

INVESTIGATION 9**CAN THE RADON PROBLEM BE FIXED?****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? There is no known totally safe level of radon in household air. The U.S. Environmental Protection Agency (EPA) recommends 4 picocuries per liter of air (pCi/L) as an “action level” for radon in homes. In other words, if the average concentration of radon in your home is above 4 picocuries per liter, EPA scientists think it would be prudent for you to do something about it. The 4 pCi/L level is an achievable goal for homeowners in trying to minimize their health risk, and further reductions will lower health risks even more. Obviously if the average concentration of radon in your home is 200 pCi/L, there is 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 is 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 involve one of two things: 1) preventing radon entry, and 2) venting radon gas to the outdoors. 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
- 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.**

OBJECTIVE

To analyze the benefits of different strategies to reduce radon concentrations in the home; to utilize problem-solving skills in a creative fashion; to prepare a detailed proposal for conducting mitigation work.

PROCEDURE

1. Examine your home in detail to evaluate the most likely major sources of radon from the soil into your home.
2. 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 number 1 should be based on the principle of preventing radon from entering the house. Mitigation strategy number 2 should be based on the principle of ventilating excess radon out of the house after it has entered.

ANALYSIS

3. Describe your two mitigation strategies. Use additional sheets of paper, as necessary.

4. What are the advantages and disadvantages of each?

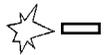


Hint: Include in your discussion an evaluation of the relative difficulty of implementing your proposed strategies, relative costs of implementation, aesthetics (i.e., how does it look?), and possible effects on your home heating/cooling costs.

5. You are a professional radon contractor and have been requested to deliver a proposal for fixing the radon problem in your own home, based on the results of your home examination in Step 1. On a separate sheet of paper, describe the radon problem, strategies to fix the problem, and what the job is going to cost. Remember that your role is that of a building contractor. Your audience is your parents and the purpose is to persuade your parents to accept your bid proposal and hire your company to do the job.

CONCLUSIONS

6. How would your bid proposal change if your house was measured at 100 pCi/L, as compared with 10 pCi/L?





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