

Proceedings of the 2006 International Radon Symposium  
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**NEW-HOME RADON UP - RRNC POLICY DOWN:  
CAN THE GAP BE ADDRESSED BY LOCAL PUBLIC HEALTH  
LAWS?**

Dan Delano, BS, RS, Environmental Health Sanitarian  
Rich Peter, BS, MA, RS, Environmental Health Director,  
Olmsted County Public Health Services  
2100 Campus Drive SE, Rochester, Minnesota, 55904, USA

**INTRODUCTION**

This presentation is intended to stimulate thinking about options for addressing radon as a public health threat that local governments can address through their public health agency's assessment, public education, professional development, policy development, and policy administration functions.

**The Issue:**

National and state building industry associations have not clearly demonstrated their professional responsibility or intention in addressing elevated radon in new homes being built in high-risk radon zones. According to our records about one-half of the homes built in Southeastern Minnesota since 1950 have radon levels that meet or exceed EPA's recommended action level.

The lack of clarity about building association support for effective professional or national policy increases health risk and financial burdens on the families that occupy homes affected with elevated radon. It also increases costs that federal, state, and local government incur attempting to inform the public of the risk radon presents in the home and the remedies available to them.

The Surgeon General identifies radon as a significant public health risk. Minnesota statutes, probably like those in other states, provide authority to local boards of health to address public health threats (aka public health nuisances in some states). Typically this includes the power to adopt ordinances addressing specific public health nuisance conditions.

**Our Local Experience:**

For 15 years, Olmsted County Public Health Services (OCPHS) has augmented local funding for radon services with grants, initially from the National Association of Counties and then by Minnesota Department of Health (SIRG). With the help of these resources an electret system was purchased in 1992. This was important:

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1. It provides area residents with convenient, rapid and inexpensive radon testing; and
2. It provides data for community assessment, public & professional education, planning, & decision making.

We find that advertising and news releases directed at the general public and home-buyers appear to be reasonably successful in encouraging residents to test their homes for radon. We also find that training for realtors and builders about radon risk and the local incidence of radon appears less successful.

Since 1992, OCPHS has provided training to realtor and builder groups and financial assistance to cover individual builder cost for RRNC demonstration installations. OCPHS has also sponsored RRNC graphic-display advertising directed to local builders and realtors for the past 6 years. At this time, we are aware of only one low-volume builder and the local Habitat for Humanity Chapter systematically installing RRNC systems.

Locally, individual builders indicate they will provide RRNC only if required by law or contract and they are not sufficiently prepared to “sell” RRNC to the families buying their homes. The spring 2005 publication of the Builders Association of Minnesota (BAM), includes the following statement by the BAM Director of Codes:

1. “. . . there are no statistics on the number of newly constructed homes that have radon levels above 4.0 pCi/L.”
2. “. . .explained to the 2003 IRC Advisory Committee, in the past 10 years, remediation companies have tested around 300 of their homes for radon levels. Less than 10, or 3 percent, of the homes that were tested had levels that required remediation. . . . “
3. “. . .Now that we add the poly and put a cold air return in all basements, I think the number of houses with radon levels over 4.0 will be even lower.”

BAM’s data and conclusion are not consistent with radon test data gathered from about 3,800 single family homes in Olmsted County. Over one-half of the homes constructed during the last 16 years show radon concentrations exceeding EPA’s 4.0 pCi/L Action Level, including the most recent decade.

### HOME BUILDER AND PUBLIC POLICY

The EPA recommends that new residential buildings, in areas with a high radon-potential, be built with a passive radon control system, incorporating features that facilitate post-construction radon reduction, if needed. (Radon-Resistant New Construction. *Sources of Information on Indoor Air Quality*. U.S. Env. Protection Agency, August 1999. <http://www.epa.gov/iaq> )

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Some of the National Association of Home Builder's (NAHB) policies for addressing radon in new homes in high-risk zones, are included in their web site and summarized here:

1. "Federal radon policy should be restricted to those areas of the country where radon accumulation in homes constitutes a health problem;" and
2. "Support voluntary use of residential radon construction standards in building codes, statutes, or regulations."

We are being advised that national & state builders' associations are a) lobbying policy makers to discourage public policy addressing radon through building codes; and b) are not actively encouraging their members to address radon in high risk zones.

Federal and/or state building construction standards and laws addressing radon and RRNC appear to be stalled in Minnesota. This leaves a gap that invites other options, for addressing radon such as local public policy.

### **IT IS TIME TO CONSIDER NEW OPTIONS**

Efforts to set RRNC public policy at State or Federal government level appear to be advancing very slowly and are apt to stall, due in part to NAHB policies and their legislative influence. In addition we see difficulty gathering a significant majority of legislative interest within large governmental jurisdictional areas because most of these jurisdictions are apt to include zones with low, moderate, and high radon risk.

Our local experience coupled with the above findings prompt us to reconsider current radon program strategies. We propose the following:

1. State & Federal programs might be more effective at achieving RRNC and new home radon testing by directing their support to development of a) robust local government educational campaigns, and b) community support for adoption of policies addressing elevated radon before new homes are occupied;
2. Local governments can achieve RRNC through a) local Public Health "point of sale" radon testing/mitigation ordinances and/or b) local building codes.
3. Addressing radon as a local public health threat can be supported by State's "Local Public Health Acts" and associated "public health nuisance" provisions.

### **OPTIONS FOR BUILDERS AND PUBLIC HEALTH POLICY MAKERS**

Several states establish the powers and duties of a local Board of Health to adopt & enforce ordinances related to public health for the territory within its jurisdiction. In our state, Minnesota, Statutes § 145A.04 and 145A.05 authorizes a County Board to adopt

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ordinances to regulate actual or potential threats to the public health, to define public health nuisances, and to provide for their prevention.

Under existing statutory foundations, many local governments can adopt ordinances addressing the radon public health threat. To be effective such ordinances should include provisions such as the following:

1. Clarify that radon is a public health threat,
2. Require radon testing of new homes and the prospective first occupant be informed about the radon level and associated health risk, and/or
3. Require mitigation when radon exceeds EPA limits.

With such public policy, builders have options based on their experience with local conditions and economics of the situation. They can a) install RRNC during construction, or b) provide radon mitigation as a retrofit of the new home, prior to occupancy, when radon is found to be elevated. This approach addresses both the builder's and public health concerns:

1. Respects builder's policy that RRNC should not be mandated;
2. Avoids installation of RRNC in locales where radon is not apt to be elevated, and
3. Assures public health protection by bringing radon levels to the owner's attention and/or reducing them below EPA action limits prior to occupancy.

### **LOCAL GOVERNMENT RADON POLICY EXAMPLES**

The following local government policy and program models may be helpful to parties considering how to address radon through local public health policy:

1. Fort Collins, Colorado: "Point of Sale Ordinance" and public informational campaign. See web-sites: <http://fcgov.com/airquality/radon.php>  
[www.cdph.state.co.us/hm/rad/rac/Meetings/attach051012ref05.pdf](http://www.cdph.state.co.us/hm/rad/rac/Meetings/attach051012ref05.pdf)
2. East Moline, Illinois: "Public Health & Building Code"  
See web-site:  
<http://www.healthpolicyguide.org/doc.asp?id=5972>
3. Topeka, Kansas: "Amend Residential building code to include Radon control methods" See web-site:  
[www.topeka.org/cityclerk/ordinances/18657-relating to radon control methods.pdf](http://www.topeka.org/cityclerk/ordinances/18657-relating%20to%20radon%20control%20methods.pdf)

### **QUESTIONS AND ACKNOWLEDGMENTS**

Questions about this presentation and suggestions can be directed to either author at 507-285-8335. We acknowledge the insight, support, and professional assistance provided to us by Daniel Steck, Physics Professor, St John's University; William J. Angell, Professor

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& Director of Midwest Universities Radon Consortium, University of MN; and Josh Kerber, MN Dept of Health.

**APPENDICES**

**Appendix A** = Mean & Median Radon Level By Decade Of Construction For 2,854 Single Family Olmsted County Homes

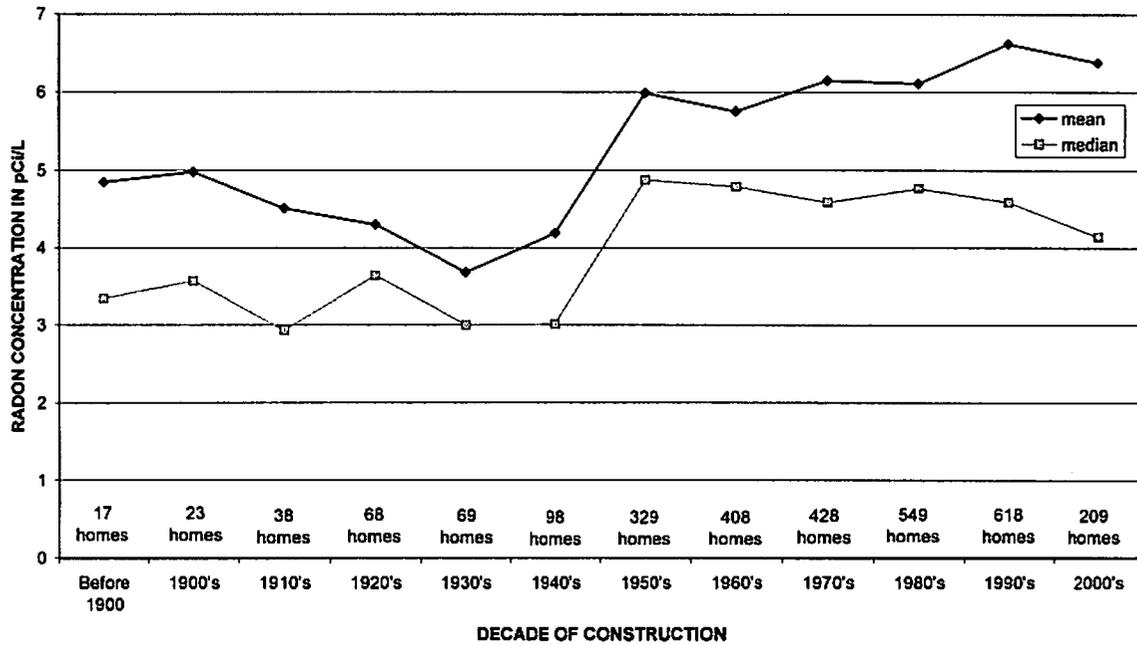
**Appendix B** = Distribution Of 3,832 Initial Short-Term Radon Test Results For Samples Collected At Single Family Homes In Olmsted County, Minnesota

**Appendix C** = Text of our August 16, 2006 E-mail inquiry to: Marolyn Parson (800-368-5242 x8157), National Assoc of Home Builders (NAHB)

**Appendix D** = Radon – Sources, Health Risks, Local Exposure, & Local P. Health Services

Appendix A

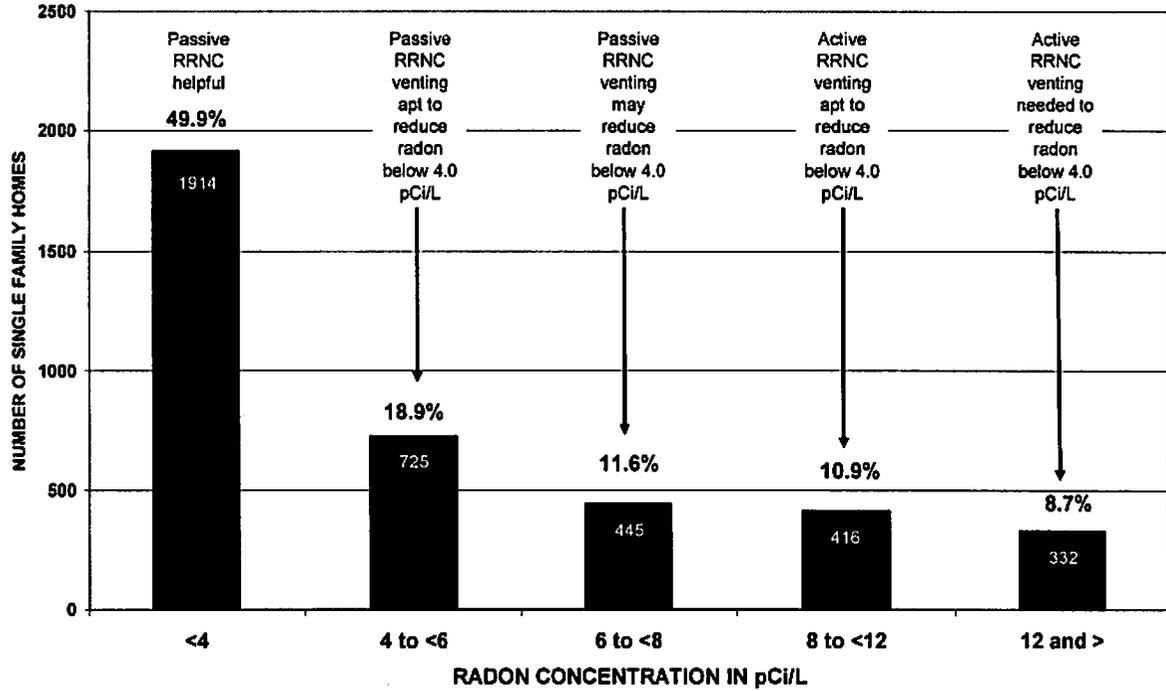
**MEAN AND MEDIAN RADON LEVEL BY DECADE OF CONSTRUCTION  
FOR 2,854 SINGLE FAMILY OLMSTED COUNTY MINNESOTA HOMES**  
INITIAL SHORT-TERM TEST DATA FROM OLMSTED COUNTY BASEMENT TESTS CONDUCTED BETWEEN 8/1992 AND 8/2006



Appendix B

**DISTRIBUTION OF 3,832 INITIAL SHORT-TERM RADON TEST RESULTS  
OLMSTED COUNTY, MINNESOTA**

DATA COLLECTED FROM 8/1992 THROUGH 8/2006 BY OLMSTED COUNTY PUBLIC HEALTH SERVICES



**Appendix C**

**Text of our August 16, 2006 E-mail inquiry to:  
Marolyn Parson (800-368-5242 x8157), National Assoc of Home Builders (NAHB)  
(No response as of 8-30-06)**

I am a public health manager for Olmsted County. Our office is in Rochester, MN.

As you must be aware, much of the upper Midwest region is located in the EPA's highest risk zone for radon and radon has been identified by the National Academies of Science and the US Surgeon General as a significant risk for lung cancer. Their studies show that Radon is the single largest source of people's exposure to ionizing radiation and radon exposure leads to about 22,000 lung cancer deaths in the US each year.

Our office has had a radon lab for nearly 15 years. We have tested about 4,000 homes in this region. About 1,000 of these homes are less than 15 years old. We consistently find that over 50% of the homes built in our County (including those built in the past 15 years) exceed EPA guidelines for indoor air radon concentration.

Many of the people inquiring to us about radon tests, express surprise and concern for their family's health when they find their homes are affected by elevated radon. They join members of our citizen Health Advisory Boards, in expressing frustration when they learn that the building industry has information and techniques that could have inexpensively reduced our resident's exposure to radon. They want to know why those that build their homes are not systematically alerting them and addressing radon during construction, knowing its prevalence in our upper Mid-west homes.

To help address the comments and inquiries, our office receives, I searched your web site to better understand NAHB policy and direction.

The NAHB web site includes the following policy statements:

1. "Federal radon policy should be restricted to those areas of the country where radon accumulation in homes constitutes a health problem;"
2. "Urge Congress to oppose mandatory imposition of residential radon construction standards in building codes, statutes, and regulations;" and
3. "Support voluntary use of residential radon construction standards in building codes, statutes, or regulations."

These statements indicate that the National Home Builder's Association's intends that radon construction standards will be voluntarily applied by the home builders, in high radon zones of our nation.

Our local Public Health office, with financial assistance from the MN Dept of Health, has

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provided construction information and financial support such as the following for training builders:

1. Trained & paid local builders to install RRNC in 19 new homes to provide them with first hand experience.
2. Placed paid informative ads, illustrating RRNC techniques, in the local Builder's magazine for 8 years.
3. Provided local Realtors and Builders Assn with Public Health informational presentation, addressing radon and RRNC, in several of their local training conferences.

I am disappointed to report that our Public health efforts, in addition to whatever Builder's Assn efforts are made, have prompted very few (if any) local builders (other than Habitat for Humanity) to systematically apply radon resistant construction techniques in new homes here. We are one of MN fastest growing cities and over 50% of new homes constructed in the past 5 years show radon exceeding EPA radon guidelines.

In behalf of our community, I am seeking answers to questions such as the following:

1. To what extent is the National and State Builders Assn systematically providing a) professional training, b) professional standards, c) informational bulletins, and d) advisories that are designed to consistently lead building professionals and clients to address the radon health threat that can enter their new homes.
2. What are your Association's plans for leading a more pro-active and robust campaign at National, State, and Local levels to assure that professional builders are systematically addressing residential radon health risk, in high risk radon areas?
3. What are your suggestions as to how our Nation's Home Builder and Public Health professional associations can be more effective in assuring that radon is being reduced below EPA action levels - particularly in homes being built in our Nation's high radon risk zones?

## Appendix D

### Radon – Sources, Health Risks, Local Exposure, & Local Public Health Services

#### Radon Sources:

- Much of the soil in the Upper Midwest contains uranium and radium, which release colorless, odorless, and tasteless radon gas. Radon makes up over ½ the ionizing radiation that most people are exposed to.
- Radon gas can enter homes through joints, cracks, and porous concrete blocks in basement floors and walls.
- Wind passing over a house, coupled with heat differential between the outside air and home interior reduces indoor air pressure, which draw soil gases, including radon, into the parts of the home built into the soil;

#### Extent of Local Exposure:

- Olmsted County is located in the highest of the three radon risk zones in the United States. A radon test is the only way to identify how much radon is in a home because it has no color or smell.
- About 50 % of all new and existing homes we have tested in the past 14 years show radon to be elevated above the 4 pico-curies/liter action level recommended by the EPA;
- Elevated radon levels can be more effectively removed from homes built with radon-resistant features; It can be more cost-effective to include radon-resistant features when building a home rather than retrofitting existing homes.

#### Health Risk:

- The National Academy of Sciences' Biological Effects of Ionizing Radiation VI report (1998) concludes that radon exposures lead to about 22,000 lung cancer deaths each year in the US.
- The Surgeon General of the United States warns that radon is the second leading cause of lung cancer in the United States - second only to smoking.
- Radon is identified as the number one cause of lung cancer for non-smokers in the US,

#### Public Interest:

- Locally, the Environmental Health Division receives several hundred contacts per year from people concerned about indoor air quality health risks, such as mold & radon, and access to mitigation and testing services.

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- Radon & well water quality tests are often required for residential property financing.

Public Health's Information, Training, & Lab Services:

- Our lab is equipped to test radon. Low cost (\$5) radon test kits are available at our P. Health office.
- Public Health typically provides about 500 tests per year, with about 3,300 (7.8% of total) local homes tested since 1992. The test kit is exposed for about 1 week in the home, with analysis completed at our lab;
- We have secured funding for radon venting systems to be installed in 22 Habitat-for-Humanity homes and to mitigate elevated radon in 16 low-income housing units;
- Seven local home construction firms have received training & funding for installing radon venting systems in 19 new homes. The installation costs are typically less than \$500.
- Radon mitigation information & graphics were placed in the Rochester Builders Assn publications and in the Real Estate Directory, from 1998 to 2006, to alert & inform builders, realtors, and home buyers about radon risk.

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