

The Dangers of High Radon Exposure: The Silent Killer Finds Its Voice

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Radon, a natural gas, is the second leading cause of lung cancer after smoking and is responsible for around 21,000 deaths every year (Vogeltanz-Holm & Schwartz, 2018). However, public knowledge about radon as a health threat is minimal and awareness campaigns have been ineffective at increasing testing rates. Lacking a designated community responsible for educating the public, as well as the general struggle to persuade homeowners that an invisible, odorless gas poses a credible threat to their health, the scientific information describing radon as a health concern has struggled to disseminate into the public sphere. In order to effectively increase the public's awareness of radon, campaigns need to prioritize presenting their information in a way that convinces the public of radon's relevance, making the desire to mitigate it increasingly salient. Additionally, the scientific community must focus its resources on dispersing the information to a smaller portion of the nation that is geographically at higher risk and therefore more likely to accept radon risk information as relevant. Radon has a long latency, occurs naturally, and appears in the home, which is a place that is typically not associated with health risks, making it difficult for informative and persuasive messaging campaigns to be met with interest. Therefore, it is crucial that radon safety information comes from a source that homeowners will listen to, one that they view as credible and trustworthy. Refining the target population for radon awareness, as well as communicating safety information in a way that prioritizes clarity and emphasizes salience, and utilizing trustworthy, accessible sources of information is the key to diminishing radon-related lung cancer deaths.

Previous national campaigns to raise awareness about the risks of radon saw little increase in public awareness or concern. A study conducted using the 1990 National Health Interview Survey found that only 69.1% of the nearly 50,000 respondents had heard of radon and a third of those knew that it caused cancer (Vogeltanz-Holm & Schwartz, 2018). Considering that

different states are at different risk levels for radon exposure, the failure of a mass, one-size-fits-all approach to disseminating radon threat information and persuasion is not surprising. Data on the varying levels of radon by state can function as a form of audience segmentation for organizations such as the Environmental Protection Agency (EPA) and the American Association of Radon Scientists and Technologists (AARST) to prioritize targeting and tailoring their messages to these regions. Hawaii residents, who are least at risk for radon exposure, will be less motivated to listen to radon risk messages than Alaska residents who are of greatest risk and therefore residents of these states should not be receiving the same messaging (Reynolds, 2021).

In tandem with audience segmentation, central route processing is an effective way to tackle the barrier of apathy that prevents motivation from homeowners to listen to messages about radon risk. Central route processing or central route persuasion focuses on the quality of the information and facts presented in an effort to create *lasting* attitude change (Dumper, 2014). In order for central route persuasion to be effective, the persuasive message that radon is a present health risk needs to be salient. Spotlighting the facts, that radon causes approximately 21,000 lung cancer-related deaths a year (which is double that of the approximately 10,000 annual drunk driving-related deaths) and that high levels of radon are present in one out of fifteen homes in the United States is a strong expression of the data in a way that promotes relevancy and salience amongst the target recipients of the radon informational campaigns (Vogeltanz-Holm & Schwartz, 2018). The direct and simple presentation of easily comprehensible, but shocking and concerning information will hopefully reshape homeowners' apathetic attitude due to radon's long latency and invisibility into recognition that these silent attributes are what makes radon a relevant threat.

Focusing on presenting information in a clear and to-the-point manner combats the inaccessibility of jargon, which is a present peril and barrier to knowledge dissemination in science communication. The jargonization of scientific discourse is “the institutional tendency... to seek legitimization in a professional voice, one whose status depends,... on exclusion” (Montgomery, 1989, p. 45). While jargonization is an aspect of scientific literature that is difficult to translate without losing certain aspects of knowledge to generalizations, accessibility is instrumental for laypeople to interpret, understand, and trust that scientific knowledge is true. Communication accommodation plays a key role in accomplishing adequately informing at-risk homeowners of the health consequences of radon. Reading about radon levels, one will find there is an abundance of data on the number of picoCuries per liter and becquerels per cubic meter of air (the measurement for radon) that is deemed safe. As a layperson, that measurement is difficult to interpret and therefore immemorable. EPA campaigns that focus on accommodating scientific language and data to converge, or meet, the information needs of their desired audience will see greater success at disseminating the radon information to this target population. Accommodating communication to fit the needs of those who are intended receivers of the information is important, but it is only as successful as the person or institution responsible for delivering the message.

Currently, radon campaigns have been predominantly been led by scientists who fit the area of expertise regarding radon but are not necessarily considered “friends” of the general public. People believe scientists are credible because of their expertise as well as their *trustworthiness*. Lab coat, P.h.D scientists are not typically going to be the people that convince homeowners of the risks of high-level radon exposure, so a different avenue of information

communication is necessary. Trust is a key component to audiences' acceptance of messages and one is more likely to trust someone they believe has their best interests at heart, someone they relate to, someone who is in their in-group (Fisk & Dupree, 2014). In the case of radon information dissemination, homeowners are more likely to trust messages about radon from members of their close interpersonal networks or from people who are both experts and credible. The difficulty lies in selecting a responsible party, in addition to scientists, to help effectively spread the message about radon. Radon testing is a required element of home real estate transactions in 29 states and it is likely that the motivation on both ends of the home buyers and sellers to complete the real estate transaction builds mutual trust over a common goal (Vogeltanz-Holm & Schwartz, 2018). As a result, realtors can act as a channel in disseminating radon risk information. Real estate agents deal with their clients face-to-face and if radon testing is required by law rather than by realtors' own personal agenda their clients are more likely to believe in real estate agents as agents of neutrality.

Persuasive messages that come from dyads and both strong and weak relational network ties are more effective than mass messaging campaigns, but that does not render these campaigns obsolete. Expertise remains a crucial and irreplaceable aspect of perceived credibility, especially when it comes to scientific findings related to healthcare. Working in tandem, expertise from scientists and the perceived credibility of the real estate industry can lessen the gap between the scientific community and laypeople's understanding of radon as a health risk. The goal of legally bringing real estate agents into the fold of disseminating radon information is an effort to compound the existing messages put forth by large organizations such as the Centers for Disease Control and Prevention (CDC), the EPA, and the AARST. Realistically, people who are not realtors do not make a large number of real estate-related transactions in their lifetime, but

realtors' dissemination of information about radon on a smaller, more interpersonal level in addition to large-scale campaigns increases the likelihood that more people become aware of radon in general.

Realtors' communication of the health risks related to radon exposure will diffuse through home buyers and sellers into their own relational network ties, solidifying radon exposure as a relevant and salient health concern. Successful diffusion of information from scientists to the real estate industry to home buyers/sellers to current homeowners will ideally result in lay people's motivation to research the health effects of radon themselves. Their own agency to discover the data behind radon mitigation efforts will allow them to form and have confidence in their own opinions toward the safety of radon and the various actions and testing options that exist to decrease radon levels within the home. The acquisition and comprehension of information about radon as a viable threat is crucial because an adequate understanding of radon risk is ultimately what should motivate homeowners to actively seek out radon testing and mitigation, which in turn will prevent radon-related lung cancer deaths. Real estate agents, as the source of radon-related information in housing transactions, funnel the message from a large mass communication campaign to local, interpersonal interaction and can act as key players in sponsoring overall radon mitigation.

Narrowing in on a smaller portion of the United States that is more at risk to high levels of radon exposure and curating diverse, smaller informational campaigns via organizations like the EPA as well as employing realtors as a means for more localized diffusion of radon safety and testing information is a multifaceted approach to bringing radon mitigation concerns to the forefront of homeowners minds. Creating different paths in which information can diffuse and reach the general public maximizes the potential for homeowners to learn about the dangers of

radon and accept the scientific data as true. Distributing the burden of diffusing radon information between larger scientific organization campaigns as well as smaller interpersonal relationships like that of a realtor and a homeowner relieves both parties of overwhelming educational responsibility. Homeowners can also take the information provided to them by their realtors and look to larger campaigns are awareness efforts to double down on the radon risk that their localized interpersonal networks detailed.

Radon is not detectable by the senses and if there is not adequate dissemination of information on where it comes from and the risks associated with high levels, the primary evidence it even exists will be on cancer screening results rather than the results of radon testing kits. 21,000 deaths a year, but minimal awareness or coverage of the topic depicts a clear problem with the current strategies of radon information dissemination. Utilizing communication accommodation in terms of convergence and clarity as well as reshaping, framing, and priming a more salient route to persuasion will increase trust in those who typically deliver scientific messages. Emphasizing the power of social and relational networks, moving information about radon and radon mitigation through smaller face-to-face modes of communication will likely be more successful in informing the general public of the risks associated with high levels of radon than public service announcements from government-sponsored campaigns. Combining increased access to radon-related information as well as increased access to and required conduction of radon testing kits via realtors will contribute to the continued growth of general awareness of the health detriments of high levels of radon. As a public health concern, ensuring the increasing awareness of the health risks of radon in tandem with increasing access and regulation of radon testing kits is the most promising way to motivate and sustain the salience and timely dissemination of radon-related information.

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