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A radon daughter deposition model for low background experiments K. RIELAGE, V.E. GUISEPPE, A. MASTBAUM, S.R. ELLIOTT, A. HIME, Los Alamos National Laboratory — The next generation low-background detectors operating underground, such as dark matter searches and neutrinoless double-beta decay, aim for unprecedented low levels of radioactive backgrounds. Although the radioactive decays of airborne radon (particularly ^{222}Rn) and its subsequent daughters present in an experiment are potential backgrounds, more troublesome is the deposition of radon daughters on detector materials. Exposure to radon at any stage of assembly of an experiment can result in surface contamination by daughters supported by the long half life (22 y) of ^{210}Pb on sensitive locations of a detector. An understanding of the potential surface contamination will enable requirements of radon-reduced air and clean room environments for the assembly of low background experiments. It is known that there are a number of environmental factors that govern the deposition of daughters onto surfaces. However, existing models have not explored the impact of some environmental factors important for low background experiments. A test stand has been constructed to deposit radon daughters on various surfaces under a controlled environment in order to develop a deposition model. Results from this test stand and the resulting deposition model will be presented.

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