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DEADLY RADON IN MONTANA?

John Hart □ Sherman College of Chiropractic

In his letter, Puskin (2011) criticizes ecological measurements for radon concentration that were used in my analyses (Hart, 2011a, b) but then cites a study (Turner et al, 2011) to support his view that also used ecological measurements for radon estimates. In the other study that Puskin cites, namely Darby et al, 2005, it is unclear how the radon measurements were obtained. Indeed one peculiar statement is found in this latter citation: “For homes where radon measurements were unobtainable, we estimated the concentration from measurements *in the homes of controls*” [emphasis added] (Darby, 2005).

Case control and ecological studies on radon share a common weakness. Rather than determining *actual individual absorptions*, both designs provide *estimates of population exposures*, though case control estimates are purportedly more individualized (e.g., measurements taken from individual homes). On the other hand, direct evidence, in the form of actual individual absorptions, along with corresponding clinical findings, is available for those who are interested. Radium, which decays by alpha emission to radon (U.S. EPA, 2011a), has been found to have a relatively large margin of safety. This margin of safety was found in a study of approximately 500 persons who had skeletal mean doses of < 1000 cumulative rads, yet they had “no signs or symptoms of clinically significant radiogenic effects” (Evans, 1974).

Puskin also notes the confounding effect that smoking can have on data analysis. However, my comments (Hart, 2011a, b) were made in regard to “deadly radon” (Schontzler, 2010) rather than “deadly radon *when confounded by smoking*.” Indeed, the U.S. EPA states, without qualifying the confounding effect of smoking in the statement, that “overall, radon is the second leading cause of lung cancer” (U.S. EPA, 2011b).

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