



**E-Conservation**

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# DIY: Detecting Air Leaks

**Difficulty:** Beginner

**Time:** 1+ hours

**Materials:**

- notepad
- pen
- flashlight
- matches or lighter
- candle
- incense stick
- cordless hair dryer

**Additional Info:**

- There are professionals who will detect air leaks in your house, usually part of a home energy assessment. They use a blower door which sucks air out of the house. Outside air then rushes in through leaks which can be located using a smoke pencil. Look for a professional that uses a calibrated blower door. This will allow them to determine the amount of air leakage and the effectiveness of an air-sealing job.
- The incense stick method can be made more effective by first sealing your house by closing doors and windows then turning on all exhaust fans such as the dryer, bathroom fan, and stove hood. This creates low pressure inside your house and outside air will rush in through leaks allowing you to detect them more easily.

**Safety Precautions: Care should be taken when using an open flame indoors.**

1. Start by doing a visual inspection of the outside of your house. Walk around and look for potential air leaks. These are most likely to occur around doors and windows, where different building materials meet, around corners, at chimneys, and where pipes, ducts, faucets, or wiring enter your house. Write down any obvious air leaks along with the size and location of the air leak. This will allow you to come back and properly seal any leaks. Doors and windows can be weatherstripped and, generally, smaller cracks can be filled with caulk while larger cracks might require an expanding foam spray.
2. Check doors and windows for rattling as this can allow an air leak.
3. Have someone stand outside a window and blow on it with a hairdryer while someone inside holds a lit candle next to the window. If the candle flickers then the window is allowing air to pass through.
4. Before checking for air leaks inside, do your best to seal the house by closing doors and windows and anything else that might allow the movement of air in to or out of your house. Start your inspection in the attic first, followed by the basement as these usually have the largest air leaks due to the stack effect. Hot air will rise and leave through the attic and this pulls cool, outside air in from the basement. Be sure to check around knee walls and ducts in the attic and where the house meets the foundation in the basement. Light an incense stick and hold it in front of suspected air leak areas. These can include areas where pipes or wires go through walls, doors or windows, recessed lights, unfinished spaces, outlets, baseboards, the attic hatch, faucets, and vents or fans. Incense smoke being pushed or pulled can be the result of an air leak. Take note of potential air leaks so you can return later to properly seal them.
5. Other techniques for detecting air leaks are holding a damp hand near potential air leak areas and shining a flashlight around suspected areas in the dark. Dampening your hand will increase its sensitivity to airflow. Have someone shine a flashlight at a potential leak area. If light rays can be seen from the other side then air is able to pass through.

Resources:

<http://energy.gov/energysaver/articles/blower-door-tests>

<https://docs.google.com/viewer?url=http%3A%2F%2Fwww.ces.ncsu.edu%2Fwp-content%2Fuploads%2F2013%2F09%2FHEMS-Home-Energy-Self-Assessment.pdf>

<http://energy.gov/energysaver/articles/detecting-air-leaks>

<http://www.youtube.com/watch?v=2ZLVfBWcGs4>

<http://www.youtube.com/watch?v=NrC3Mb2YBmE>

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