

## Preliminary Results from the EARTH Study: Partial Testing of Multifamily Buildings Will Misrepresent Radon

“Evaluating and Assessing Radon Testing in Housing with Multifamily Financing” (EARTH) is a HUD-funded Healthy Homes Technical Study led by Health Research Inc. for the New York State Department of Health with assistance from the National Center for Healthy Housing. The primary aim of the study is to develop an evidence-based, statistically sound protocol for measurement professionals to correctly characterize a multifamily building’s radon level that is sufficiently protective of occupant health without being unduly burdensome to transactions or property owners.

The below table presents the probability of missing a unit with a radon level above the EPA action level, based on the % of units sampled, according to the analysis of data for 8,000 units across 600 multifamily buildings in the US. The data indicate, across building sizes, that it is not possible to characterize radon levels correctly in a multifamily building unless radon measurement occurs in at least 90% of the ground-contact units. While subsequent publications (such as the final report to HUD and related journal article) will contain additional information, the data and trend presented by this table will not change.

**Table I**

**Probability of ANY units above 4 pCi/L in a building given all sampled units are below 4 pCi/L**  
[Inclusion requirement: Building with at least as many values below 4 pCi/L as the number sampled]

# GF units	25% sampled			50% sampled			75% sampled			90% sampled		
	N	Probability	95% CI	N	Probability	95% CI	N	Probability	95% CI	N	Probability	95% CI
05-06	121	35%	(27%,44%)	112	29%	(22%,38%)	91	13%	(8%,22%)	79	0%	NA (1)
07-08	162	36%	(29%,44%)	155	34%	(27%,41%)	127	19%	(13%,27%)	103	0%	NA (1)
09-10	92	36%	(27%,46%)	89	34%	(25%,44%)	80	26%	(18%,37%)	73	19%	(12%,30%)
11-12	98	34%	(25%,43%)	95	32%	(23%,41%)	86	24%	(17%,34%)	77	16%	(9%,25%)
13-16	74	36%	(26%,48%)	71	34%	(24%,45%)	65	28%	(18%,40%)	55	15%	(8%,26%)
17-20	50	48%	(35%,61%)	50	48%	(35%,61%)	47	45%	(31%,59%)	37	30%	(17%,46%)

*(1) All units are sampled, so the probability must be 0%*

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