Project Overview

The Building a Healthy Start: Professional Development for Caregivers of Infants and Toddlers Project (the Project) is administered by the Alabama Department of Public Health (ADPH) and funded by the Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services. The Project’s purpose is to improve the quality of infant and toddler child care in Alabama by integrating nationally recognized health and safety standards into a professional development project. The Project is comprised of six best practice training modules for caregivers of infants and toddlers to be developed and released over a three-year period. Creating a Healthy Environment for Infants and Toddlers in Early Childhood Settings is the fourth module in this series. The first three modules—Feeding Infants and Toddlers in Early Childhood Settings, Promoting Physical Activity for Infants and Toddlers in Early Childhood Settings, and Protecting Infants and Toddlers in Early Childhood Settings from Disaster—have been published and are available on the Project’s website at www.adph.org/healthystart. The remaining modules will address social emotional development and child abuse and neglect prevention. The training modules are based on 28 standards from Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition (CFOC3).

Training module content was researched and written by an early childhood curriculum specialist with experience and expertise in health and safety consultation in early childhood settings and guided by the oversight of an expert work group under the leadership of the project director. Members of the work group include pediatricians, professional development leaders, child care health consultants, early care and education professionals, and leaders from Alabama’s Office of Child Care Licensing and its Quality Rating and Improvement System, Alabama Quality STARS. Additional guidance and technical assistance was provided by Barbara U. Hamilton, M.A., the Early Childhood Comprehensive Systems federal grant officer for this Project.

The Project training modules are not intended to be a comprehensive curriculum for caring for infants and toddlers in early childhood settings. Each module addresses a specific issue and focuses on information specific to the care of infants and toddlers related to that issue. A developmental approach is integrated into each module because of its vital importance to optimal health outcomes during the first three years of life. The Project staff and work group members hope that these training modules enhance the knowledge and skills of the caregivers who participate and improve the quality of care that they provide to Alabama’s youngest and most vulnerable citizens.

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Instructions for Trainers

Target Training Population
This module is designed to train caregivers of infants and toddlers on creating healthy environments in early childhood settings. Content is appropriate for a variety of early childhood settings including center- and family-based child care, Early Head Start, Department of Defense community services programs, and teacher preparation programs.

Length of Training
The training module may be taught in one two-hour session or two one-hour sessions at the discretion of the trainer. The length of training is dependent on learning needs and the trainer’s preferences regarding utilization of participant activities.

Module Description
The training presentation includes colorful slides to lead participants in discussion relevant to their specific settings and the infants and toddlers in their care. The module includes the following components:

- learning outcomes
- detailed outline of content
- PowerPoint presentation
- instructions for participant activities
- materials list for activities and visual aids
- pre- and post-test questions
- reproducible handouts
- reproducible evaluation forms

The module is packaged on a compact disc. Master copies of participant handouts are included so trainers can make the appropriate number of copies. Trainers are encouraged to select or develop additional handouts to meet the specific training needs of each target audience.

The training guide outline is numbered to match the slides. The PowerPoint slide presentation is protected to prevent printing of slides as handouts. Copies of the presentation slides may not be used as handouts.

Equipment
A laptop and projector are needed to project the PowerPoint slide presentation during the training session. A flipchart, chalkboard, or whiteboard may be used during class discussion.

Supplemental Materials
Supplemental materials will be needed by the trainer for participant activities and demonstration purposes to enhance training and facilitate learning. Existing supplies may be utilized or new items may be purchased. Recommended supplemental materials include copies of weather forecasts, labels from cleaning products and
pesticides, examples of products with and without fragrance, and smoke and/or carbon monoxide detectors.

**Compliance with National Standards**
Information and recommendations presented in these training modules are current and in compliance with national standards and recommendations in effect at the time of publication. Information presented reflects best practice as presented in the following documents:

- Other national criteria or recommendations, as appropriate and relevant to the specific topic.

It is the responsibility of the trainer to review materials prior to presentation, and include any additional information that may be required by state and local regulations.

**Training Information Disclaimer**
Content is designed to provide information appropriate for early childhood teachers, caregivers, and families. Individual consultation by a child care health consultant or other health care professional may be required to address specific situations or needs. Training information related to illness or injury, medical services, or consumer products is not intended for diagnosis or treatment. Questions or situations related to individual children should be referred to an appropriate health care provider.

**Instructions for Teaching the Module in Two Sessions**
This module may be taught in one two-hour session or two one-hour sessions. If the trainer opts to teach the module in two sessions, the first session will consist of Part 1 Environmental Health Overview, Air Quality, and Mold. The second session will consist of Part 2 Carbon Monoxide, Childhood Lead Poisoning, Integrated Pest Management, and Poisoning Prevention. If teaching the module in two sessions, the introductory slides (1-7) and concluding slides (86-88) should be used at each presentation. The first and second learning objectives and the first five pre- and post-test questions pertain to Part 1. The third and fourth learning objectives and last five pre- and post-test questions pertain to Part 2.
1. **Title Slide: Creating a Healthy Environment for Infants and Toddlers in Early Childhood Settings.**

The Alabama Department of Public Health received a grant from the Maternal and Child Health Bureau (#H25MC00238) to focus on the improvement of Alabama’s infant/toddler child care quality by integrating nationally recognized health and safety standards into a professional development project. This project, *Building a Healthy Start*, will develop and deploy six best practice training modules for caregivers of infants and toddlers over a three-year period. *Creating a Healthy Environment for Infants and Toddlers in Early Childhood Settings* is the fourth module in this series. The first three modules—*Feeding Infants and Toddlers in Early Childhood Settings*, *Promoting Physical Activity for Infants and Toddlers in Early Childhood Settings*, and *Protecting Infants and Toddlers in Early Childhood Settings from Disaster*—have been published and are available on the Project’s website at [www.adph.org/healthystart](http://www.adph.org/healthystart). The remaining modules will address social emotional development and child abuse and neglect prevention. The training modules will incorporate 28 standards from *Caring for our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, Third Edition (CFOC3).

2. **Introduction**

3. **Learning Outcomes**

   At the end of this session, participants will be able to:
   - Identify sources of airborne contaminants.
   - List ways to reduce airborne contaminants in the child care environment.
   - Recognize sources of surface contaminants.
   - List ways to reduce surface contaminants in the child care environment.

4. **Pre-Test**

   Please have participants complete the pre-test questions at this time.

5. **Caring for Our Children**

   CFOC3 is the definitive source on best practice in health and safety in early care and education settings. These standards are evidence based, have expert consensus, and are nationally recognized as model standards for health and safety practices.

   CFOC3 was developed through a collaborative partnership between the following organizations:
• American Academy of Pediatrics (AAP)
• American Public Health Association (APHA)
• National Resource Center for Health and Safety in Child Care and Early Education (NRC)

Visit www.nrckids.org to browse the CFOC3 standards. Content for this training session includes standards presented in Chapter 5, Facilities, Supplies, Equipment, and Environmental Health. Standards that are specifically addressed in this training are listed in Appendix A of this training guide. Information from additional CFOC3 standards has been incorporated where appropriate.

6. **Standards, Guidelines, and Regulations**

Best practice in child care is based on standards, guidelines, and recommendations.

- **Standard:** A statement that defines a goal of practice. It is usually based on scientific or epidemiological data. A standard is set as the strongest criterion for best practice in a given area by an organization or association.
  
  Examples:
  - CFOC3
  - ASTM International Standards for product safety, such as cribs

- **Guideline:** A statement of advice or instruction. A guideline originates from an organization with acknowledged standing.
  
  Examples:
  - Choose My Plate campaign
  - Let’s Move Child Care campaign

- **Regulation:** A standard or guideline that becomes a requirement for legal operation. A regulation originates in an agency with governmental or official authority and is accompanied by enforcement activity.
  
  Examples:
  - Alabama Department of Human Resources (DHR) Licensing Standards
  - Head Start Program Performance Standards
  - U. S. Department of Agriculture (USDA) Child and Adult Care Food Program

**NOTE:** The content of this module is based on the best practice standards published in CFOC3. These standards may or may not have been adopted as regulations in Alabama. Caregivers should be familiar with state and local child care regulations and operate in compliance with such regulations.
7. Standards, Guidelines, and Regulations Related to Environmental Health in Early Care
Standards, guidelines, and regulations related to environmental health in early childhood settings can be found in the following documents and on organizational websites:
- Caring For Our Children, 3rd edition (CFOC3)
- Child care licensing regulations
- Local health department regulations for child care
- Head Start Program Performance Standards
- Child care accreditation standards
- Environmental Protection Agency (EPA) standards
- American Academy of Pediatrics (AAP) guidelines

8. Part 1: Overview

9. Environmental Health in Early Childhood Settings
Environmental health is the field that studies how substances or other environmental factors have an impact on human health.

The environment includes air, water, surfaces, and items with which infants and toddlers come in contact.

10. The Environment
The infant/toddler environment in an early childhood program includes these areas:
- Indoors—nursery, classroom, bathrooms, kitchen, etc.
- Outdoors—playground, lawn, sand and water play areas
- Vehicles—vans or buses used to transport children
- Storage areas—closets, basements, garages

11. Environmental Factors
Substances and factors that can impact the health and well-being of infants and toddlers include, but are not limited to:
- Dust, dirt, and irritants.
- Fragrances and airborne particles.
- Chemicals and toxins.
- Mold.
- Pests.
12. **Environmental Factors**...

Environmental factors can cause, trigger, or exacerbate child health conditions, such as:
- Asthma.
- Allergic reactions.
- Respiratory illness.
- Poisoning.

13. **Infant and Toddler Vulnerabilities**

Infants and toddlers are more vulnerable than adults to risks associated with environmental factors.

Anatomic:
- The body size and surface area of young children increases the risk of injury from exposure to chemicals, molds, toxins, and other substances.
- Their skin is thinner than adult skin, making it easier to absorb harmful chemicals and toxics.

Developmental:
- Infants and toddlers are curious and touch everything, often by mouthing. They put objects in their mouths, and also put their mouths on tables, window sills, and other surfaces.
- Young children crawl, sit, and scoot along the floor and ground where chemicals, toxins, and irritants can collect.

Physiologic:
- The brain, immune system, and other physiologic functions are developing.
- Infants and toddlers breathe more air for their size (compared to adults). Therefore, they are more likely to be affected by airborne chemicals, molds, and irritants.

14. **Part 2: Air Quality**

15. **What is Air Quality?**

The term “air quality” means the state of the air around us. This term does not indicate whether the air is clean and healthy, or unhealthy.

Most people are familiar with the term “air pollution.” Air pollution occurs when the air—whether indoors or outdoors—contains gases, dust, fumes, or odors in amounts that could be harmful to children’s health or comfort.
16. **Indoor Air Quality**  
Many people think of air pollution only in relation to outside activities. However, indoor air pollution levels are often greater than outdoor air pollution levels.

- Outdoor air pollutants may enter the facility. Exhaust from vehicles or lawn equipment, dust, and pollen can enter the building as people enter and leave the building.
- Newer homes and buildings are often well insulated, with airtight seals around doors and windows. If outdoor pollutants enter the facility, the facility may lack adequate air filtration and ventilation to remove air pollutants.
- The presence of dirt, contaminants, moisture, and warmth inside the facility can encourage the growth of mold. Mold spores can become airborne.

17. **Infant and Toddler Vulnerabilities**  
Young children are more vulnerable than adults to airborne contaminants.

- Infants and toddlers have a high respiratory rate and a larger lung surface area in relation to their body weight. They breathe more air per kilogram of body weight.
- Their lungs, immune system, and brain are immature and rapidly developing. The cell layer lining the inside of the respiratory tract is particularly permeable during this age period. Infants who were born prematurely or with low birthweight may be particularly vulnerable.
- Their height and play habits (e.g., crawling) may expose them to pollutants or aerosols that are heavier than air and more concentrated near ground level.

18. **Air Quality and Children’s Health**  
Good air quality is essential to the health and well-being of all infants and toddlers.

Airborne contaminants—such as tobacco smoke, dust, fragrance, and chemicals—can cause, trigger, or exacerbate asthma and asthma episodes, allergic reactions, and respiratory illness.

It is the program’s responsibility to create and maintain a healthy air quality in all early childhood environments. Good air quality is created and maintained by avoiding introduction of potentially harmful chemicals, contaminants, and odors.
19. **Prohibit Tobacco Products**
Secondhand smoke is the smoke and other airborne products from burning tobacco products, such as cigarettes. Secondhand smoke can enter the early childhood environment through doors and windows. Prohibit smoking and all tobacco use not only in the facility, but everywhere on the program’s property.

- Exposure to smoke and residue from tobacco products can lead to asthma, sinus and ear infections, allergies, and respiratory problems.
- Exposure to smoke increases the risk of sudden infant death syndrome (SIDS).
- Tobacco smoke is harmful to unborn infants.

20. **Prohibit Tobacco Products. . .**
Thirdhand smoke is the smell, nicotine, and other chemicals that remain on surfaces and in dust after tobacco is smoked. These contaminants can also remain after the use of other tobacco products, such as smokeless tobacco.

Tobacco residue can stay on the hair, skin, and clothes of individuals who use tobacco products or who are around tobacco smoke. This residue also collects on furniture, carpets, and other surfaces. The residue and odor can be even more concentrated in small areas, such as in vehicles.

Thirdhand smoke can linger for months, long after secondhand smoke clears. It is difficult to remove, and requires deep cleaning and/or replacement of items.

Fabric refreshers do not remove tobacco residue. Fabric refreshers may mask the tobacco odor but can further pollute the air with additional fragrance.

21. **Prohibit Tobacco Products. . .**
- Every tobacco product, including smokeless tobacco, contains nicotine, odor, and other potentially harmful chemicals.
- The use of all forms of tobacco should be prohibited in early childhood settings.
- Tobacco products are toxic if ingested. Tobacco products must be out of children’s sight and out of children’s reach.

22. **Prohibit Tobacco Products. . .**
The prohibition of all smoking and tobacco use in early childhood settings:
- Includes all areas—indoors, outdoors, and in vehicles.
- Applies to volunteers and visitors.
- Covers all work hours, including during lunch and breaks.
Staff who are smokers or who live with someone who smokes should wear clean tunics over clothing each day. Tunics should be laundered frequently, and stored at the early childhood program.

23. **Electronic Cigarettes**

Electronic cigarettes (e-cigs) are battery-operated devices that can look, act, and taste like a real tobacco cigarette. E-cigs can provide the user with nicotine and the act of smoking.

E-cigs consist of a liquid cartridge, a battery, and an LED light. When turned on, the e-cig heats the liquid producing an aerosol mist or vapor that can be inhaled. This process is called “vaping.”

E-cigs generally include nicotine, chemicals to vaporize the nicotine, additives, and flavoring.

While the toxicant levels of e-cigs is lower than in cigarette smoke, they can produce substances that worsen indoor air quality. In addition to nicotine, e-cig smoke may contain formaldehyde, metals, and silicate particles. Additional research is being conducted.

Another danger of e-cigs is childhood poisoning. The nicotine liquid can be ingested, inhaled, or absorbed through the skin and eyes. The Centers for Disease Control and Prevention (CDC) reported that more than half of the calls to Poison Control Centers due to e-cigs involved young children under age 5 years.

The use and storage of e-cigs should be prohibited in and around early childhood settings.

24. **Maintain Easy-to-Clean Surfaces**

Reduce airborne contaminants, as well as germs, by keeping surfaces clean.

- Maintain floors, walls, and ceilings in good repair.
- Have easy-to-clean flooring (e.g., vinyl, hardwood).
- Place non-slip rugs at entrances to catch dirt. Carpet and rugs should be clean, nonflammable, and nontoxic.
- Have smooth, nonporous surfaces in hand washing, toileting, and diapering areas. Tile, vinyl, and enamel paint are easy to clean.
- Have smooth, nonporous surfaces in food preparation areas.
25. **Reduce Dust and Irritants**

Dust and irritants can accumulate on surfaces, such as furniture, shelving, window coverings, floors, and carpets. Electronic equipment, such as televisions and computers, attract dust.

- Eliminate clutter.
- Clean tables, counters, and other surfaces daily.
- Dust and clean surfaces—such as shelving, furniture, and storage units—regularly.
- Clean floors and vacuum carpet and rugs daily.
- Remove dust from ceiling fans, light fixtures, and electronic equipment regularly.

26. **Use Effective Cleaning Tools**

- Utilize microfiber cloths and mops to effectively pick up dirt, oils, and germs while requiring less detergent. Launder microfiber cloths only with other microfiber cloths, and without bleach or softener.
- Clean surfaces with disposable wipes.
- Avoid sponges, which can provide a breeding ground for germs.
- Use a vacuum with a HEPA filter to clean floors and carpet. Remember to clean under and behind furniture.
- Vacuum upholstered furniture, including under cushions.

27. **Cleaning Products**

Use the least-toxic cleaning and sanitizing products. A good “rule of thumb” is to look for products that contain the fewest ingredients.

In addition, choose products that are:
- Fragrance-free, and with no strong chemical smell.
- Dye-free.
- Non-aerosol. (Pump spray bottles may be used when children are not present.)

Remember – the smell of clean is no smell at all!

28. **Cleaning Products**

Read the product label and avoid products with “Danger” on the label.

- **Danger** means the product is highly toxic if eaten, absorbed through skin, splashed in eyes, or inhaled. Improper use could cause illness, injury, or even death. Danger is also used on products that could explode if exposed to heat.
- **Warning** is less strong, but the product could cause illness or injury. Warning also identifies products that could easily catch on fire.
• Caution is used on less harmful products. However, products could irritate skin and eyes, and cause illness if inhaled.

Always use and store products according to manufacturers’ instructions.

29. Cleaning Products...
Look for products with independent third-party certification:
• Green Seal
• EcoLogo
• The EPA’s Design for the Environment

These organizations look at effects on human health, wildlife, and the environment when they test cleaning products.

Remember, the words “natural,” “nontoxic,” and “green” are not regulated and do not assure product safety.

Participant Activity:
Give participants empty clean containers from a variety of cleaning and other products. Have participants explore the labels and compare products for number of ingredients, fragrance, third-party certification, instructions for use (e.g., concentrate, ready-to-use), country of origin/distribution, etc.

30. Reduce Fragrance
• Avoid air fresheners, room sprays, plug-ins, candles, potpourri, “odor eliminators,” and other scented products that mask odors.
• Do not use powder or spray cleaners and fresheners on rugs, upholstered furniture, and curtains.

For example, you can reduce odors by cleaning with hydrogen peroxide, baking soda, or vinegar.

31. Reduce Fragrance...
• Avoid use of perfumes, colognes, and other scented body products when coming to work.
• Avoid scented laundry products. Choose dye-free and fragrance-free detergent, fabric softener, and dryer sheets. For example, adding ½ cup white distilled vinegar to the laundry rinse cycle helps to remove chemicals and soften clothes but does not add fragrance.
• If staff members use scented laundry products on personal clothing, then provide clean tunics to cover clothing.
Participant Activity:
Ask participants about areas in their child care environment that may have odors, such as diaper changing areas, bathrooms, garbage cans, etc. Discuss ways to reduce or prevent odors.

32. Reduce Chemicals and Odors
- Avoid products that emit odors, such as foam floor matting. If a product has a strong odor when purchased, “air it” outside or in a room away from children until the odor dissipates.
- When purchasing furniture, avoid products of pressed wood, plywood, and particle-board. These wood products may contain formaldehyde or other volatile organic compounds (VOC’s). VOC’s become a gas at room temperature and release into the air. Furniture may release gas for up to five years. Instead, purchase furniture that is over five years old, or furniture made of solid wood, glass, metal, or chrome.
- When painting, use products labeled “low-VOC,” “no-VOC,” or “odorless.” Avoid spray painting. After painting, allow 24 hours of ventilation before re-entering the area.

33. Ventilate
Building ventilation is the circulation of air throughout a structure. Adequate ventilation helps remove formaldehyde and other chemicals.

Many newer buildings have greatly reduced air flow because of insulation and tightly sealed doors and windows. Increase ventilation naturally by occasionally opening screened windows and using fans.

Windows can be opened if:
- Weather permits.
- Windows have screens and barriers to prevent falls.
- Outside air quality index is good.

When the weather is good, consider opening windows and using fans for a few minutes before children arrive or after they leave.

34. Maintain HVAC System
Building ventilation is also accomplished through the heating, ventilation, and air conditioning (HVAC) system. HVAC systems include all the equipment used to ventilate, heat, and cool the building; ductwork to move air around the building; and filters to clean the air.

Improper use and maintenance of HVAC systems can impact indoor environmental quality. Air filters can become saturated leading to mold growth.
and odors. Mold can also grow in stagnant water in drain pans, and in uncontrolled moisture inside air ducts and cooling coils.

Ensure that the HVAC system is properly maintained and meets legal standards. Have the HVAC system checked at least annually by a licensed professional.

Use high-efficiency filters in the HVAC system; look for filters labeled “true HEPA.” Check filters monthly. Clean or replace filters as needed (i.e., when visibly dirty) or as recommended by the manufacturer. Most filters should be replaced every 1-3 months.

35. **Air Cleaners**
Most allergens and irritants are located on surfaces, rather than in the air. Air cleaners may or may not reduce allergens and irritants.

Air cleaners should be considered supplemental and may be recommended for people with allergies and asthma, but are not a solution.

There are no national standards on air cleaner performance, so it is important to choose wisely when purchasing. Questions to ask if purchasing an air cleaner:
- What substances will the cleaner remove?
- What is the efficiency rating compared to “true HEPA” standard?
- Will it clean the air in the room (square footage)?
- Are filters easy to change? Are filters readily available and affordable?
- How much noise does it make?

Avoid using air cleaners that produce ozone, which is a known irritant of the lungs and respiratory system.

36. **Air Quality Index**
The Air Quality Index (AQI) is the system used to warn the public when air pollution is dangerous. Keeping track of the current AQI in your area can help you take steps to protect children and yourself.

AQI is often presented through a color-coded warning system.

- Green (good) means the air quality is considered satisfactory; the air poses little or no health risk.
- Yellow (moderate) air quality is acceptable; however, there may be a moderate health concern for a very small number of people.
- Orange means the air is unhealthy for sensitive groups, including infants and toddlers.
• Red means the air is unhealthy and children, active adults, and people with respiratory disease should avoid prolonged outdoor exertion.

37. **Outdoor Air Quality**

AQI forecasts may be included in your local weather forecast on TV and radio. You can also access local AQI forecasts online at:

- [www.airnow.gov](http://www.airnow.gov)
- [www.enviroflash.info](http://www.enviroflash.info)

If the AQI is Code Orange or above, then limit outside activities and keep windows closed.

**Participant Activity:**
Give participants copies of several weather forecasts in the newspaper, or screen shots of website or TV weather forecasts. Try to have forecasts with diverse AQI, such as forecasts for different seasons (e.g., summer, winter) or seasonal trends (e.g., pollen count). Ask participants to find the AQI and other information that could impact outdoor play for children.

Discuss whether outdoor play is advisable, any limitations or precautions, and alternative indoor activities.

38. **Outdoor Air Quality**...

Outdoor air quality can be affected by both natural and man-made products and activities.

- Transportation sources (vehicles, trains, planes, and ships) can release chemicals that may be harmful in gasoline and diesel exhaust. Early childhood facilities are at higher risk if they are located within 500 feet of major roadways or heavy bus traffic.
- Adopt a “no-idling” policy. All vehicles must be turned off when parked near the early childhood facility.

39. **Outdoor Air Quality**...

- Air quality can vary seasonally due to dust and pollen.
- Wildfire and other incidents can produce smoke and irritants.
- Industry—such as factories, power plants, and smelters—may release particles and irritants.
- Farming activities may produce airborne chemicals, including fertilizers, herbicides (weed killers), and insecticides.
40. Part 3: Mold

41. Mold
In nature, molds (fungi) help break down dead materials and can be found growing on soil, food, plant matter, and other items. Molds produce microscopic cells called "spores" that spread easily through the air.

Tiny particles of mold are naturally present in indoor and outdoor air. Live spores form new mold colonies when they find the right conditions.

Indoors, molds can grow on any organic substance, such as wood, paper, carpet, foods, and insulation. If mold is permitted to grow and multiply indoors, building materials, goods, and furnishings may be damaged.

42. Mold...
People are exposed to mold by breathing spores or other tiny fragments. People can also be exposed through skin contact with mold contaminants and by swallowing them.

All types of mold have the potential to affect human health. Infants and toddlers are more likely to be affected sooner and more severely than adults.

Molds produce allergens, irritants, and in some cases, toxins that may cause reactions in humans. The type and severity of symptoms depend, in part, on the types of mold present, the extent of an individual's exposure, the age of the individual and existing sensitivities or allergies.

43. Mold...
Allergic reactions to mold are common; these reactions can be immediate or delayed.

Mold can trigger a variety of health problems, such as:
- Headaches.
- Cough, wheezing, and breathing difficulties.
- Runny nose, sinus congestion, and upper respiratory infection.
- Skin irritation.
- Eye irritation.
- Aggravated asthma symptoms.

44. Signs of Mold Problem
Mold often appears as discoloration, staining, or fuzzy growth on the surface of building materials or furnishings. Visible mold growth may appear cottony,
velvety, granular, or leathery. Mold may have varied colors of white, gray, brown, black, yellow, or green.

- Search areas with noticeable mold odors.
- Look for signs of excess moisture or water damage.
- Search behind and underneath furniture and stored items, especially items placed near outside walls or on cold floors.
- Search underneath carpet and pad, wallpaper, vinyl flooring, and sink cabinets.

45. Control Moisture
It is impossible to eliminate all molds and mold spores in the indoor environment. Controlling excess moisture is the key to preventing and stopping indoor mold growth.

- Remove standing water. Check appliances, such as hot water heaters and refrigerators, which have overflow trays.
- Remove unused appliances, such as dishwashers and washing machines.
- Fix leaks promptly, including faucets.
- Use ventilation fans in kitchen and bathroom areas.

46. Control Moisture...
- If carpets or rugs are steam-cleaned or shampooed, be sure they dry completely. Consider removing carpet if it has been wet longer than 48 hours.
- Launder wet towels and items daily.
- Clean hand washing and toileting areas daily. Clean spills immediately.

47. Control Moisture...
Moisture that starts outdoors can create mold and mildew issues indoors.

- Eliminate standing water.
- Make sure rain and ground water flow away from building.
- Remove items that could hold water, such as tires and buckets.
- Check plumbing and water lines entering the building.

48. Part 4: Carbon Monoxide
If teaching all the material in one training session, a break may be taken here.
49. **Carbon Monoxide (CO)**

CO is called the “Invisible Killer.” It is a colorless, odorless, poisonous gas. You can’t smell it, see it, or taste it—but CO can kill you and your children. About 170 people in the United States die every year from CO poisoning associated with consumer products, such as generators and stoves. In 2005, the Consumer Product Safety Commission (CPSC) reported at least 94 deaths related to generator usage. Half of these deaths occurred during power outages (e.g., Hurricane Katrina).

CO enters the lungs and is transported by the bloodstream. It prevents the blood from carrying oxygen.

Symptom severity is related to both the CO level in the blood and the duration of exposure. Initial symptoms may be similar to the flu, such as headache, fatigue, shortness of breath, nausea, and dizziness.

High level CO exposure is often associated with use of generators in residential spaces. High level exposure may quickly cause more severe symptoms, including mental confusion, vomiting, loss of muscular coordination, loss of consciousness, and ultimately death.

50. **Carbon Monoxide (CO)**

CO is produced by the incomplete burning of various fuels, including coal, wood, charcoal, oil, kerosene, propane, and natural gas.

CO can be produced by malfunctioning fuel-burning appliances, such as furnaces, water heaters, or portable room heaters. To minimize the risk of CO exposure:

- Have appliances installed and serviced by professionals, according to manufacturer’s instructions.
- Have the heating system inspected and serviced annually.

51. **Carbon Monoxide (CO)**

Gas stoves and ovens can be a significant source of CO.

- Install and always use a stove hood that vents to the outdoors to ensure adequate ventilation.
- **Do not** cover the bottom of a gas oven with aluminum foil. Foil blocks the combustion air flow through the appliance and can produce CO.
- **Never** use fuel-burning camping equipment or burn charcoal in an enclosed area.
- **Never** use a gas oven or dryer to heat a room.
52. Carbon Monoxide (CO)...
- Avoid open flames when children are present, such as fireplaces, wood stoves, gas logs, kerosene burners, and oil lamps. If these products are used, ventilate before children enter the room.
- Never use unvented gas-burning appliances (e.g., gas logs) in a closed room.
- Clean chimneys and wood stoves each year. Prevent blockages (e.g., bird nests) in the chimney.

53. Carbon Monoxide (CO)...
CO is produced by internal combustion engines, such as vehicles, trains, planes, and boats. Early childhood facilities are at higher risk if they are located within 500 feet of major roadways or heavy bus traffic.
- Never leave a vehicle running in a garage or where exhaust is blocked or can enter breathing space.
- Adopt a “no-idling” policy. All vehicles must be turned off when near the early childhood facility.

54. Carbon Monoxide (CO)...
CO is also produced by equipment, such as portable generators, lawn equipment (e.g., mowers, blowers), power washers, etc.
- Never operate gasoline or diesel engines (such as portable generators) inside the facility or in an enclosed area.
- Avoid use of such equipment where exhaust can enter the facility.
- Avoid use of equipment when children are present.

55. Carbon Monoxide (CO) Detector
Facilities must meet state or local laws regarding CO detectors. In addition, CO detector(s) should be installed if:
- The program uses coal, wood, charcoal, oil, kerosene, propane, or natural gas either indoors or in an attached garage.
- Vehicles are kept in an attached garage.
- Fuel-powered equipment (e.g., lawn mowers, blowers) is stored in an attached garage or storage unit.

56. Carbon Monoxide (CO) Detector...
Both CO detectors and combination smoke/CO detectors are available. Be familiar with the different alarm sounds. Detectors may be battery operated, hard wired, or plug-in. Hard wired and plug-in detectors should have battery backup.
Test CO detectors weekly. Testing assures that you are familiar with the sound, and that all components are working properly.

Replace batteries as recommended by manufacturer.

Replace CO detectors as recommended. CO detectors made after May 2011 have a 7-year life; in summer 2014, CO detectors with a 10-year life and sealed lithium battery became available.

Consider purchasing a combination smoke and CO detector with a 10-year battery. The 10-year period begins after you purchase the detector, and when you activate the batteries according to manufacturer’s instructions.

The 10-year replacement recommendation is because the components can start failing after that length of time. The sensor may deteriorate, and the battery may begin to drain.

**Participant Activity:**
Show examples of CO detectors, including combination smoke/CO detectors. Check product labels for instructions, replacement recommendations, type of batteries, etc. Activate the alarm test button to demonstrate the difference in alarm sounds for CO and for smoke.

**57. Carbon Monoxide (CO) Detector…**
CO detector recommendations are similar to smoke detector recommendations. Install CO detectors:

- In the hallway near each separate sleeping area (or nursery/classroom).
- On every floor of the early childhood facility.

Do not install CO detectors in garages, attics, or kitchens. The smoke and CO detectors will not work properly in extreme temperatures (i.e., below 40 degrees F or above 140 degrees F). Also, the regular exhaust from vehicles in a garage will ruin the sensors.

**58. Carbon Monoxide (CO) Detector Placement**
Placement of CO detectors is similar to smoke detectors; however, CO detectors must not be installed on ceilings.

- Combination smoke/CO detectors should be wall-mounted, 4 to 12 inches below the ceiling. Never place detectors less than 4 inches from the ceiling; this space is considered “dead air space.”
- Unlike smoke, CO disperses evenly in air. A stand-alone CO detector can be placed lower on the wall (e.g., plug-in receptacle).
• Avoid locations that are near heating/air conditioning vents, fans, or ceiling fans. Air movement from vents and fans can blow debris into the unit. Also, in an actual event, the air movement may blow the CO away from the unit, and therefore the alarm will not sound.
• Avoid locations that may be covered by furniture or draperies.
• Remove dust from CO detectors; dust particles can cause false alarms.

59. **Carbon Monoxide (CO) Alarm Sounds**

Know the alarm sound of the CO detector!!! Be sure you recognize the different sounds for the CO alarm, smoke alarm, and “low battery” alarm.

If you purchase a combination smoke/CO detector, be familiar with the different sounds. The alarm warning sound is different for CO and for smoke.

If the CO detector alarm sounds:
• Immediately move outside to fresh air.
• Call 911.
• Do not reenter the facility until first responders give permission.

60. **Part 5: Childhood Lead Poisoning**

61. **Lead Poisoning**

Lead is a neurotoxin. When inhaled or swallowed, it can act as a poison.

There is no “safe” level of lead exposure. Lead poisoning is asymptomatic at low levels. The only way to find out if a child has lead poisoning is to test his or her blood.

Effects of lead poisoning may include:
• Decreased bone and muscle growth.
• Poor muscle coordination.
• Damage to the nervous system, kidneys, and hearing.
• Speech and language problems.
• Developmental delays.
• Shortened attention span, learning difficulties, and behavioral problems.

Lead poisoning has no cure. The effects cannot be reversed once the damage is done.

62. **Infant and Toddler Vulnerabilities**

Young children are at the greatest risk for lead poisoning.
• Infants and toddlers put unwashed hands, toys, and other objects in their mouths.
• They crawl, sit, and scoot along the floor and ground where dust and soil can collect. They play outside in dirt which may be contaminated.
• They mouth and chew surfaces.
• Infants and toddlers are small, so exposure results in higher doses of contaminants in relation to body weight.

63. Lead Sources
Lead is a naturally occurring element found in small amounts in all parts of our environment—the air, the soil, the water, and inside our homes and buildings.

Lead paint is the most widespread source of lead exposure. In 1978, the Consumer Product Safety Commission (CPSC) banned the manufacture of lead paint. However, many homes and facilities built before 1980 contain lead paint.

Lead paint may be found on:
• Kitchen and bathroom walls, doors and windows, and wooden trim in homes and facilities built before 1980.
• Painted toys and furniture made before 1978.
• Newer such items made outside the United States.

Exposure occurs when:
• Children mouth or chew painted items and surfaces.
• Painted surfaces are sanded, releasing fine dust into the air.

64. Lead Sources...
Prevent exposure to lead paint by:
• Maintaining paint on walls, window sills, and other painted surfaces.
• Taking precautions when sanding painted surfaces.
• Disposing of painted toys and furniture made before 1978.
• Being sure all toys and art supplies are labeled “non-toxic.”

65. Lead Sources...
Lead from paint, gasoline, and hobbies may be found in soil and dust. Higher lead concentrations may be found in soil:
• Near roadways, gas stations, and car-repair shops.
• Where vehicles have been parked.
• Near buildings with lead paint.
• Where hobbies—such as ammunition reloading, soldering, and pottery—take place.
Prevent exposure to lead in soil by:
- Washing children’s hands after outdoor play and before eating.
- Placing non-slip rugs at entrances to catch dirt.
- Damp-mopping floors. Wet-wipe windows and other surfaces.
- Planting grass or other ground cover in children’s play areas.
- Regularly washing outdoor toys.

66. Lead Sources...
Contamination of drinking water with lead can occur through plumbing pipes. Buildings built before 1920 may have lead pipes, and facilities built before 1990 may have copper pipes with lead-soldered joints. Water standing in these pipes may become contaminated with lead.

Prevent exposure to lead in water by:
- Using only cold tap water for drinking and cooking.
- Running tap water for a few seconds to flush pipes before using water for making formula, drinking, and cooking.

67. Lead Sources...
Lead may be found in other items. Keep items, such as the following, out of children’s sight and out of their reach:
- Bullets and ammunition supplies, fishing sinkers, and curtain weights.
- Supplies for soldering, pottery glazing, and making stained glass and jewelry.
- Pewter pitchers, china dinnerware, or leaded glassware.
- Pottery and ceramic items made outside the United States.

68. Part 6: Integrated Pest Management

69. Integrated Pest Management
The term “pest” includes:
- Spiders and insects, such as fleas, mosquitos, wasps, fire ants, cockroaches, and bed bugs.
- Rats, mice, and other rodents.
- Weeds, including poison ivy and poison oak.

70. Integrated Pest Management ...
Some pests can spread disease. For example, ticks can transmit Lyme disease and mosquitos can carry West Nile Virus. Flea, mosquito, and bed bug bites cause itching; and scratching can lead to skin infection.
Pest bites, feces, and residue can cause allergic reactions. Cockroaches are allergens and asthma triggers for some individuals. Severe allergic reactions to fire ants, wasps, and bees can cause life-threatening anaphylaxis.

71. **Integrated Pest Management (IPM)...**
IPM works primarily by reducing or eliminating pests’ access to water, food, and shelter.

IPM minimizes use of pesticides—herbicides, insecticides, and fungicides. Pesticides can cause, trigger, or exacerbate child health conditions, such as asthma, allergic reactions, and respiratory illness.

Pesticides are toxic. Ingestion, inhalation, or absorption through skin and eyes can be harmful.

72. **Steps in IPM**
There are six basic steps to effective IPM:
- Determine the pest problem.
- Keep pests out of the building.
- Eliminate food sources.
- Eliminate moisture.
- Eliminate hiding areas.
- Kill pests.

73. **Determine the Pest Problem.**
Monitor signs and identify specific pests that may be a problem.

- Use your eyes. Look for dead bugs, pest droppings, and evidence of nesting. Check under sinks, in cabinets, and in crawl spaces, attics, basements, and attached garages. Check food packages for evidence of gnawing.
- Use your nose. Rodents give off the smell of urine or ammonia. A musty smell may indicate moisture that attracts pests.
- Use your ears. Listen for the pattering of rodents as they scratch, gnaw, or run.

74. **Keep Pests Out of the Building**
- Caulk cracks, holes, and crevices (e.g., where water pipes and electrical cables enter the building).
- Install door and window seals, window screens, and attic screens.
- Inspect boxes, bags, and foods for pests before they are brought into the building.
75. **Eliminate Food Sources**
   - Clean up crumbs and spills quickly.
   - Clean food preparation and meal service areas after use.
   - Store food products properly.
   - Dispose of trash in tightly closed containers.

76. **Eliminate Moisture**
   - Check for and repair leaks, including dripping faucets.
   - Inspect and maintain appliances, such as dishwashers, washers, and refrigerators.
   - Quickly clean up moisture from spills and leaks.

77. **Eliminate Hiding Areas**
   - Reduce clutter inside the building.
   - Rake leaves and organic debris away from the building.
   - Clean under bushes and trim branches so they do not touch the building.
   - Store firewood, stacked lumber, and similar materials well away from the building.

78. **Kill Pests**
   - Use traps and physical elimination devices.
   - When necessary, select appropriate pesticides.

If pesticides are required, use a licensed pest control operator.

Require an IPM plan prior to pest control treatment. The plan should detail:
   - Methods and insecticides to be used.
   - Efforts expected by you.
   - Copies of labels and MSDS (material safety data sheets) for each product to be used.
   - How quickly and effectively the problem will be solved.
   - What kind of warranty the pest control operator provides.

Insecticides should not be used when children are present or in areas where children may have contact. Treated areas must be thoroughly ventilated before reentering the area.

**Participant Activity:**
Make copies or photos of and show labels from a variety of pesticide products that are marketed for indoor and/or outdoor use. Review product instructions for use, ingredients, and warnings.
79. **IPM for Outdoor Areas**
Grass and ground cover can be part of the healthy outdoor early childhood environment. When properly maintained, it can:
- Reduce exposure to lead and other contaminants in the soil.
- Help prevent tracking of dirt and dust into the facility.
- Provide a softer surface for children’s play.
- Provide different textures for exploration and learning.
- Improve the appearance of the facility and play area.

Healthy lawns and vigorous plants will crowd out weeds, reducing the need for chemicals.
- Choose appropriate turf grass and ground cover for your area.
- Mow grass regularly and at the proper height. Maintain mowing equipment, including sharp blades. Leave clippings on the lawn to recycle nutrients.
- Assure proper drainage to reduce excess moisture and eliminate standing water.

80. **IPM for Outdoor Areas...**
Remove and prevent potentially harmful plants.
- Poison ivy, poison oak, and poison sumac contain an irritating oily sap called urishiol. Exposure to the leaves or stems (even of dead plants) can cause itchy and sometimes painful rash. Exposure can occur from touching contaminated items, such as clothing and garden tools.
- Grass and weeds in loose-fill (e.g., sand) can reduce the resiliency of playground surfacing under equipment.
- Plants with thorns and stickers, including ornamental plants, can cause injury.
- Many ornamental plants are toxic if ingested, including:
  - **Bushes and shrubs** (azalea, boxwood, eucalyptus, hydrangea, and wisteria).
  - **Flowers** (caladium, cardinal flower, chrysanthemum, daffodil/narcissus, delphinium, foxglove, gladiola, hyacinth, iris, larkspur, lantana, and lily of the valley).
  - **Green plants** (castor bean, chinaberry, elephant ear, holly, ivy, jimson weed, juniper, mistletoe, nightshade, poison hemlock, and pokeweed).
  - **Mushrooms.** (Many wild mushrooms are poisonous.)
- Tall grass and vegetation can promote breeding and nesting of pests.

81. **IPM for Outdoor Areas...**
If chemicals (herbicides) are required to kill vegetation, choose products specific to your needs.
• Choose the least toxic product. Products with Caution on the label are the least toxic. The signal word Warning on the label indicates the material is moderately toxic. Products with the word Danger indicate they are highly toxic.
• Follow manufacturer’s instructions or use a licensed qualified lawn service.
• Never apply chemicals when children are present. Do not let children in the area until safe (e.g., after watering in chemicals, and lawn is thoroughly dry).

82. Part 7: Poisoning Prevention

83. Poisoning Prevention
Check the label. All toys, art supplies, and other items used in the nursery and classroom must be non-toxic.

Know the names of indoor plants and be sure they are non-toxic. Contact the Poison Control Center if you are unsure about safety of a plant.

Do not use potentially harmful products, such as cleaning supplies, when children are present. Ventilate the room before reentry.

Medications, cosmetics, and personal care products are also potentially harmful. Do not have these items in children’s areas.

84. Poisoning Prevention
• Products should be sealed tightly and stored in original, labeled containers.
• Immediately return products to storage after use.
• Never store toxic products near food items and supplies.

Keep potentially harmful products out of children’s sight, out of children’s reach, and locked as necessary.

85. Poison Control Center 1-800-222-1222
This number can be called from anywhere in the United States.

This number works like the 9-1-1 system. It connects the caller with their local poison control center.
• Poison Control Centers are staffed with doctors, pharmacists, and registered nurses.
• Help is available 24 hours a day, 7 days a week, 365 days a year.
• With their advice, most poisonings can be treated at home.
• There is no charge for calling the Poison Control Center.
• All calls are confidential.

86. Conclusion

87. Post-Test and Evaluation
Please have participants complete the post-test questions and training evaluation at this time.

Explain that the training module team may follow up with some participants in 2-3 months to see how they used this information.

88. Thank You
Thank the attendees for their participation in the training session.

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APPENDIX A
Specific CFOC3 Standards Used in the Development of Module 4

1. **Standard 5.2.8.1: Integrated Pest Management**
   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. IPM is a simple, common-sense approach to pest management that eliminates the root causes of pest problems, providing safe and effective control of insects, weeds, rodents, and other pests while minimizing risks to human health and the environment (2,4).

   Pest Prevention: Facilities should prevent pest infestations by ensuring sanitary conditions. This can be done by eliminating pest breeding areas, filling in cracks and crevices; holes in walls, floors, ceilings and water leads; repairing water damage; and removing clutter and rubbish on the premises (5).

   Pest Monitoring: Facilities should establish a program for regular pest population monitoring and should keep records of pest sightings and sightings of indicators of the presence of pests (e.g., gnaw marks, frass, rub marks).

   Pesticide Use: If physical intervention fails to prevent pest infestations, facility managers should ensure that targeted, rather than broadcast applications of pesticides are made, beginning with the products that pose least exposure hazard first, and always using a pesticide applicator who has the licenses or certifications required by state and local laws.

   Facility managers should follow all instructions on pesticide product labels and should not apply any pesticide in a manner inconsistent with label instructions. Material Safety Data Sheets (MSDS) are available from the product manufacturer or a licensed exterminator and should be on file at the facility. Facilities should ensure that pesticides are never applied when children are present and that re-entry periods are adhered to.

   Records of all pesticides applications (including type and amount of pesticide used), timing and location of treatment, and results should be maintained either on-line or in a manner that permits access by facility managers and staff, state inspectors and regulatory personnel, parents/guardians, and others who may inquire about pesticide usage at the facility.

   Facilities should avoid the use of sprays and other volatilizing pesticide formulations. Pesticides should be applied in a manner that prevents skin contact and any other exposure to children or staff members and minimizes odors in occupied areas. Care should be taken to ensure that pesticide applications do not result in pesticide residues accumulating on tables, toys, and items mouthed or
handled by children, or on soft surfaces such as carpets, upholstered furniture, or stuffed animals with which children may come in direct contact (3).

Following the use of pesticides, herbicides, fungicides, or other potentially toxic chemicals, the treated area should be ventilated for the period recommended on the product label.

Notification: 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. A member of the child care staff should directly observe the application to be sure that toxic chemicals are not applied on surfaces with which children or staff may come in contact.

Registry: Child care facilities should provide the opportunity for interested staff and parents/guardians to register with the facility if they want to be notified about individual pesticide applications before they occur.

Warning Signs: Child care facilities must post warning signs at each area where pesticides will be applied. These signs must be posted forty-eight hours before and seventy-two hours after applications and should be sufficient to restrict uninformed access to treated areas.

Record Keeping: Child care facilities should keep records of pesticide use at the facility and make the records available to anyone who asks. Record retention requirements vary by state, but federal law requires records to be kept for two years (7). It is a good idea to retain records for a minimum of three years.

Pesticide Storage: Pesticides should be stored in their original containers and in a locked room or cabinet accessible only to authorized staff. No restricted-use pesticides should be stored or used on the premises except by properly licensed persons. Banned, illegal, and unregistered pesticides should not be used.

2. Standard 5.2.9.1: Use and Storage of Toxic Substances
The following items should be used as recommended by the manufacturer and should be stored in the original labeled containers:

   a. Cleaning materials;
   b. Detergents;
   c. Automatic dishwasher detergents;
   d. Aerosol cans;
   e. Pesticides;
   f. Health and beauty aids;
   g. Medications;
   h. Lawn care chemicals;
   i. Other toxic materials.
Material Safety Data Sheets (MSDS) must be available onsite for each hazardous chemical that is on the premises.

These substances should be used only in a manner that will not contaminate play surfaces, food, or food preparation areas, and that will not constitute a hazard to the children or staff. 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-resistant opening device, inaccessible to children, and separate from stored medications and food.

Chemicals used in lawn care treatments should be limited to those listed for use in areas that can be occupied by children.

Medications can be toxic if taken by the wrong person or in the wrong dose. Medications should be stored safely (see Standard 3.6.3.1) and disposed of properly (see Standard 3.6.3.2).

The telephone number for the poison center should be posted in a location where it is readily available in emergency situations (e.g., next to the telephone). Poison centers are open twenty-four hours a day, seven days a week, and can be reached at 1-800-222-1222.

3. **Standard 5.2.9.5: Carbon Monoxide Detectors**
   Carbon monoxide detector(s) should be installed in child care settings if one of the following guidelines is met:
   a. The child care program uses any sources of coal, wood, charcoal, oil, kerosene, propane, natural gas, or any other product that can produce carbon monoxide indoors or in an attached garage;
   b. If detectors are required by state/local law or state licensing agency.

   Facilities must meet state or local laws regarding carbon monoxide detectors. Detectors should be tested monthly. Batteries should be changed at least yearly. Detectors should be replaced at least every five years.

4. **Standard 5.2.9.13: Testing for Lead**
   In all centers, both exterior and interior surfaces covered by paint with lead levels of 0.06% and above, or equal to or greater than 1.0 milligram per square centimeter and accessible to children, should be removed by a safe chemical or physical means or made inaccessible to children, regardless of the condition of the surface.

   In large and small family child care homes, flaking or deteriorating lead-based paint on any surface accessible to children should be removed or abated according to health department regulations. Where lead paint is removed, the surface should be refinished with lead-free paint or nontoxic material. Sanding, scraping, or burning of
lead-based paint surfaces should be prohibited. Children and pregnant women should not be present during lead renovation or lead abatement activities.

Any surface and the grounds around and under surfaces that children use at a child care facility, including dirt and grassy areas should be tested for excessive lead in a location designated by the health department. Caregivers/teachers should check the U.S. Consumer Product Safety Commission’s Website, http://www.cpsc.gov, for warnings of potential lead exposure to children and recalls of play equipment, toys, jewelry used for play, imported vinyl mini-blinds and food contact products. If they are found to have toxic levels, corrective action should be taken to prevent exposure to lead at the facility. Only nontoxic paints should be used.