

~ Radon Fast Facts ~

1-Authorities

- *Superfund Amendments and Reauthorization Act (SARA), Title IV, 1986.
- *Toxic Substance Control Act (TSCA), Title III, Indoor Radon Abatement (IRAA), 1988.

2-Science & Risk

EPA Risk Assessment (June 2003) (see also #7 'key public documents')

- *EPA 2003 risk assessment estimates 20,000 annual radon related lung cancer deaths; about 17,260 were among ever smokers (86.3%) and about 2,740 among never smokers (13.7%).
- *Linear no-threshold model. No known 'safe' level. Action level of 4 pCi/L is not a 'safe' level.
- *Assessment based on assumed lifetime exposure to 1 pCi/L for 75.4 years at 70% residential occupancy with a 40% equilibrium fraction.
- *About 13% of all lung U.S. cancer deaths were radon-related (20,000 of 157,000 in 1995)
- *At 4 pCi/L about 7 in 1,000 never smokers will die of radon-related lung cancer, a risk roughly equal to dying in an auto accident.
- *At 4 pCi/L about 62 in 1,000 ever smokers will die of radon-related lung cancer, a risk roughly equal to five times the risk of dying in an auto accident.

Surveys & Studies

- *1.25 pCi/L is the average indoor radon level in U.S. homes.
- *.4 pCi/L is the average ambient radon level in the U.S. (1/10th the action level; also IRAA National goal)

3-Public Messages

- *Test and fix your home if the level is 4pCi/L or more (action level). Not a safe level. Risk assessment based on lifetime exposure to about 1 pCi/L over an estimated lifetime of 75.4 years.
- *Consider fixing your home if the level is between 2 – 4 pCi/L.
- *The Office of the U.S. Surgeon General and EPA recommend all homes be tested and fixed when high radon levels are found (1988).
- *Radon is the second leading cause of lung cancer death after smoking.
- *With radon, a smoker's risk of lung cancer is much higher than that of a never smoker.
- *Testing is the only way to know what your home's radon level is.
- *Buying or selling a home is an excellent opportunity to test and fix (if needed).
- *The average cost to fix was \$1,200; the average cost to build radon-resistant was \$390 (in 2002).
- *If you're building or buying a new home ask your builder to include radon-resistant features.

4-Help & Information

- Web Front Page: <http://www.epa.gov/iaq/radon/index.html>
- *publications (20+): <http://www.epa.gov/iaq/radon/pubs/index.html>
 - *state radon offices: <http://www.epa.gov/iaq/whereyoulive.html>
 - *hotlines & proficiency: <http://www.epa.gov/radon/rmxlines.html>
 - *radon map: <http://www.epa.gov/radon/zonemap.html> (state/local data also exists)
 - *risk assessment: http://www.epa.gov/radon/risk_assessment.html
 - *real estate: <http://www.epa.gov/radon/realestate.html>

Hotlines

- *1-800-SOS-Radon (767-7236); 24-7; order brochures & test kits (NSC)
- *1-800-55-Radon (557-2366); 9-5 M-F; live help; for Qs, pubs (single copy), state information
- *1-800-438-4318; Indoor Air Quality Information Clearinghouse; 9-5 M-F; IAQ Qs, pubs
- *1-800-725-8312; National Hispanic IAQ Helpline; 9-6 M-F; bilingual help (NAHH)

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5-Scope

- *About 1 in 15 homes has an elevated level (≥ 4 pCi/L)
- *More than 5 million homes with an elevated radon level have yet to be fixed.
- *Homes in Zone 1 (red) are predicted to have a radon (screening) level above 4 pCi/L.
- *Homes in Zone 2 (orange) are predicted to have a radon (screening) level between 2-4 pCi/L.
- *Homes in Zone 3 (yellow) are predicted to have a radon (screening) level pf less than 2 pCi/L.

6-Progress

- *An estimated 1.2 million homes built radon-resistant since 1990; the majority in Zone 1.
- *An estimated 455,000 - 585,000 homes had an operating (active) radon mitigation system as of 2003.
- *A radon-resistant new construction standard was included in the International Residential Code (as an appendix, 2000), and by the National Fire Protection Association in NFPA 5000 (in the body, 2003).
- *American Society for Testing and Materials International (ASTMI) published *Standard Practice for Radon Mitigation Systems in Existing Low-Rise Residential Buildings* (ASTMI E2121); EPA incorporated it into its radon program by reference (2002). A draft standard on Radon-resistant New Construction (E1465) is being finalized (expected by Spring 2005).

7-Key 'Public' Documents

- **A Citizen's Guide to Radon* (EPA 402-K02-006, Revised May 2004)
- **Home Buyer's and Seller's Guide to Radon* (EPA 402-K-00-008, July 2000)
- **Consumer's Guide to Radon Reduction* (EPA 402-K-03-002, Revised February 2003)
- **EPA Assessment of Risks from Radon in Homes* (EPA 402-R-03-003, June 2003)
- **Technical Support Document* (TSD) (EPA 400-R-92-011, May 1992)
- **Building Radon Out* (EPA 402-K-01-002, April 2001)

8-History

- *1899-Radon's *alpha radiation* discovered by Ernest Rutherford (England); called *radium emanation* by Friederich Dorn (Germany-1900) who discovered radium emanated a gas. Beginning in 1908 it was known as *niton* and renamed *radon* in 1923.
- *1984—Became a U.S. national health issue. Received national attention because of a very high radon level in the home of Stanley Watras (Colebrookdale Township, Berks County, Pennsylvania)
- *1985-National Radon (Measurement/Mitigation) Proficiency Program (opened 1985, closed 1998)
- *1986-First *Citizen's Guide* (revised 1992)
- *1986-First radon mitigation guide, *Radon Reduction Methods* (revised 1992 as *Consumer's Guide*)
- *1989-Three Regional Radon Training Centers established (the fourth was added in 1990)
- *1989-First schools measurement and mitigation guidance documents (updated 1994)
- *1990-State Indoor Radon Grant program begins
- *1991-*Radon Potential Map* published
- *1991-Model radon resistant residential new construction standards
- *1992-*Technical Support Document* (basis for *Citizen's Guide* and *Home Buyer's and Seller's Guide*)
- *1993-*Home Buyer's and Seller's Guide to Radon*
- *1999-NAS *Biological Effects of Ionizing Radiation* (BEIR VI)
- *2000-ASHI-EPA *Mitigation System Inspection Checklist*
- *2001-EPA's *PSA Man on the Street* receives 2000 Emmy Award for Community Service
- *2003-*EPA Assessment of Risks from Radon in the Home*

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