Skills to Develop

• Recall why radon is dangerous to humans.
• Recall how to prevent radon poisoning.
• Recall the process by which radon is produced.

Radon is a colorless, odorless gas, the primary source of indoor air pollution. It sinks in air because it has a high density as is therefore often found in the basements of homes, particularly in areas where with a lot of shale and boulders in the soil. Radon results from the radioactive decay of radium in the soil, and it further decays to produce radioactive daughters including polonium and lead. Radon gas, along with decay products that can attach to dust and airborne particles, enters the lungs and decays, producing alpha and beta radiation that damages DNA and causes lung cancer.

Introduction

Discovered in 1900 by Friedrich Dorn, radon is a radioactive noble gas now regarded as a potential health hazard in some homes. It also has medical applications for cancer treatment. Its original name was to be niton for "shining" but it was eventually named as a derivative of radium. Radon is found in underground deposits where is it produced by uranium and radium decay.

Source

Radon has a variety of sources, including uranium, and contains rocks like granite, shale, phosphate rock, and pitchblende. Radon can escape from these sources and migrate into the surrounding air and water supplies. It can be found in well water, natural gas sources, and building materials. Radon sources are found throughout the United States, in houses, schools, and businesses that have been constructed on top of radon-rich soil. Due to its heavy density, radon typically floats downward and is often found in the basements of buildings.

Molecules of Radon

Radon fluoride (\(\text{RnF}\)) has been produced and the compound glows with a yellow light in the solid state.

Toxicity

Radon gas, the result of radium’s radioactive decay, can severely compromise indoor air quality. A variety of contaminants can affect the quality of indoor air and the health of the people who inhabit that space. Radon levels can be tested through a number of available assays, and contamination can be addressed by sealing basements and cellars to prevent the exchange of gas with the surrounding soil or by increasing ventilation. Many states require radon testing before selling a house.
Contributors

- Boundless
- Stephen R. Marsden (ChemTopics)