly known as “Bisphenol A” or “BPA”.
- Bisphenol A (BPA) is a chemical compound that has been shown to impair brain function, disrupt the endocrine system, and may cause cancer (Healthy Child Healthy World, 2008). It is found in most baby bottles and sippy cups and in the plastic lining of baby formula cans (Center for Health, Environment, and Justice, 2008).
- BPA leaching is considerably greater in polycarbonate that is scratched, cloudy, or exhibits wear of any sort. Heating also accelerates the leaching process, so carrying hot water in a polycarbonate bottle is not advised.

**Preventive Measures**

- Look for products that state “No phthalates” or “No bisphenol A (BPA)” on the packaging. Plastics marked with #1, #2, #4, and #5 are the least toxic, and plastics that are not identified should be avoided.
- Avoid vinyl products marked with a “V” or “3”. Wash these products often if they can’t be eliminated from the environment (Healthy Child Healthy World, 2008).
- Choose baby care products that have been tested and are free of phthalates.
- Consider alternatives to plastic: use toys made of natural products such as wood or cloth, and store food in glass, ceramic, or stainless steel containers.
- Use glass or phthalate-free baby bottles, and use powdered formula rather than canned liquid formula (Environmental Working Group, 2007).
- To reduce exposure to phthalates, consumers should wash the top layers of packaged cheeses and meats with hot water, because these foods attract the phthalates in PVC plastics. Bags or containers marked as “polypropylene” or “polyethylene” are safer plastics for packaged food (Turner Toys, 2005).
- Do not heat food or drinks in plastic containers. Use glass or ceramic instead.
- Vinyl utensils should not be used for hot foods, particularly infant feeding, since warming increases emissions of phthalates.
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Sun Exposure

Key Points
- While some exposure to sunlight can be enjoyable, too much can be dangerous.
- Overexposure to ultraviolet (UV) radiation in sunlight can result in a painful sunburn. It can also lead to more serious health effects, including skin cancer, premature aging of the skin, and other skin disorders; cataracts and other eye damage; and immune system suppression.
- Children are particularly at risk of overexposure, since most of the average person's lifetime exposure occurs before the age of 18.
- Intense sun exposure in childhood increases the risk of skin cancer in adult life.
- Currently, one in five Americans develops skin cancer during their lifetime. The incidence of melanoma, the most serious type of skin cancer, is increasing faster than almost every other form of cancer.
- Due to the depletion of the ozone layer, increased levels of harmful UV radiation are likely to reach the Earth.
- Many believe that only lighter-skinned people need to be concerned about the effects of overexposure to the sun. The incidence of skin cancer is lower in dark-skinned people, but it still occurs and is often not detected until later stages when it is more dangerous.
- The risk of other UV-related health effects, such as cataracts, premature aging of the skin, and immune suppression, is not dependent upon skin type (EPA, 2002f).

Preventive Actions
- The best sun protection is provided when all the sun-safe behaviors are practiced together.
- Limit time in the midday sun. The sun's rays are strongest between 10 a.m. and 4 p.m.
- Whenever possible, limit exposure to the sun during these hours. Seek shade. Staying under cover is one of the best ways to protect your self from the sun. Remember the shadow rule: Watch Your Shadow. No Shadow, Seek Shade! (American Academy of Dermatology, 1999).
- Always use sunscreen. Apply a broad spectrum (blocks UVA and UVB) sunscreen of a Sun Protection Factor (SPF) of at least 15 or higher liberally on exposed skin and reapply every 2 hours when working or playing outdoors. Even waterproof sunscreen can come off when you towel off, sweat, or spend extended periods of time in the water.
- Sunscreen should be applied 30 minutes before exposure to the sun and reapplied every 2 hours. “The issue of whether sunscreen is safe for infants under the age of 6 months is controversial”(AAP, 1999 p. 244). Of primary importance in this age group is to avoid high-risk exposure and use adequate protection through the use of clothing, hats and shade. Remember, best practice indicates that the child care program have a written policy for the use of any commonly used nonprescription medication for oral or topical use and that it includes parental consent. Sunscreen should be included in this policy.
- Wear a hat. A hat with a wide brim offers good sun protection to your eyes, ears, face, and the back of your neck - areas particularly prone to overexposure to the sun.
- Cover up. Wearing tightly woven, loose-fitting, and full-length clothing is a good way to protect your skin from the sun's UV rays.
- Wear sunglasses that block 99-100% of UV radiation. Sunglasses that provide 99-100% UVA and UVB protection will greatly reduce sun exposure that can lead to cataracts and other eye damage. Check the label when buying sunglasses.

- Watch for the UV Index. The UV Index provides important information to help you plan your outdoor activities in ways that prevent overexposure to the sun. Developed by the National Weather Service and EPA, the UV Index is issued daily in selected cities across the United States.
ENVIRONMENTAL TOPICS OF SPECIAL INTEREST TO CHILD CARE STAFF: KEY POINTS & PREVENTIVE ACTIONS

Extreme Weather

**Key Points**
- Heat and cold-related injuries are serious problems for children resulting in death, heatstroke, heat exhaustion, frostbite and hypothermia.
- Know your weather terminology:
  - Wind-chill: how cold it feels when air temperature and wind are combined.
  - Heat index: how hot it feels when air temperature and relative humidity are combined.

For example, a wind-chill factor of 16° (30° F and a wind speed of 10 mph) is cold and a heat index of 95° (90°F and a relative humidity of 45) is uncomfortable.

**Preventive Actions**
- Play outdoors when it is safe and comfortable for the children. Use a wind-chill factor and heat index chart as a guide.
- Provide cooling off activities such as running through a sprinkler when temperatures are high. Provide an air-conditioned environment when the heat index, both humidity and temperature, is high.
- Keep children hydrated, especially in high temperatures and when they are physically active. Water is best. Before prolonged physical activity in warm weather, children shall be well-hydrated and shall be encouraged to drink water during the activity.  
- Monitor length of time outside based on child’s age and weather conditions. Caregivers shall check children’s extremities for maintenance of normal color and warmth every 15 minutes when children are outside in cold weather.
- Dress children to maintain a comfortable body temperature.
- In warm weather, this should be lightweight cotton protective clothing, including hats.
- In cold weather, this should be loose fitting, lightweight, warm clothing in several layers. The trapped air between the layers serves to insulate. Layers can be removed to avoid perspiration and subsequent chill. Outer garments should be tightly woven, water repellent, and hooded if possible. Since half of all body heat is lost through the top of the head, hats are necessary. Mittens, snug at the wrists are better than gloves. It is important to make sure the children stay dry (Schneider and Freeman, 2000).
Tips for Managing and Preventing Exposure to Environmental Hazards in Child Care Facilities


- Make sure that staff are not bringing household products to the child care facility and using them at their own discretion.
- Make sure items and surfaces that only require cleaning are not also being disinfected.
- Remove children, food, dishes, toys and other objects from vicinity before application of any chemical product.
- Pesticide products (and any toxic substance) should be used as recommended by the manufacturer and should be stored in the original labeled containers in a safe and secure manner in a locked room or cabinet, fitted with a child-resistive opening device, inaccessible to children, and separate from stored medications and food. 5.2.9.1
- Facilities should adopt an integrated pest management program (IPM) to ensure long-term, environmentally sound pest suppression through a range of practices including pest exclusion, sanitation and clutter control, and elimination of conditions that are conducive to pest infestations. 5.2.8.1
- Strongly discourage any use of spray formulations and foggers indoors and all pesticide use outdoors.
- Notification should be given to parents/guardians and staff before using pesticides, to determine if any child or staff member is sensitive to the product. 5.2.8.1. Ensure that children are not present when pesticide products are applied.
- Consider having children remove outdoor shoes at the door.
- If pesticides are used outdoors, or if pesticides are used in neighboring areas, keep children inside and cover playthings or bring them inside during and after the application.
- Buy organically grown and in-season foods. Whether buying organic or not, always try to purchase foods that are in season. Fruits and vegetables sold out-of-season are often imported from other countries where pesticide laws are less stringent than in the United States.
- Scrub fruits and vegetables under running water and peel and trim where appropriate. This can remove some pesticide residues on the surface of the food.
- Avoid use of flea collars, dips, and insecticide shampoos on pets. Instead, use a flea comb and shampoo pet occasionally. If pet must be treated for fleas, restrict children from playing with pet for a few days after treatment.
- Try to restrict pets to outdoor areas or at least to non-carpeted indoor areas of the facility.
- The use of the following shall be prohibited:
  - EPA banned pesticides
  - Incense
  - Moth crystals or moth balls
  - Chemical air fresheners that contain ingredients on the EPA toxic chemicals list
National Training Institute for Child Care Health Consultants  
Evaluation of Trainer Form

Using the rating scale below, please evaluate the Trainer’s presentation skills.
1= unsatisfactory  2= below average  3=average  4=above average  5=outstanding  NA=non-applicable

### Training Content
Please rate the Trainer on the quality of the following:

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### Training Techniques: Methods, Media, & Materials
Please rate the effectiveness of the Trainer’s use of the following:

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### Training Techniques: Activities
Please rate the Trainer's use of training activities on the following characteristics:

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### Delivery of Content
Please rate the Trainer on the following training dynamics:

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Facilitation Skills

Please rate the Trainer on the following skills:

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Please take a moment to answer the following questions:

What did you like most about this training?

What can the Trainer do to improve this training?

Was this the most effective way to present this material? Please explain.

Do you have any suggestions for other methods to present the material?

Thank you.
Environmental Health in Child Care

Participant’s Packet