INSTRUCTOR'S GUIDE

Environmental Health

First Edition, 2006

California Childcare Health Program
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This *Instructor's Guide* is a supplement for trainers of the
California Training Institute's curriculum for Child Care Health Advocates.

INTRODUCTION TO THE ENVIRONMENTAL HEALTH MODULE

This *Instructor's Guide* provides trainers with an outline for the teaching of the *Environmental Health* module. Participants will be introduced to the most significant toxins in the early care and education (ECE) setting and to the ways that Child Care Health Advocates (CCHAs) can identify them. In addition, they will learn about the health effects of exposure to these hazards and about recommended actions for prevention and management. CCHAs play a critical role in the improvement of the environmental health of children in the ECE setting, and this curriculum introduces them to the scope and range of this role.

Learning Objectives:

1. To describe why young children are uniquely vulnerable to environmental exposures.
2. To identify the leading environmental health risks for children.
3. To describe the effects of hazardous exposures on children's health.
4. To describe actions to reduce environmental health exposures.
5. To describe three ways a CCHA can assist ECE programs with appropriately addressing the children's environmental health needs.
6. To identify the key environmental health resources available to assist and support ECE providers and families.

Primary Messages:

1. Children have special vulnerabilities to environmental toxins and hazards.
2. The adults in the children's environment must protect them from exposure to lead, pesticide and household chemicals by reducing the presence of these toxins in the environment and by using the least toxic chemicals.
3. Children are affected by poor environmental factors, including air quality (indoor and outdoors), water quality and certain weather conditions, such as sun and ozone.
4. Adults can advocate for improved environmental health and can protect children from the effects of adverse environmental factors.
5. Children are uniquely vulnerable to environmental toxins because of their developmental stage and physical size.
6. The five worst environmental risks to the health of young children are environmental tobacco smoke, lead, air pollution, pesticides and drinking water pollution (Crain, 2000; Gratz & Boulton, 1993).
7. Exposure to lead is the most common health problem in children. Lead poisoning affects every system in the body and can cause harm even at low levels.
8. Indoor air is often more polluted than outdoor air. Air pollutants can come from sources such as air fresheners, cleaners, adhesives, arts and crafts supplies, and materials for buildings or furniture.
9. Only 1% of pesticides applied indoors reach the targeted pest, and the rest may pollute surfaces and air in the treated environment.
10. Sunscreen alone is insufficient for solid sun protection. The best line of defense against the harmful rays of the sun is a combination of protective clothing, hats with a broad brim and sunglasses that block 100% of the ultraviolet rays.

Materials and Equipment Needed:

1. Copy of module: *Environmental Health*
2. Copy of *Instructor's Guide: Environmental Health*
3. Copies of *Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs, Second Edition* (CFOC)
4. Flip chart/whiteboard and markers, or chalkboard and chalk
5. Masking tape for posting flip chart paper
6. LCD projector or overhead projector
7. Computer for PowerPoint slides
8. CDs of slides or transparencies
9. Handouts
    a. Handouts in the *Environmental Health* module
        i. Handouts from California Childcare Health Program (CCHP), Oakland, CA

Handout Title	Page Number in Module
Chemical Hazard Survey and Action Plan for ECE Programs	35
Health and Safety Notes: Anemia, Lead Poisoning and Child Care	37
Health and Safety Notes: Indoor Air Quality	39
Health and Safety Notes: Keeping Children Safe from Pests and Pesticides	41
Health and Safety Notes: Lead in Keys	43
Health and Safety Notes: Pets in the Child Care Setting	45
Health and Safety Notes: Recommendations for Cleaning, Sanitizing and Disinfecting	47
Health and Safety Notes: Summer Safety	49
Health and Safety Notes: The Use of Insect Repellent by Child Care Programs	51
Less Toxic Alternatives to Common Hazardous Household Products	53
No Smoking Poster	56
Survival Tips Poster: Sun Protection	57

        ii. Handouts from National Training Institute for Child Care Health Consultants (2004)

Handout Title	Page Number in Module
Child Care Inventory for Air Pollution Hazards	59
Child Care Inventory for Water Pollution Hazards	64
Supplementary Materials on Environmental Topics of Special Interest to ECE Providers	65

    b. Handouts in the *Instructor's Guide*

Appendix Title	Appendix Number
Sample Charts on Environmental Toxins in the ECE Setting	16A
Using the Environmental Health Module	16B

SUGGESTED TRAINING OUTLINE

Outline	Method	Time (Minutes)
I. Introduction to the Environmental Health Module	—	10
A. Assessment of Group Knowledge	Questioning	3
B. Introduction/Rationale to Environmental Health	Lecture	7
II. Environmental Hazards in the ECE Setting	—	40
A. Environmental Hazards and Their Consequences	Large Group Discussion	30
B. Child Development and Risk of Exposure	Large Group Discussion	10
III. The Role of the CCHA in Protecting Environmental Health	—	45-65
A. The Role of the CCHA	Large Group Discussion	15
B. Environmental Health Issues	Small Group Activity	20
C. Optional: Policy Development	*Small Group Activity*	*20*
D. Review of Child Care Program Chemical Hazards	Large Group Activity	10
IV. Summary and Closure	—	10–15
A. Optional: Using the Environmental Health Module	*Small Group Activity*	*5*
B. Next Steps for the CCHA	Large Group Discussion	5
C. Summary and Closure	Brief Closing Activity	5

Total time: 105–130 minutes

OUTLINE AND INSTRUCTIONS

Environmental Health

I. Introduction to the Environmental Health Module

A. **Topic:** Assessment of Group Knowledge

Method: Questioning

Instructions:

1. Ask participants several of the following questions, choosing questions most appropriate for your participants. Ask them to raise their hand if they:
   - Are currently in the role of the CCHA.
   - Have conducted assessments of environmental health hazards in their setting.
   - Know if their facility has been checked for sources of lead.
   - Know the risk factors for lead poisoning.
   - Know how to identify air pollutants in their program.
   - Have policies promoting environmental health.
2. Ask participants to state some activities that they are presently engaged in, both in and out of the classroom, that promote the health and safety of children in their setting or that improve the environmental health of the care they are providing.

B. **Topic:** Introduction/Rationale to Environmental Health

Method: Lecture

Instructions:

1. Ask participants what environmental exposures we are concerned about in the ECE setting. State that among the hundreds of potential environmental exposures in today's world, the scientific community tends to agree with Mott et al. (1997) that the five worst risks to the health of young children are: **environmental tobacco smoke, lead, air pollution, pesticides** and **drinking water pollution** (Crain, 2000; Gratz & Boulton, 1993). State that sun exposure is also dangerous.
2. Give participants the following information:
   a. One hundred years ago, the major causes of death and illness in children were infectious diseases: pneumonia, influenza, measles, diphtheria, dysentery and tetanus (Centers for Disease Control and Prevention [CDC], 1999).
   b. While many of these illnesses have declined greatly over the last century, new health problems have increased over the last two decades: asthma, childhood cancer rates, low birth weight, serious heart defects and urinary tract obstructions, hyperactivity, learning disabilities, slowness to learn, autism and disruptive behavior among school-age children (GBPSR, 2000).
   c. Environmental factors may play an important role in the appearance of these new health problems (Bearer, 1995; Crain, 2000; GBPSR, 2000; Mott et al., 1997). There are concerns about possible links between being exposed to environmental toxins and common chemicals, and having diseases such as asthma and cancer (Greater Boston Physicians for Social Responsibility [GBPSR], 2000).

d. It is difficult to avoid being exposed to low levels of many chemicals. In addition, scientists do not know a lot about the health risks of these exposures and are often unable to tell which chemicals might be dangerous because people are exposed to so many at the same time. In addition, chemicals in the environment may act *synergistically*, meaning that the negative consequences of each toxin increases when several toxins are present.

3. State that this module will focus on natural and humanmade environmental exposures that affect the health of children in ECE programs.

II. Environmental Hazards in the ECE Setting

A. **Topic**: Environmental Hazards and Their Consequences

Method: Large Group Discussion

Instructions:

1. State that there are many hazards, called toxins, in our environment that cause harm to our health. These toxins are often found in surprising sources. Water can have toxins such as lead or arsenic in it; arts and crafts equipment may give off toxic fumes; paint may give off toxic gases; and even some playground equipment has been treated with toxic chemicals. It is important to know about the most common toxins in the ECE setting and about how to identify and minimize exposure to them.
2. Note to Trainer: Tobacco smoke is an important toxin, but since smoking is banned from ECE programs, it is not covered at length here. See the module for additional information.
3. Ask participants to name some environmental toxins in the ECE setting. Make a list of the suggested toxins, making sure to include the following toxins in the list: lead, air pollution, pesticides, water pollution and sun exposure.
   a. Make a chart for each toxin, beginning with the following two questions:
      i. How do children take in this toxin? They can ingest it (e.g., pesticide residues), inhale it (e.g., asbestos, lead dust, tobacco smoke, air pollution) or absorb it through their skin (e.g., chemicals, cleaning solutions).
      ii. What are the negative consequences of this environmental toxin?
   b. Move on to the next toxin. You will come back to this chart in Section IIIA2, where you will introduce more discussion questions related to each toxin and where you will discuss the role of the CCHA in reducing exposures.
4. Review these handouts:
   a. *Handout: Health and Safety Notes: Keeping Children Safe from Pests and Pesticides* (page 41 in module)
   b. *Handout: Health and Safety Notes: Recommendations for Cleaning, Sanitizing and Disinfecting* (page 47 in module)

B. **Topic**: Child Development and Risk of Exposure

Method: Large Group Discussion

Instructions:

1. Ask participants how child development and the behaviors of children affect their risk of exposure to environmental toxins. Ask them why children are especially vulnerable. Refer to pages 3 to 5 of the module to make sure these behaviors are mentioned:
   a. more contact with the ground

b. more time outdoors
c. more hand-to-mouth activity
d. less varied diet
e. biological immaturity

2. Review Table 1, which lists the environmental hazards for children at different stages of development (page 4 in module).

III. The Role of the CCHA in Protecting Environmental Health

A. **Topic**: The Role of the CCHA

Method: Large Group Discussion

Instructions:

1. State that it is the role of the CCHA to:
   a. Observe the program and list the environmental hazards in the program.
   b. Establish policies for managing the hazards identified.
   c. Develop strategies for implementing the policies.
   d. Educate staff on environmental hazards.
   e. Assess the environmental hazards in the program.
   f. Advocate for good environmental practices in the ECE program, the community and the state.
2. Return to the flip chart and, for each toxin, add columns about how to identify the toxin and how to prevent exposure. Ask participants:
   a. How can the CCHA identify each of the toxins listed? (For example, since you cannot see lead, pesticides, water pollution and some air pollution, how can you identify them?)
   b. How can the CCHA help prevent exposures to each of these toxins? For example, how can lead exposure be prevented? How can pesticide exposure be prevented? (See *Appendix 16A* for sample answers. Obtain a few answers in each category and give participants an understanding of the types of issues without trying to fill out all the possible information.)
3. Review the following handouts:
   a. *Handout: Child Care Inventory For Air Pollution Hazards* (page 59 in module)
   b. *Handout: Child Care Inventory For Water Pollution Hazards* (page 64 in module)
   c. *Handout: Supplementary Materials on Environmental Topics of Special Interest to ECE Providers* (page 65 in module)

B. **Topic**: Environmental Health Issues

Method: Small Group Activity

Instructions:

1. Divide into four groups. Give each group one scenario from *Activity 1* on page 19 of the module. Give them 10 minutes to read the scenario, and then discuss and answer the questions below.
2. Have one member from each group report back to the large group.

C. ***Optional Topic:*** *Policy Development*

Method: *Small Group Activity*

Instructions:

1. *Divide into groups. Assign, or ask participants to select, one environmental hazard for children in ECE programs in order to write a policy about that hazard. Discuss the answers to the prompts in* Activity 2 *on page 20 of the module. Give participants 10 minutes to work on creating a policy.*
2. *Have one member from each group report back to the larger group.*

D. **Topic**: Review of Child Care Program Chemical Hazards

Method: Large Group Activity

Instructions:

1. Refer to *Activity 3* on page 21 of the module. Using *Handout: Less Toxic Alternatives to Common Hazardous Household Products* (page 53 in module), look at the common products and chemicals found in ECE programs and talk about other products that could be used instead.
2. Next, refer to the standards in *Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs, Second Edition* (CFOC). See page 22 of the module for a list of standards related to environmental health. State that participants can use these standards as a reference to find out when certain products must be used and what cautionary recommendations are given for the use of each chemical.
3. Note to Trainer:
   a. When looking for the least toxic alternatives, toxicity must be weighed against the efficacy of the product and the burden of possibly spreading serious disease to young children.
   b. CFOC provides some background information on the topic of sanitizers and disinfectants that may help to distinguish which alternative products can be used in group care and which ones should be confined to personal household use:
      i. *Appendix I, Selecting an Appropriate Sanitizer*: This appendix could be a supplementary handout for this activity.
      ii. *Appendix J, Cleaning Up Body Fluids*: This appendix discusses appropriate products to be used.
      iii. Section 3.3, *Sanitation, Disinfection, and Maintenance*: This section contains more information on the topic of cleaning, including a table on page 106 that presents the recommended frequency for cleaning and sanitizing areas in ECE programs.

If you have experienced CCHAs in the room, do one or more of the following:

1. Ask them to describe the policies they have in place regarding cleansing and sanitizing.
2. Ask them to describe how they minimize children's exposure to environmental toxins.
3. Ask them to describe how they protect children from sun exposure.
4. Pair them up with nonexperienced participants and instruct the nonexperienced to ask questions of the experienced CCHAs about what steps they have taken to reduce exposure to environmental toxins.

IV. Summary and Closure

A. ***Optional Topic:*** *Using the Environmental Health Module*

Method: *Small Group Activity*

Instructions:

1. *Explain to the participants that the curriculum is a rich resource for them and encourage them to become familiar with it. Towards this end, spend a few minutes looking through it together. Explain that participants will work in pairs to go through the module to find the answers to these questions.*
2. *Hand out* Appendix 16B. *Tell the participants they have 5 to 10 minutes to locate the answers.*
3. *Note to Trainer: Participants may feel that this is "busy work." Let them know that our goal is to use our time today to give them new tools and resources, and the curriculum is one such resource. Explain that becoming familiar with the curriculum is one way to help them determine how they will improve quality in their setting.*

B. **Topic:** Next Steps for the CCHA

Method: Large Group Discussion

Instructions:

1. State that participants have learned about environmental hazards and about how the CCHA can reduce exposure to them in the ECE setting. Briefly review the key points from Section III, *The Role of the CCHA in Protecting Environmental Health*, and from the activities. Ask participants to describe all the areas in which CCHAs can reduce exposure (e.g., lead testing, water testing, avoiding pesticides, hand washing, increasing ventilation, using sunscreen).
2. Ask participants what practices need to change in their programs in order to reduce or prevent exposure to toxins.
3. If possible, group participants together with colleagues who work from the same ECE program. Ask them to discuss priorities for improving environmental health in their program.

C. **Topic:** Summary and Closure

Method: Brief Closing Activity

Instructions:

1. Summarize the key points shared by participants. Review the role of the CCHA in reducing exposure to environmental hazards.
2. Next Steps: Direct participants to write down what their next steps for improving environmental health in their settings will be. Ask participants to share these with the group.

APPENDIX 16A

Sample Charts on Environmental Toxins in the ECE Setting

(Note: These charts are examples of what trainers might write on their flip charts during the large group discussions in Sections IIA4 and IIIA2. During the discussion, trainers will write down responses provided by participants and will add any information that is important for participants to know. This chart is to be used only as a guide for trainers and is not to be handed out to participants.)

LEAD

Where would you find this toxin in the ECE setting?	• Indoors: – lead-based paint – toys – drinking water in lead pipes • Outdoors: – soil
How is this toxin taken in? (e.g., by ingesting, inhaling, skin absorption)	• By ingesting lead dust or particles from paint, water or soil. • By inhaling through air from nearby industries producing lead-containing materials. • By drinking water from pipes containing lead. • By working with arts and crafts.
What are the negative consequences of exposure to this toxin?	• Lead poisoning affects every system in the body. • Symptoms are not obvious, except at very high levels. • At low levels: – lower IQ, impaired neurobehavioral development, decreased size and growth, impaired hearing • At higher levels: – coma, convulsions, death
How can you identify this toxin?	• Accurate detection of lead hazards in the environment requires professional expertise (see module). To find out if a child has elevated blood levels, you must test the child.
How can you prevent or minimize exposure to this toxin?	• Test soil. • Remove or encapsulate paint. • Replace window treatments. • Keep the ECE program clean and free of dust. • Wash hands. • Take off shoes.

PESTICIDES

Where would you find this toxin in the ECE setting?	• Indoors: – disinfectants, fungicides – sprays or powders for killing bugs – food – drinking water – pets (e.g., flea collars, shampoos, sprays, dust on fur) • Outdoors: – residential community spraying – playgrounds – insect repellants – residues of pesticides used in the present and those used in the past (e.g., some pesticides remain in the soil for up to 20 years)
How is this toxin taken in? (e.g., by ingesting, inhaling, skin absorption)	• By inhaling (e.g., pesticides in the air or dust). • By swallowing (e.g., from soil children play with in outdoor play, pesticide residues on food, hand-to-mouth activity after playing on playground equipment treated with arsenic). • By absorption (e.g., playing on playground equipment treated with arsenic).
What are the negative consequences of exposure to this toxin?	• Acute symptoms, such as nausea, headache, dizziness and respiratory irritation, may occur from exposure to pesticides. • Studies have shown that children who are exposed to pesticides also have a higher incidence of chronic health problems, such as neurological disorders, leukemia and other cancers, and have a greater risk of developing asthma (Integrated Pest Management [IPM] Institute, 2004).
How can you identify this toxin?	• Since pesticides are invisible, it is hard to identify pesticide exposure unless you have seen pesticides used or unless you have used them yourself. ECE providers should find out if pesticides are allowed in their community parks, if pesticides are used in these parks and if pesticides have been applied in the outdoors surrounding their facilities.
How can you prevent or minimize exposure to this toxin?	• Indoors: – Take steps to make the environment less attractive and hospitable to pests so that the use of pesticides can be avoided (e.g., keep food secured in tins, restrict eating to certain areas, throw out trash at the end of the day). – Vacuum frequently. – Wash produce carefully, as nonorganic produce may have pesticide residue on it. • Outdoors: – Keep shrubs and wood mulch at least 1 foot away from play structures and buildings. – Reduce clutter, which gives pests easy places to hide. – Use trash cans with tightly fitting lids. – Choose plants suited to the soil and climate of the site so that fungicides, herbicides and insecticides are not as necessary. – Use predators like ladybugs to control unwanted insects.

AIR POLLUTION

Where would you find this toxin in the ECE setting?	• Indoors: – air affected by mold, dust mites, gas or wood ranges, stoves, furnaces, household cleaning products, air fresheners, building insulation, glues and permanent markers • Outdoors: – air affected by factories, power plants, dry cleaners, vehicles, agricultural activities and windblown dust • See Table 2 on page 8 of the module.
How is this toxin taken in? (e.g., by ingesting, inhaling, skin absorption)	• By inhaling.
What are the negative consequences of exposure to this toxin?	• Acute: – eye irritation; burning sensation in eyes, nose and throat; nasal congestion; chest tightness; coughing; wheezing; asthma • Chronic: – asthma, cancer, respiratory infections
How can you identify this toxin?	• Odor. • Symptoms that go away when the toxin is eliminated (e.g., if symptoms decrease when the child leaves the building).
How can you prevent or minimize exposure to this toxin?	• Immediately: – Identify suspected pollutants or remove the children from the environment. – Increase ventilation. – Open windows and doors to the outside. • Indoors: See Table 3 on page 11 of the module. • Outdoors: Consult news media or Web site updates.

WATER POLLUTION

Where would you find this toxin in the ECE setting?	• Most public water in the U.S. is safe, unless there is accidental pollution. • Well water, however, is not subject to regulation. ECE providers must test the water to make sure it is safe.
How is this toxin taken in? (e.g., by ingesting, inhaling, skin absorption)	• By ingesting: – drinking polluted water – residue from raw foods rinsed with polluted water – eating fish or shellfish from polluted water • By absorbing: – swimming or wading in polluted water
What are the negative consequences of exposure to this toxin?	• stomachaches • diarrhea
How can you identify this toxin?	• Test water supply. • Stay informed about water quality through County Water Boards (see page 14 of the module).
How can you prevent or minimize exposure to this toxin?	• Check to see if your water system meets all drinking water standards. This report is available online at: http://www.epa.gov/safewater/dwinfo.htm. • If interior or service piping or joint seals contain lead, have your drinking water (private and public) tested for lead. • Make sure water and plumbing systems meet state and local regulations for buildings. • If using water from a private well, have it tested regularly. • Consider using a certified water filter. • Store water for emergencies.

SUN

Where would you find this toxin in the ECE setting?	• Children are exposed to hazards from the sun during outdoor play, even during cloudy weather.
How is this toxin taken in? (e.g., by ingesting, inhaling, skin absorption)	• By being exposed to ultraviolet radiation.
What are the negative consequences of exposure to this toxin?	• Short-term: – redness – sunburn • Long-term: – cancer
How can you identify this toxin?	• Ultraviolet rays are present even on cloudy days—the sun does not have to be out.
How can you prevent or minimize exposure to this toxin?	• Apply sunscreen with an SPF of 15 or more 30 minutes before going outside. • Wear protective clothing. • Wear sunglasses that block 99% to 100% of ultraviolet rays. • Avoid sun exposure between 10 a.m. to 4 p.m. • Keep infants under 6 months of age out of direct sunlight. Never leave infants to play or sleep in the sun.

APPENDIX 16B

Using the Environmental Health Module

Topic: Using the Environmental Health Module

Method: Small Group Activity

Instructions: Review the module and find the answers to the following questions.

According to the module:

1. How do you handle foods safely during warm weather?

2. What are some measures to take after using arts and crafts in order to minimize exposure to hazards?

3. What labels should art materials have on them to show that they are safe?

4. What are some health consequences of secondhand smoke in children?