INVESTIGATION 8

HOW CAN YOU CONTROL RADON IN YOUR HOME?

INTRODUCTION

Once you have obtained measurements of the average household radon concentration that you and your family are exposed to, what is your next step? At what level should you become concerned? What is a "safe" level? At this time, there appears to be no totally safe level of radon in household air. The EPA recommends 4 pCi/L as an "action level" for radon in homes. In other words, if the average concentration of radon in your home is at or above 4 pCi/L, EPA scientists think it would be prudent for you to do something about it. This action level is based on a number of criteria, including the study of cancer incidence in underground miners, laboratory animal experiments, and practicality. The "action level" of 4 pCi/L is technologically achievable. In fact, mitigation techniques are so improved that levels below 4 pCi/L are often possible, *and*, the lower the radon levels, the more your risk is reduced. Obviously, if the average concentration of radon in your home is 200 pCi/L, there is considerably more urgency to do something about the problem than if the average concentration is 5 pCi/L. There are no cut-and-dry rules; you must use some common sense. If the concentrations are 8 pCi/L in the basement and 2 pCi/L on the main floor, but nobody spends any time in the basement, there may be less cause for concern.

Mitigation is a term that is used to mean "fixing the problem." If your tests suggest that the radon levels are too high, and you want to do something about it, then the next step is to implement one or more mitigation strategies to decrease the radon concentration and thereby decrease your health risk. There are many different radon mitigation techniques, but they all involve one of two things: 1) keeping radon from leaking into the house, and 2) once radon enters the house, ventilating it out. The best approach or combination of approaches to use will depend on such things as:

- how high the test results are
- the design and air flow patterns of the house
- the cost of different strategies, including added heating or cooling costs
- appearance (i.e., exposed ventilation pipes in the basement).

Specific strategies might include sealing the cracks and openings in and around the concrete slab under the house and the foundation, increasing ventilation with fans or heat-exchangers, or drawing soil gas away from the house before it enters. Some corrective measures can be implemented by the homeowners; some require the skills of a professional radon contractor. The cost of effective mitigation may vary from $100 to a few thousand dollars. The work itself can be done by a homeowner or a professional radon contractor. Regardless of who does the work and how much it costs, confirmatory testing should always be done to see how successful the mitigation has been. **In this exercise you will design two strategies to fix the radon problem in your home based on hypothetical radon levels.**

OBJECTIVES

To analyze the benefits of different strategies to reduce radon concentrations in the home.

PROCEDURE

1. Examine your home in detail to evaluate the major sources of radon from the soil into your home. Assuming that the average radon concentration in your home was measured at 10 pCi/L, design two alternative strategies for radon mitigation in your home. Mitigation strategy # 1 should be based on the principle of preventing radon from entering the house. Mitigation strategy # 2 should be based on the principle of ventilating excess radon out of the house after it has entered.

ANALYSIS

2. Describe your two mitigation strategies.

3. What are the advantages and disadvantages of each?

Hint: Include in your discussion an evaluation of the relative difficulty of implementing your proposed strategies, relative costs of implementation, aesthetics, and the potential ramifications regarding the energy-efficiency of your home and heating/cooling costs.

CONCLUSIONS

4. How would your response to the problem differ if your house was measured at 5 pCi/L, as compared with 10 pCi/L?