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Examining the Effect of Airflow on Radon Plate-out Rates[1] TAYLOR WALLACE, DANIEL JARDIN, ROBERT CALKINS, JODI COOLEY, Southern Methodist University — The SuperCDMS Generation 2 dark matter experiment is currently being constructed at SNOLAB in Sudbury, Ontario to detect dark matter candidates less than 10 GeV/c^2 in mass using cryogenic germanium and silicon detectors. One major source of contamination for these detectors is gaseous radon whose progeny decays can plate-out (stick) to detector components and limit their sensitivity. Thus, it is imperative that steps be taken to minimize radon plate-out in these experiments. Many environmental factors can affect the rate of radon plate-out, including airflow from wind or ventilation. To understand the role of airflow in radon plate-out rates, controlled plate-out tests were conducted inside an annular cylinder exposure chamber equipped with a variable speed fan and anemometer. The exposure chamber was supplied with a controlled concentration of radon using a Pylon radon flow-through source. Measurements using a copper sample have shown an increase in radon plate-out rate when airflow is present. Findings from this study can be used to aid in handling techniques and storage methods for ultra-sensitive detectors such as those in the next generation SuperCDMS experiment. Additionally, this data can help develop models to predict how plate-out rates depend on airflow.

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