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Ion Production in the Presence of Isotopes for Various Gasses BENJAMIN GRABER, US. Naval Research Laboratory, Temple University, RONGJIA TAO, Temple University, DONG HO WU, US. Naval Research Laboratory — Gamma radiation creates ions in gasses. Since each gas has unique ionization energy, the positive and negative ion production rate will be dependent on the radiation energy. Each radioactive isotope has a characteristic gamma ray spectra. Combining these ideas, by using a few chambers containing different gasses with ion counters, one can construct a nuclear material detector that can identify an isotope. This experiment was carried out using Ar, CO2, O2, N2, regular air and humid air environments. These environments were exposed to Am, Ba, Co, Cs and Na while the positive and negative ions were counted over time. This procedure confirmed our expected result. This detection method is currently patent pending.

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