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## Investigating the Effect of Air Conditioning on Radon

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# Investigating the Effect of Air Conditioning on Radon\*

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## Abstract

Radon is an invisible and dangerous noble gas that seeps up from the ground. Breathing in too much radon may cause lung cancer. When a room is not ventilated properly and closed up for a long time, it can lead to dangerous amounts of radon filling up. Radon is everywhere around us, and any amount of radon may be dangerous. In order to lower the threats from radon, rooms must recirculate fresh air. The average radon level outside is 0.4 pCi/L (picocuries per liter). The recommended radon level in a room is under 4.0 pCi/L. As the use of air conditioning increases, the need to open windows is no longer a necessity. The aim of this study is to justify whether or not air conditioning lowers radon level. The study's hypothesis is that air conditioning will lower the radon level.

This study will conduct two rounds of experiments at Marianas Baptist Academy. The radon in the rooms will be measured by a tool called the E-PERM. Electrets that collect ions and act as an ion sensor will be placed in three rooms for four days. Doors must remain shut during the four days. The first round will be managed in an environment where no air is entered into the room. The second round will be in an environment where air conditioning occurs. After each round, the electrets will be placed on a SPER reader to measure the voltage. The voltage will then be used to calculate the radon concentration in units of pCi/L.

The study is ongoing and the results will be discussed and presented at a further date.

**KEYWORDS:** Picocuries per liter; E-PERM, electret; SPER reader; radon concentration

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### **ABSTRACT**

Radon is an invisible and dangerous noble gas that seeps up from the ground. Breathing in too much radon may cause lung cancer. When a room is not ventilated properly and closed up for a long time, it can lead to dangerous amounts of radon filling up. Radon is everywhere around us, and any amount of radon may be dangerous. In order to lower the threats from radon, rooms must recirculate fresh air. The average radon level outside is 0.4 pCi/L (picocuries per liter). The recommended radon level in a room is under 4.0 pCi/L. As the use of air conditioning increases, the need to open windows is no longer a necessity. The aim of this study is to justify whether or not air conditioning lowers radon level. The study's hypothesis is that air conditioning will lower the radon level.

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