

4. Health and safety barriers to housing upgrades

The National Center for Healthy Housing (NCHH) reports that, according to U.S. Census estimates, “millions of housing units are substandard with multiple or severe health hazards” and that “39 million housing units nationwide contain at least one health hazard. Some of these hazards may be seen (mold, dust, and pests; deteriorated lead paint or pipes) or unseen (electrical and physical hazards, radon, carbon monoxide, and other poisons and carcinogens) and can cause illness, injury, and even death”. See [Healthy Housing Facts, U.S.](#) and [Healthy Housing Facts, MA.](#)

“Weatherizing homes against the elements is a major way to save energy and money and improve comfort. Yet, programs and contractors commonly find health, safety, structural, and other barriers that preclude moving forward with weatherization work. These **“weatherization barriers” are increasingly being recognized as significant hurdles in addressing homes’ weatherization needs.**” ([Overcoming Weatherization Barriers](#), E4TheFuture, 2020)

Common barriers to weatherization include the presence of asbestos, knob and tube wiring, mold, lead, structural issues, and venting and combustion safety issues, among others. See images of weatherization barriers [here](#). These issues pose health and safety issues to contractors—and of course they are also health and safety risks to the people who live in the home.

[The NCHH website](#) offers many resources for residents to protect themselves from health hazards in the home, including brochures, fact sheets, and websites.

More resources can be found through the [Green & Healthy Homes Initiative \(GHHI\)](#), which supports healthy, safe and energy efficient homes through services, training, and technical assistance. In Worcester, the GHHI worked with UMass Memorial Medical Center to combat pediatric asthma. The website offers multiple resources, fact sheets, and a healthy

homes guidebook, as well as information on some of the health hazards identified as barriers to weatherization:

[PESTS](#)

[RADON](#)

[MOLD and MOISTURE](#)

[ASBESTOS](#)

[ASTHMA TRIGGERS](#)

[LEAD](#)

While lead is not necessarily a barrier to weatherization, there are [strict guidelines for contractors working in homes built prior to 1978](#), the year when lead-based paint was banned.

In addition to these health hazards, old homes can present serious safety risks. In particular, [knob and tube wiring has been the cause of multiple fires in Triple Deckers](#). What is knob and tube wiring? [The Center for Energy and the Environment explains](#):

Knob and tube wiring is named for the ceramic knobs that support the wires, and the tubes that protect the wires through the wood framing of the home. Knob-and-tube wiring carries a lower supply of electricity than modern synthetic wiring and does not contain a ground wire (the third prong on electrical outlets). Knob-and-tube wiring may run throughout the home, and is often identifiable by its rubber or asphalt-saturated cotton cloth coating.

This system of wiring was phased out in the 1940s after better alternatives came along. Knob-and-tube wiring does not meet modern electrical safety codes, as it was designed to carry a light electrical load and is overloaded easily in a modern home with multiple appliances often running at once.

Over time, heat from the wires causes the rubber coating to get brittle and break, which can lead to exposed live wires. Knob-and-tube wiring is often hidden in attics or wall cavities, making its condition difficult to assess. If the wires are live and exposed, they can pose a fire hazard around insulation. Additionally, since the system lacks the ground wire found in modern systems, there is no protection when a fault occurs — increasing the risk of shock or fire.

Insulation contractors will not insulate spaces that have active knob-and-tube wiring, since it increases the risk of fires. If you have knob-and-tube wiring, most contractors will require you to have an electrician verify that it is not active. If it is active, you will need to have it replaced in order to insulate your home safely.

When homes are rewired, electricians will often leave the old deactivated wiring behind. If you think you have knob-and-tube wiring but aren't sure of its condition, it is best to have an electrician take a look.

E4TheFuture created a [Weatherization Barriers Toolkit](#) (2022) for policy makers, administrators of energy efficiency programs, and energy justice advocates. The Toolkit focuses on solutions for customers that qualify for DOE's Weatherization Assistance Program (WAP) or utility income-restricted programs, because energy burdens are higher for these households, lower income households tend to have more barriers, and income-eligible residents have a harder time affording and accessing capital to remediate barrier issues. [***How to Address Health and Safety Barriers with an Income-Eligible Focus***](#) April, 2022.

See also [A Survey of Resources to Address Barriers to Weatherization in Homes](#)

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The paper provides information and resources to help break through weatherization barriers.