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The following is the Position Statement regarding radon in water supplies compiled by the Technical and Science Committee of the American Association of Radon Scientists and Technologists (AARST)

Radon Risk:

The primary health concern regarding indoor radon gas is the increased risk for lung cancer that occurs from breathing radon and its radioactive byproducts. The magnitude of the risk depends on the radon concentration in the air you breathe and how long you are breathing it. Radon gas is a serious national concern. The risk of radon-related lung cancer increases the longer one is exposed although any exposure to radon poses some risk.

Testing the radon level in the indoor air that one breathes should be a high priority and the first step for everyone concerned about radon gas. The U.S. Surgeon General, U.S. EPA, AARST, and the American Lung Association recommend that all homes be tested for radon gas, so action can be taken to reduce exposure and the risk of radon-related lung cancer.

At this time, the EPA does not have sufficient data to identify specific areas of the U.S. most likely to have groundwater containing high radon levels.

Radon Sources including Water:

Soil and rock beneath a home are the primary sources of indoor radon gas. The soil under a house always contains some naturally-occurring radioactivity that continuously produces radon gas that can enter into the air of buildings. While soil under a building is commonly the source for most of the radon gas in a home, the water supply can be a significant source when groundwater (well) is used. Radon is readily released from the water into the indoor air during uses such as bathing, washing, and drinking. The contribution of radon from water supplies to the indoor air is very dependent upon the level in the water supply, the volume of water used, and the building ventilation rate. Radon in surface-water supplies is typically very low and of little concern.

Appropriate Testing Methods for Radon in Water:

Currently, the EPA recommends the following two methods for measuring radon levels in water:

a) liquid scintillation counting
b) alpha-scintillation cells.

Although they are a good indicator, direct measurements of radon in a water supply cannot reliably predict the radon concentration that will occur in the indoor air you breathe. Attempts to use such measurements for estimating exposure are subject to large disparities due to the:

a) wide variability in the volume of groundwater used from home to home
b) significant variability in ventilation rates from home to home and room to room
c) differences in the amount of radon released into the air during water usage.

This position statement does not address the risk of other radiation in water supplies. However, it is prudent to test for radium and uranium concentrations when radon levels in the groundwater are high.

Practical Diagnostic Test:

Air

Diagnostic measurements of the radon in the air you breathe can provide better risk estimates.

Perform a radon measurement of the building air according to testing protocols (specified by EPA or AARST as noted below) in the lowest level (or lived-in level) of your home. Place any test device at least 20 inches above the floor and 12 inches from the walls, according to testing protocols. Carefully follow all manufacturers' testing kit instructions.

At the same time, perform another radon measurement of the air in a room where significant water use occurs. You may also want to test in an occupied room on the same floor to discern whether a difference in the radon levels may be due to water use.

If any of the indoor air results are at or above the EPA recommended action level retest these areas to confirm the initial results.

Water

If the radon concentration in indoor air is elevated, especially on upper levels of the home, and groundwater is used in the home, it is recommended that the radon level in the water supply be determined using an appropriate testing method (above). Water containing more than 4,000 pCi/L of radon should be remediated to reduce the water's contribution to the radon levels in indoor air.

You may also contact a State licensed or nationally certified radon measurement professional to conduct the measurements of radon in the air and water for you.

Interpreting Radon Test Results:

For guidance on test results and protocols for measurements of radon in the air, see documents such as EPA's Citizens Guide to Radon or other publications at http://www.epa.gov/radon/pubs. Other information and publications for measuring radon in the air for home and multi-family dwellings can be found at http://www.aarst.org.

If confirmed measurements are at, or above, the EPA recommended action level, contact a State licensed or nationally certified mitigation professional to fix the home and/or water supply to reduce the radon levels.

Reducing Radon Concentrations:

The best approach to reduce radon in the home is to install an active soil depressurization system (ASD) and reduce the entry of radon coming from the soil. In some cases, increasing the entry of outdoor air to the home is an appropriate method to reduce radon levels by dilution and improve indoor air quality. Both of these methods require a qualified radon mitigation professional to design and install the appropriate radon reduction system. Only in cases of groundwater use would determination of the radon level in the water supply be necessary to further reduce the indoor radon concentration, assuming water measurements confirm it as a significant source.

In Conclusion:

Testing the air you breathe is the best method to determine your risk from radon, whether the source of the radon is from the soil or from water use inside the building.

AARST supports peer-reviewed research to identify and quantify the contributions of groundwater supplies to indoor radon concentrations.

This statement was provided by the Science and Technical Committee of the American Association of Radon Scientists and Technologists, Inc. (AARST.)

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