

Health Opportunities During Energy Audits and Upgrades Instructor Notes

Below are notes to help instructors familiar with the Healthy Homes Essentials class prepare to teach this class. The notes primarily explain key exercises. An annotated instructor agenda is also shown below.

- 8:30 am **Introductions & Overview**
- Introduce instructors, students, and notebook
 - Exercise #1: Making the Connections
- 9:30 am **Health Protections and Opportunities**
- House as a System: Use Large Graphic – Emphasis on Air Movement & Moisture and Concerns with Tightening and Trapping Contaminants
 - Show “Grandma’s House” video –need web access <http://tinyurl.com/2a38qhe>
 - Introduce Health Protections and Opportunities During Energy Upgrades chart
 - Introduce climate Specific Case Study – explore how to avoid doing harm, opportunities for health improvements
- 10:15 **Keep it Dry & Ventilated**
- Exercise #2: Identify moisture and ventilation problems & responses. Emphasize Don’t Make it Worse & Low Cost Health Improvements
 - Review key moisture & ventilation issues using slides
 - Introduce related healthy work practices (covered in more detail in afternoon).
 - Discuss confusion over eligible program expenses, work outside typical scope, possible referral needs, up-selling opportunities. Document on flip charts.
- 11:45 **Keep it Pest and Contaminant Free**
- Exercise #3: Identify pest and contaminant problems & responses. Emphasize Don’t Make it Worse & Low Cost Health Improvements
 - Review pest & contaminant slides
 - Introduce related healthy work practices (covered in more detail in afternoon)
 - Discuss confusion over eligible program expenses, work outside typical scope, possible referral needs, up-selling opportunities. Document on flip charts.
- Lunch
- 1:00 pm **Keep it Pest and Contaminant Free (Continued)**
- 2:00 pm **Keep it Safe – Review slides**
- 2:15 pm **Integrated Energy and Health Assessment Protocol & Responses**
- Exercise #4: Creating a new integrated assessment tool. See notes below.
- 3:00 pm **Health Precautions & Opportunities During Energy Upgrades**
- Review slides with healthier work practices, emphasize these are examples not a comprehensive list
- 3:30 pm **Local Referral and Up-Selling Opportunities**
- Exercise #5: Referrals and Up-selling
- Exercise #1: Making the Connections**

Tell the students to remove the Exercise #1 from the exercise tab of the binder. It is a one-page worksheet. Pull out the answer sheet for the exercise to make sure you cover the basics. Follow the basic instructions for the Essentials class that are listed below but also be sure to emphasize that is research showing that the air inside homes is more contaminated—often much more contaminated—than the air outside, even in industrial cities with notoriously fouled air. When we think about this, the reason becomes clear: All the air inside a home originates outside. To the extent that the air is “trapped” in the house, contaminants will build up. If the rate of contaminants coming into the house is greater than the rate of contaminants leaving the house, then the air inside becomes more and more polluted. Any time we make a house tighter, we run the risk of making it more polluted. The big problems are:

- Moisture. Moisture that used to find it’s way out of the house is now trapped inside, increasing the chance for bio-nasties (mold, bacteria, some pests) to grow and thrive in the house.
- Combustion gasses. Tightening the house can change the pressure balance inside. Combustion appliances like furnaces and water heaters that had worked fine before are now back-drafting or spilling combustion by-products.
- Air-borne pollutants. When you tighten the house, you may increase the concentrations of VOCs like formaldehyde off-gassing from materials and furnishings, particulates like soot or dust, and even pesticides brought in from outside.

Since making the house tighter is the most important measure in making it use less energy, it’s essential that you make sure there is adequate ventilation in the house when you leave.

Step 1: Ask the students to identify a health hazard. List the first one that you hear – usually it will be asthma. Before listing others health impacts, identify the health hazards that may result in the health impact. Keep proceeding through the list. Check the exercise answer sheet for suggested answers. Some points to consider:

- Lead poisoning is not a health impact. List it as brain damage or neurological impacts.
- For asthma, distinguish between causes and triggers by listing them separately under asthma.
- Consider drawing dotted lines where the science is tenuous. This problem is common for classes of chemicals such as pesticides and volatile organic chemicals. It depends on the pesticide or the VOC. There is no simple answer.
- Don’t forget injuries and death under health impacts. You may want to draw lines from some health impacts such as asthma to death.
- Don’t forget damp indoor spaces under health hazards.

- Ask nurses in the room if they see other health impacts. It is good to highlight their perspective.
- Explain that nurses tend to think in terms of health impacts. Environmental health people tend to think in terms of health hazards.

Step 2: Move onto the fixes column. Ask the students for fixes. Students will usually throw out a few ideas such as education. Move them towards the seven principles. When finished, check off the seven principles. Some points to consider:

- Emphasize that the housing people tend to think in terms of the seven principles even though they may not identify or describe them that way.
- Explain that the seven principles are a much easier way to address problems than focusing on the health hazards. The categorical approach may be overwhelming and may miss opportunities to address multiple problems with one solution.
- To reinforce the point about fixes addressing multiple hazards, identify the health hazards that would be addressed by one of the principles such as Keep It Dry. Draw lines to make it clear.

Step 3: Move onto resources. Ask the students how to get resources to implement the fixes. Make sure you identify the landlord's wallet and increased efficiency as resources. Finding ways to do more with the same resources is not a popular message but it is reality. And it is possible with healthy homes by getting all those that enter a home to carry the healthy homes message. Don't forget the private sector such as weatherization, renovation, home inspectors and pest control operators.

. Note that there are two drawings: one with a furnace in the basement and another with no basement and the furnace in the attic. Spend most of the time focusing on the movement of air and water as we are trying to stress the inadvertent consequences of tightening homes for air contaminants and moisture issues.

Typical Answers – Lines should connect the various items making it clear that there are many interactions.

<u>Health Impacts</u>	<u>Housing Hazards</u>	<u>Corrective Action</u>	<u>Resources</u>
Asthma – Causes	Damp indoor spaces	Keep It Dry*	Energy Upgrades
Asthma Triggers	Cockroaches	Keep It Clean	Offer Opportunities (Weatherization; Utility Funded Work; Private Work)
Neurological Problems	Dust mites	Keep It Pest Free*	Utility Funded Work; Private Work)
Lung & Other Cancer	Mold	Keep It Ventilated*	Energy Raters
Death	Pet Dander	Keep It Safe	Federal Grants – Housing, etc
Injuries	Mice or Rats	Avoid Contaminants*	Landlord Investment in Property
Stomach illness	Trash	<i>Several of these items we will talk about in this class – we will emphasize those with a *</i>	Avoiding Duplication
Allergic Reactions	Lead Dust/Paint Chips		Resolving Core Problems
	Lead in Soil		Nurses
	Carbon Monoxide		Housing Contractors
	Trip Hazards		Code Enforcement
	Contaminants – formaldehyde, VOCs,		<i>Emphasize energy work is an opportunity</i>

Exercises #2 and #3 provide problem pictures, similar to those of the Essentials class. Place students in groups to have them review the pictures and complete the forms for each exercise. Debrief as a group.

Notes on Health Protections and Opportunities Section

Introduce the chart Health Protection and Opportunities During Energy Upgrades. The key messages to introduce are the 3 levels of responses:

1. Minimum Health Protections – Don't Make it Worse;
2. Low Cost Health Improvements – easy relatively low cost upgrades that will likely make home healthier and that can often be included in energy jobs; and
3. Added Health Opportunities – more extensive health related housing upgrades that may make sense in some jobs and programs

Focus on the first two levels of response. Radon will likely be the most challenging issue. It is also an opportunity to remind students of the new Federal lead requirements. Don't get too immersed in the details. The course will come back to these Health Protections later in the work practices section.

The course materials also include 2 case studies – one for heating climates and one for a Gulf Coast climate to orient students to a typical weatherization/energy upgrade job. You can use this case study to get all the students on a level playing field and begin in discussion to identify:

- What which of the healthy housing issues do we not assess or address?
- Which problems do we want to repair but don't have funding to address?
- Where do we need more help with referral resources?

The key is to get students talking.

Exercise #4: Creating a Healthier Energy Audit Protocol and Housing Upgrades

Goal: The goal of this exercise is to have students begin to incorporate the ideas we have discussed during the day into their daily work as energy auditors and firms/individuals who can complete energy upgrades.

Key Documents: The exercise works best if you can obtain a copy of the local energy weatherization audit form as it helps students review what is currently identified in an audit and where there are opportunities to expand assessments for both referrals and health upgrades. If you cannot obtain a local audit form, you may use the form provided by the Massachusetts or NY. In addition, you will need to use the Healthy Housing Assessment Questions and the Health Additions to Energy Upgrades matrix.

Exercise:

1. Place students in groups.

2. Ask each group to review the Healthy Housing Assessment Questions (this is a comprehensive list of potential healthy housing assessment queries that can help identify issues of concern) and identify 3- 5 additional items that they may want to add to their own local energy audit forms.
3. Ask each group to also identify health upgrades where they feel there is confusion about whether their local weatherization program would fund the activity.
4. Ask each group to identify their priority healthy upgrades or protections that are not currently being undertaken on a consistent basis, but that could be incorporated into their program or business.
5. Explore how the new revised audit would have been applied to the case study home. Explore how it related to the recommended healthy housing response actions in the Health Protection and Opportunities During Energy Upgrades chart.
6. Write the suggestions from #2, #3, #4 on separate flip charts. Then ask the group to vote on the highest priority items as a group – or use sticky dots and have students walk up to vote with their dots.

Record the final tally/results in a word document that you send to the sponsoring organization and ask them to email it out to the students.

Exercise #5: Improving Referrals and Up-Selling Opportunities

Put students in groups. Ask each group to complete the sheet for exercise #5 to help identify the local referral options and firms/programs/individuals that can provide resources or skills to undertake the health protections or upgrades.

Debrief with the entire group.