DEFEATING RADON

New field research has revealed practical measures that can sharply lower indoor levels of this fearsome gas.

By Terry Brennan and Bill Turner

The chemistry of radon gas and its health risks have been well-documented in everything from scholarly reports to TV newscasts. (For more information on this see our first article in Solar Age, 5/85.) Little has been written, though, on the practical side of diagnosing and curing radon problems. The important questions for builders and designers are these:

- How does radon get into buildings?
- How do I know if a building has a problem?
- How can I solve radon problems in existing homes?
- What can I do to prevent radon from entering new homes?

William Turner is manager of the building air quality group at Hartman Associates, Auburn, Maine. Terry Brennan is a principal of Camroden Assoc., Rome, N.Y.

Where it comes from

A house is a likely candidate for a radon problem if it is in an area with soil or bedrock that is rich in uranium or radium. Loose, permeable soils further increase the chances of radon entering a building. Areas such as the Reading Prong, a geological formation that stretches into Pennsylvania, New Jersey, and New York, and phosphate-rich lands in central Florida have these problems. Unfortunately, radon problems aren't confined to such areas. There is enough naturally occurring uranium and radium in many soils and bedrocks to produce radon concentrations that, although moderate, exceed all recommended standards. Soil gas is the most common source of radon gas in homes.

Radon sometimes enters a building in well water. Water-borne radon escapes into the house air only during showers, washes, mopping, and other times when water is exposed to the air. For radon from well water to become an air-quality problem, the water must have radon concentrations well above typical levels—about 10,000 picoCuries per liter (pCi/l). Well water is not the usual suspect in a building that has a radon problem.

In rare cases, building materials can be a source of radon in houses, as when concrete blocks were made from phosphate mine slag in Montana. In a similar case in Colorado both concrete products and landscape fill used uranium mine tailings.

Diagnostics

There is no way to assess the probability of a building having a radon problem by simply looking. High-yield bedrock, permeable soils, earth basement floors, and open sumps are only clues. The only way to know for certain is to take a time-averaged measurement over at least four days. The longer the measurement period, the more representative the measurement will be. The measurement must be averaged because