The Business Case: Radon As an Important and Overlooked Public Health Problem

Radon exposure in buildings is the second leading cause of lung cancer and results in more than 21,000 deaths each year. Radon is one of the most comprehensively investigated human carcinogens: laboratory studies have documented that an alpha particle (e.g., from radon decay products polonium-218 and polonium-214) can cause both single- and double-strand DNA breaks and can produce indirect genotoxic and nongenotoxic effects on both traversed and neighboring non-traversed cells.[i]

Radon knows no boundaries: high radon levels have been found in all states and nearly every county. Exposure affects the health of people in farmhouses and townhouses, new homes and old homes, one-story buildings and multi-story buildings, regardless of foundation or structure type. Data reported to CDC's National Environmental Public Health Tracking Network by labs and states indicate that 87% of US counties had radon test results above the EPA action level of four picocuries per liter of air between 2008 and 2017.[ii] By reducing air leakage in buildings, radon mitigation conserves energy, lowering costs for property management and occupants.

The Business Case for Action on Radon Is Substantial

The return on investment from the benefit of avoided lung cancer death over the cost of radon mitigation is significant.

EPA's most recent cost-benefit analysis estimates that testing and mitigating 100,000 homes for radon over 20 years will prevent 3,121-7,989 cancer fatalities with a return on investment (ROI) of $7.38-$15.27, assuming a two percent discount rate.[iii]

Risk Scenario	Number of Reduced Cancer Fatalities	Value of Costs ($ Billions)	Present Value of Benefits ($ Billions)	Return on Investment (Benefits/ Cost)
Test Existing Homes and Mitigate Homes That Exceed the Action Level				
EPA Scaled BEIR VI[1]	5,113	$1.40	$14.40	$10.08
PUMA[2]	7,989	$1.40	$21.90	$15.27
Residential[3]	3,121	$1.40	$10.60	$7.38

(Source: EPA: Analysis of Costs and Benefits)

This means that every dollar invested in mitigation yields benefits in terms of avoided medical expenses and deaths valued at $7.38-$15.27. This range compares favorably with the ROI of $.83 to $2.52 for smoke cessation.

Radon-induced lung cancer costs the health sector and the economy $8.6 billion annually.

- The National Cancer Institute estimated the medical cost of a lung cancer case to be $201,000 per patient per year in **2020** based on Medicare data, [iv] encompassing initial (first year after diagnosis), end-of-life (year before cancer death) and continuing (the time in between) medical care plus oral prescription drugs. Medicare is funded by taxpayer contributions, premiums and federal appropriations.
- The estimated economic loss caused by each lung cancer case each year per patient was $210,000 in **2008**,[v] including forgone earnings for employed individuals and imputed forgone earnings for informal caregiving. This income loss affects the wellbeing of families, harms the larger economy, and increases dependence on benefit programs.
- EPA estimated in **2003** that there are 21,000 annual lung cancer deaths from radon (with an uncertainty range of 8,000 to 45,000).[vi]
- A death toll of 21,000 is a fairly conservative estimate two decades later, considering 17% growth in the population[vii] and 21% in the housing stock[vii] plus the high proportion of energy-efficient homes.

References: i. National Research Council. Health Effects of Exposure to Radon: BEIR VI. 1999. ii. CDC, National Environmental Public Health Tracking Network Data Explorer iii. US EPA, Bowles, T et al., Analysis of Benefits and Costs of Radon Reduction Strategies iv. National Institutes of Health. Cancer Trends Progress Report. 2022. v. National Institutes of Health. Productivity Costs of Cancer Mortality in the US. 2008. vi. US EPA, Assessment of Risks from Radon in Homes, 2003. vii. US Census, Population and Housing Estimate Tables, 2025.