

May 2015

To: Early Learning and School-Age Practitioners

Re: Indoor Air Quality Self-Learning Module

Thank you for your interest in the *Indoor Air Quality (IAQ)* Self-Learning Module. Poor indoor air quality can impact the comfort and health of children and staff. It can affect concentration, attendance and academic performance. If programs fail to respond promptly to poor IAQ, children and staff are at an increased risk of short and long term health problems. Problems may include: fatigue, nausea, and asthma. This module is **most appropriate for directors** who can make policy decisions. However, all staff may use this module for education and provide input on policy and practice for indoor air quality management.

Objectives:

Upon successful completion of this module, the learner will be able to:

- Review best practices and factors contributing to indoor air quality.
- Explain the health effects of poor indoor air quality.
- Use *Tools for Schools* Checklists to inspect your Early Care and Education (ECE) program.
- Document Areas to Correct and develop an Action Plan for issues identified using the checklist.
- Educate staff and parents about indoor air quality.

This module addresses the following **Core Knowledge Competencies**:

- K7. 1 C3 Evaluate the current practices for effectiveness and compliance with applicable health, safety and nutrition mandates and standards through instituting corrective actions in areas of need and consulting outside experts as needed or required.*
- K7.2 C3 Evaluate current sanitation practices within your classroom for effectiveness in minimizing transmission of disease and make modifications as needed.

An asterisk (*) indicates that Appendices of the PA Core Knowledge Competencies document offer additional information on definitions, including a further detailing of competencies, and alignment to other commonly-used documents. C2 competency requires all of C1; C3 requires all of C1 and C2 (from PA Core Knowledge Competencies online at <http://www.pakeys.org>.)

This module draws upon the best practices described in *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, 3rd Edition (CFOC3) and the Environmental Protection Agency's (EPA) *Indoor Air Quality (IAQ) Tools for Schools Kit*. It helps early childhood education personnel create and maintain healthy indoor learning environments by identifying, correcting and preventing problems. To complete the module, you need to assess your facility for air quality issues with two of six of the eleven IAQ checklists that are specified in this module. Although many actions are appropriate for early childhood practitioners, some may require you seek expert advice.

To receive 2 hours of professional development credit:

1. Review the Self-Assessment: Before you complete the learning activities for the module, take a look at the *Self-Assessment* you need to submit for review to obtain professional development credit. It includes implementation questions concerning your checklist findings, material review and case studies. Knowing what you will be asked may help you find the necessary information as you do the activities. The *Self-Assessment* must be completed independently and submitted by each practitioner requesting credit. PA child care practitioners may submit the *Self-Assessment* for review for credit using an electronic response form at <https://www.surveymonkey.com/s/N25375N>

If you prefer, you may copy and print out the *Self-Assessment*. Then, complete and submit it either by scanning and attaching it to an e-mail, or by sending the original of your work by surface mail to ECELS at the address on the top of this letter.

2. Follow the instructions in the “Important Reminders” box next to the list of self-learning modules on this webpage. These instructions include the steps to register your credit and mark your assignment complete in the PA Key Professional Development Registry. Review the document “Using the Professional Development Registry” posted in the “Important Reminders” box. If a review fee is required for this module at the time you submit it, ECELS must receive the per person payment before ECELS staff will review the work you submit for credit.

When you have successfully completed the *Self-Assessment*, ECELS will notify you by e-mail that your credit has been approved. Remember that you must follow the steps required to document your work in the PA Key Professional Development Registry to receive credit in the PA Key Registry. Contact ECELS if you have questions.

After ECELS approves your credit, you will be able to complete the Evaluation Form. Then the PA Key staff will record your credit and notify you that your credit has been awarded. In the My Learning Path Tab, select My Transcript to view a detailed history of the Courses you have completed.

3. If you need help with this module, or have questions about the material, call the ECELS office 1-800-243-2357 toll free in PA or 484-446-3003 or email ecels@paaap.org.

Sincerely,
Libby Ungvary, MEd
ECELS Director

Sandy McDonnell, MSN, RN, CRNP
ECELS Training/Technical Assistance Coordinator

Section 1

Introduction/

Best Practices and Health Effects Overview

Objective: Review best practices and factors contributing to indoor air quality.
Explain the health effects of poor indoor air quality (or indoor environment).

- **Action:** Review *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs 3rd Edition (CFOC3)* by clicking on these links: [Chapter 5: Facilities, Supplies, Equipment, and Environmental Health Standards 5.2.1 \(5.2.1.1 to 5.2.1.15\)](#) and [Prevention and Management of Toxic Substances 5.2.9 \(5.2.9.1-5.2.9.15\)](#).
 - Note that eight of the Standards are also part of the *Stepping Stones*, 3rd Edition (SS3) collection. SS3 is a subset of 138 of the CFOC Standard; when practiced, they are most likely to prevent serious adverse outcomes.
 - Standard 5.2.1.1 states, " For further information on air quality and on ventilation standards related to type of room use, contact the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) (<http://www.ashrae.org>), the U.S. Environmental Protection Agency (EPA) Public Information Center, the American Gas Association (AGA), the Edison Electric Institute (EEI), the American Lung Association (ALA), the U.S. Consumer Product Safety Commission (CPSC), and the Safe Building Alliance (SBA)... The contractor who services the child care HVAC system should provide evidence of successful completion of ASHRAE or comparable courses. Caregivers/teachers should understand enough about codes and standards to be sure the facility's building is a healthful place to be."
- **Action:** Familiarize yourself with [IAQ Tools for Schools Action Kit](#).
 - Review [IAQ Tools for Schools Action Kit](#). It shows schools how to carry out a practical plan to improve indoor air problems at little- or no-cost using straightforward activities. It is available in an [interactive](#) or [text](#) version. The resources, checklists and publications compiled into the Action Kit assist in identifying the actions programs can take to successfully plan and implement an effective IAQ management program. It is very comprehensive but for this module we are only able to use a small portion of the information they offer from the [text](#) version. Familiarize yourself the content so you may use the information pertinent to the areas you need to act upon. The next few items pertain to the information contained in the *IAQ Tools for Schools* Action Kit: IAQ [Reference Guide](#) .

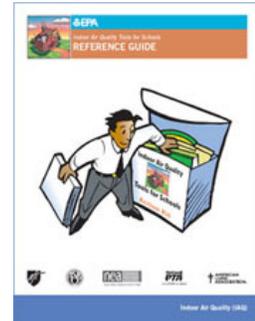


Section 2

Understanding Indoor Air Quality (IAQ)

Objective: Educate staff and parents about indoor air quality.

- **Action:** Read select content from *IAQ Tools for Schools Action Kit*: IAQ [Reference Guide](#) and Appendices:
 - Section 1-[Why IAQ is Important to Your School](#)
 - Section 2-[Understanding IAQ](#)
 - Appendices
 - [Appendix A - Hiring Professional Assistance](#)
 - [Appendix D - Asthma](#)
 - [Appendix E - Typical Indoor Air Pollutants](#)
 - [Appendix F - Secondhand Smoke](#)
 - [Appendix G - Radon](#)
 - [Appendix H - Mold and Moisture](#)
 - [Appendix I - Emissions from Motor Vehicles and Equipment](#)
 - [Appendix K - Integrated Pest Management](#)
 - [Appendix L - Resources](#)
 - [Appendix M - Glossary and Acronyms](#)



Record the **specific information** you intend to share with your parents/staff on the *Self-Assessment*.

Section 3

Checklists and Problem-Solving

Objective: Use *Tools for Schools* Checklists to inspect your ECE program.

- **Action:** Review and complete specific *Indoor Air Quality (IAQ) Tools for Schools Kit* [Checklists and Topic Backgrounders](#).
 - Return to the *Indoor Air Quality (IAQ) Tools for Schools Kit* first accessed on page 3; refer to the [Checklists and Topic Backgrounders](#). There are 11 checklists to help staff manage IAQ. Review the Topic Backgrounder documents on the next page. Perform the **Teacher's Classroom Checklist** inspection and one other of the six **highlighted** inspections/checklists. Record the findings from both checklists in the appropriate area in the Self-Assessment on Survey Monkey. Remember to refer to the *Renovation and Repair* documents if you perform renovations in the future.
- **Action:** *Document Areas to Correct* and create an *Action Plan* as indicated by items requiring correction from the two checklists used.
 - List **two** items you checked as “no” (that require correction) from **two of the six highlighted checklists** you completed. If more than one staff member is completing the module, then each person should independently complete the **Teacher's Classroom Checklist** and **one other** of the six highlighted areas. Then suggest plans to correct problems noted on the checklist. If more than

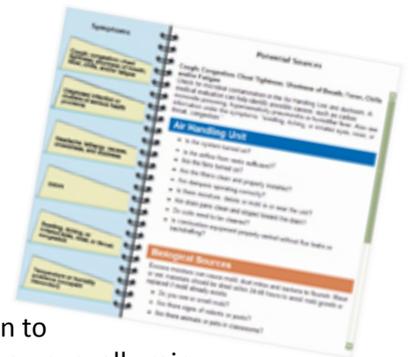
one staff member is completing the module, then staff should complete **different** checklists so different areas are assessed in the facility. When completing the Checklist Results Section of the Survey Monkey Self-Assessment, each person should note her/his findings and suggested action plans for correction. Then, all the participating staff members should collaborate to make a combined IAQ Action Plan for the facility. Use the IAQ Action Plan to implement necessary corrections. For example, to minimize student, teacher and administrative staff exposure to hazardous chemicals:

- Conduct pollutant-releasing activities only when the school is unoccupied.
- Use walk-off mats at building entrances.
- Implement comprehensive tobacco-free school policies.
- Establish an anti-idling school bus policy.

<p>Administrative Staff</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 89 K) (DOC, 2 pp., 89 K) • Backgrounder (PDF, 2 pp., 86 K) 	<p>School Officials</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 63 K) (DOC, 2 pp., 150 K) • Backgrounder (PDF, 2 pp., 436 K)
<p>Building and Grounds Maintenance</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 98 K) (DOC, 2 pp., 99 K) En Español (PDF, 6 pp., 321 K) • Backgrounder (PDF, 3 pp., 132 K) 	<p>Teacher's Classroom</p> <ul style="list-style-type: none"> • Checklist (PDF, 3 pp., 123 K) (DOC, 3 pp., 100 K) • Backgrounder (PDF, 4 pp., 152 K)
<p>Food Service</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 96 K) (DOC, 2 pp., 94 K) En Español (PDF, 3 pp., 225 K) • Backgrounder (PDF, 1 page, 57 K) 	<p>Ventilation</p> <ul style="list-style-type: none"> • Checklist (PDF, 5 pp., 254 K) (DOC, 5 pp., 139 K) • Backgrounder (PDF, 8 pp., 606 K)
<p>Health Officer/School Nurse</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 87 K) (DOC, 2 pp., 156 K) • Backgrounder (PDF, 2 pp., 90 K) 	<p>Walkthrough Inspection</p> <ul style="list-style-type: none"> • Checklist (PDF, 2 pp., 71 K) (DOC, 2 pp., 75 K) • Backgrounder (PDF, 1 page, 423 K)
<p>Integrated Pest Management (IPM)</p> <ul style="list-style-type: none"> • Checklist (PDF, 3 pp., 121 K) (DOC, 3 pp., 160 K) En Español (PDF, 4 pp., 319 K) • Backgrounder (PDF, 3 pp., 96 K) 	<p>Waste Management</p> <ul style="list-style-type: none"> • Checklist (PDF, 1 page, 60 K) (DOC, 1 page, 97 K) En Español (PDF, 2 pp., 155 K) • Backgrounder (PDF, 1 page, 55 K)
<p>Renovation and Repairs</p> <ul style="list-style-type: none"> • Checklist (PDF, 3 pp., 495 K) (DOC, 3 pp., 101 K) • Backgrounder (PDF, 4 pp., 148 K) 	

Mandatory

- **Action:** Use the interactive [Problem Solving Tool](#) and *Reference Guide* to answer the following case study questions.
 - Click on a health symptom to review a list of possible causes of these complaints. Then, use the resources and [checklists](#) available in the *IAQ Tools for Schools* Action Kit to identify and respond to IAQ issues.



- **Case Study I:** The Susan Dey Child Care is located in a converted two story 3700 sq. ft. house. Staff in the older toddler room began to complain of swelling, itching, Irritated eyes, nose or throat after an unusually rainy spring. Use the [Problem Solving Tool](#) to select a likely Biological Source that contributed to the staff's symptoms. What steps should the director take to remedy the situation? What other cause could be the source of the complaints (as noted in the Problem Solving Tool)? Record your response on the Self-Assessment.

Refer to the IAQ Reference Guide [Appendix H - Mold and Moisture](#) and list “Steps to Reduce Moisture and Mold”.

- **Case Study II:** The Blue Bird Child Care Center is located in a 75 year old stone building in the inner city. The windows were old and drafty, so they closed them off, using fixed glass block. The building had a musty odor when the heat came on in the fall. What could be the likely Building Source of the odor (according to the [Problem Solving Tool?](#)) Record your response on the Self-Assessment.
- **Action:** Verify or plan to assess radon levels in facility. Document on Survey Monkey.
 - *IAQ Tools for Schools* explains, “Perform radon assessments in conjunction with regular IAQ walkthroughs. Obtain floor plans to estimate the number of test kits needed and to determine where to place the test kits. If elevated radon levels are found, survey buildings for structural or mechanical issues that could be allowing radon to enter, such as cracks in the foundation, expansion joints, sub slab HVAC ducts and building pressurization patterns.”

Radon, a radioactive gas, is one of the most hazardous indoor pollutants. Radon is the leading cause of lung cancer among non-smokers. In the U.S., an estimated 20,000 people die from radon-induced lung cancer annually. Thousands of classrooms nationwide have elevated radon levels, needlessly exposing hundreds of thousands of students and staff to this serious health risk.

The EPA recommends testing all schools for radon. The only way to know if elevated radon levels are present is to test. <http://www.epa.gov/radon/healthrisks.html>

Radon gas enters from the soil beneath the building through cracks and openings in the foundation. Air pressure inside a building is sometimes lower than pressure in the soil under the foundation. Because of this difference in pressure, a building acts like a vacuum, drawing radon inside from the soil. Typical cracks and openings include joints where the floor meets the wall, expansion joints in the floor, openings in the floor for pipes and wires, and hollow masonry walls that penetrate the floor.

<http://www.epa.gov/radon/index.html>

- Review [Exposure to Radon Causes Lung Cancer In Non-smokers and Smokers Alike](#)
- For additional information see: [Eco-Healthy Child Care® Radon Fact Sheet](#) [Pennsylvania Reference Radon Fact Sheet](#). If the direct links do not work, information is available at https://www.pakeys.org/pages/get.aspx?page=Environmental_Health.

Section 4

Resources

Resources

- American Academy of Pediatrics Council on Environmental Health. Etzel, RA, ed. *Pediatric Environmental Health*, 3rd Edition Elk Grove Village, IL: American Academy of Pediatrics; 2012
- United States Environmental Protection Agency ([EPA Indoor Air Quality](#))
 - [Healthy Childcare](#), United States Environmental Protection Agency (EPA)
 - [Envisioning Excellence: IAQ Strategies in Action \(PDF\)](#) (12 pp., 510 K) Provides examples of how school districts incorporate the Framework for Effective School IAQ Management into programs.

- Webinar Presentations and Resources, United States Environmental Protection Agency (EPA)
 - View and download resources from technical Webinars that feature experts and school districts on a range of indoor environmental quality topics. Click here to [access Webinar presentations](#).
- [Frequently Asked Questions Indoor Air Quality Tools for Schools](#)
- [Center for Environmental Research and Children's Health](#) (CERCH)

Section 5

Documentation & Self-Assessment

You are now ready to complete the Self-Assessment and document your plans related to indoor air quality. You may complete the Self-Assessment online or send the Assessment and Implementation Questions by mail, fax or email to ECELS Fax: 484-446-3255; email: ecels@paaap.org

- To Complete the Self-Assessment online, go to <https://www.surveymonkey.com/s/N25375N>
 If more than one staff member is seeking credit for this module, then the Self-Assessment should be completed independently by each person. Most facilities need some changes. Sending information to ECELS about items that require a corrective action plan will not interfere with approval of credit for this module. If technical assistance is needed, please call ECELS: 484-444-3003 or 800-243-2357 (toll-free in PA) or email to ecels@paaap.org.



Follow the instructions on the ECELS website Self-Learning Module page. Review the information on that page in the box with the heading “Important Reminders”. Click on the green rectangle labeled “Click here to order SLM reviews” to pay the review fee. Each staff member seeking credit must register. If the facility is paying for a review of this module by more than one person, then send the Module Review Payment Form to ECELS via e-mail attachment, fax or surface mail. Use this form to list all the individuals whose Self-Assessment fee is being paid with a single payment.

ECELS staff will review the work you submit to complete the module. If you have questions, please contact the ECELS office. ECELS will approve (2) hours of professional development credit for each person who successfully completes the module. Once you complete the PA Key Evaluation Form, the PA Key will award your credit and send you email notification to view your completed Courses in the tab My Transcript. Processing takes approximately 3-6 weeks after you submit the required documentation.

Costs for the development of this module have been underwritten by the Pennsylvania Department of Human Services, Office of Child Development and Early Learning.