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Dispersion of Radon-222 Gas in Air

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Radon-222 is a heavy radioactive gas with a half-life of 3.8 days, often found in basements and other enclosed, underground spaces. It is produced by decaying deposits of uranium-238, and presents a significant health risk to those who encounter it in their homes and places of work. The only gas in the uranium decay chain, radon atoms work their way through layers of soil, usually to dissipate harmlessly into the atmosphere. In buildings, however, the gas accumulates and causes dangerous environmental radiation. Much work has been done to measure the transmission of the gas through water and solid materials, but very little is known about its behavior once it enters into the air of a contained space, besides larger scale statistical data. In this project, I will study how radon gas disperses horizontally and vertically over time in air and formulate a model for this dispersion. The model will benefit those working against the radon problem by providing a more efficient algorithm for evaluating radon's presence in a space and for locating its points of entry.

Information about the Author:

Erin Beckmeyer is a senior student studying physics and philosophy, with plans to someday attend seminary and enter the ministry. She discovered an interest in radon after seeing previous students' presentations of research on the subject.

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