Alaska radon maps suggest potential scope of health concern
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Abstract
Radon is a naturally occurring radioactive gas and progeny in the uranium-238 decay chain. When radon is liberated from rocks and soils, the gas can migrate to the surface, enter buildings through their foundation, and concentrate inside. The odorless, colorless gas is the second leading cause of lung cancer after smoking and causes more than 21,000 deaths per year in the U.S. Unfortunately, tests that measure radon concentrations in buildings are inexpensive and easy to conduct, and most homes can be fixed inexpensively. The Alaska Radon Program (https://maps.dggs.alaska.gov/hazards/radon.html) is meeting the challenge to increase Alaskans’ awareness of the hazard of radon by providing owners to test to determine the concentration of radon in their homes and reduce exposure to radon through mitigation when necessary, ultimately decreasing lung cancer deaths.

Alaska radon testing has long indicated that the Fairbanks area, particularly the hills around the City of Fairbanks, has elevated radon levels that can cause indoor air concentrations greater than the Environmental Protection Agency’s (EPA) radon action level of four picocuries per liter (pCi/L). EPA recommends homes be mitigated to lower radon concentrations if the indoor radon level is 4 pCi/L or more. Because there is no known safe level of exposure to radon, EPA also recommends that building owners consider mitigating for radon levels between 2 pCi/L and 4 pCi/L. Radon maps at https://maps.dggs.alaska.gov/radon/ suggest that education and outreach should also be conducted in Matanuska-Susitna Valley, Kenai Peninsula, and other areas of the state where test results are elevated and/or the potential for radon is elevated.

The radon maps are an effective tool to encourage radon testing. Alaska radon data are crowdsourced from homeowners and radon laboratories, who release their information to DGGS to help inform others about the hazard. Personally identifying information and exact locations of radon tests are held confidential by DGGS. Because testing data are still sparse or nonexistent in many locations and building construction and use plays as much a role in indoor air radon concentrations as radon availability, the maps should not be consulted in a decision about whether to test for radon. All Alaskans should consider testing the buildings in which they spend significant amounts of time.

Additional resources
• Radon circular with general radon information: https://doi.org/10.14509/30163
• Radon testing after earthquakes: https://doi.org/10.14509/30481
• Understanding your radon test: https://doi.org/10.14509/30467
• Mitigating radon levels at home: https://doi.org/10.14509/30474
• Radon in Alaska. What you should know: https://doi.org/10.14509/30645

Test results are elevated and/or the potential for radon is elevated. If the radon level in your home is measured at 4 pCi/L or greater, the EPA recommends mitigating your home to lower its radon concentration. Most buildings can be successfully mitigated.

Study participants with mean radon concentrations above 4 pCi/L experienced a 34% increase in risk for lung cancer mortality relative to those below the guideline value. Overall, each 100 Bq/m³ (0.7 pCi/L) increase in radon was associated with an 8% increase in lung cancer risk.

4 pCi/L

Average radon test results (pCi/L)

Data as of April 19, 2022
>2500 unique test result locations

https://maps.dggs.alaska.gov/radon/

https://maps.dggs.alaska.gov/radon/

https://sosradon.org/

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https://doi.org/10.14509/30467

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