

LETTERS

LUNG CANCER EFFORTS NEED STRONGER EMPHASIS ON REDUCING RADON EXPOSURE

In their article, Lantz et al. construct a false dichotomy between tobacco cessation and indoor radon reduction efforts.¹ It is better to adopt a comprehensive cancer prevention approach. Both tobacco and indoor radon cause lung cancer and both should be addressed separately and in combination.

While the authors discuss the risk of indoor radon on smokers extensively, they almost completely ignore the lifetime lung cancer risk of indoor radon for people who have never smoked—about 7 out of 1000 at the Environmental Protection Agency (EPA) action level. The typical EPA target range for risk management is 1 out of 1 million to 1 out of 10 000. Radon risks are at least an order of magnitude higher. Fixing high radon levels protects all current and future residents in homes for which levels have been reduced (i.e., smokers, former smokers, and never smokers).

The authors' assertion that there is a lack of smoking messaging in radon outreach materials is incorrect. The EPA provides both smoking and radon messages to the public. However, risk communication research has shown that

combining these two issues in one message must be done with care. Individuals have an optimistic bias about their own personal risks. Non-smokers often believe messages that mention smoking do not apply to them, and smokers often tune out warning messages that mention smoking.

The authors recommend actions with which we strongly disagree, such as the use of different action levels for different smoking behaviors. However, in the range of the action levels they considered, the lifetime mortality risks are in excess of 1 out of 1000 for both smokers and non-smokers. This is far higher than risks from environmental carcinogens ordinarily targeted for action by public health policy in the United States. The authors further ignore the fact that homes are bought and sold frequently, with no regard for smoking behavior. In addition, focusing outreach toward smokers does not align with international policy consensus to target geographical areas with high radon.

Controlling indoor radon is cost-effective. In 1992, EPA concluded that universal testing at EPA's action level costs \$700 000 per life saved (CPLS). However, the authors highlighted 1999 results by Ford et al.,² which estimated CPLS at more than \$3 million. We noted at least two reasons to believe the CPLS is considerably smaller than the Ford et al. calculations indicate. First, the recommended models in the most recent comprehensive National Academy of Sciences report on radon risks³ would have yielded CPLS estimates roughly half as large. Second, Ford et al. used a relatively high discount rate (4%), which can highly influence estimates of CPLS since the health effects tend to occur many years after exposure. Caution is advised when using cost-effectiveness studies from other countries. As detailed in the World Health Organization Handbook of Indoor Radon,⁴ cost-effectiveness can vary greatly by country. ■

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LANTZ ET AL. RESPOND

Conrath and Pawel's response does not acknowledge the growing evidence that current radon control efforts are not as effective or efficient as they could be for optimal public health benefit.¹ We are not against a comprehensive approach. However, the strong interaction between radon and tobacco exposure cannot be ignored; the Environmental Protection Agency (EPA) itself estimates that 86% of radon-induced lung cancer deaths are among current and former smokers.² Given stalled radon control efforts and limited resources, we argue that residential radon policy should have a much stronger focus on smokers and should also create synergies with evidenced-based tobacco control efforts.^{1,3}

Conrath and Pawel take issue with our assertion that there has been limited tailored communication with smokers about radon risk. The EPA's main educational product, *A Citizen's Guide to Radon*, does provide some risk information for smokers along with the pithy message to smokers in homes above the action level to both "stop smoking and fix your home."⁴

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This simple informational approach to behavior change, however, cannot be considered a tailored or sophisticated communication strategy.⁵

Furthermore, at the state and local level, radon-related messaging to smokers is mostly buried within general educational materials. Our review of state government Web sites about residential radon revealed that very few explicitly or prominently communicate that smokers are at significantly higher risk.³ The fact that there are low levels of testing and remediation in the general population and that smokers remediate at an even lower rate strongly indicates that current efforts are lacking.^{1,6} We agree that this type of risk communication is not easy and that more research regarding effective educational interventions is needed.

The EPA's 1992 cost-effectiveness analysis is cited to justify the current recommended approach to remediation.⁷ However, since this analysis was conducted, smoking rates in the United States have fallen from near 30% to 19%, which decreases the cost-effectiveness ratio because smokers carry the majority of the residential radon burden.⁸ Furthermore, given normal residential mobility, Warner et al. demonstrated that current radon exposure is a poor indicator of lifetime risk, and that for typical individuals living in high radon homes, the lifetime risk is likely much lower than what EPA analyses have assumed.⁹

We maintain that reducing smoking in the general population and special efforts to target current and former smokers with tailored radon testing and remediation messages are the most cost-effective approaches to reducing the public health burden of radon. ■

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