

Kansas Radon Program Newsletter

Serving individuals certified in radon measurement, mitigation and laboratory services in Kansas.



Kansas Radon Program

June 2017

Sharing information of value with all participants. We plan periodic publication, and we welcome your suggestions, questions and requests in order to meet your needs and help us all provide quality radon risk-reduction services to the people of Kansas.

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June is National Healthy Homes Month

A healthy home is one that provides a safe and healthy environment protecting the occupants from disease and injury

The Healthy Homes program of Housing and Urban Development (HUD) is promoting National Healthy Homes Month in June. According to the sample press release, “A healthy home is one that provides a safe and healthy environment protecting the occupants from disease and injury.” Radon is included in the 10 principles of a healthy home. Facts about radon risk and reduction of risk can be included in Healthy Homes Month promotions. Ideas for spreading the word about Healthy Homes can be found at https://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes.

Upcoming Training:

(more info on all of these at www.kansasradonprogram.org)

Combined Radon Measurement and Mitigation Course and Exams

August 21-26, 2017 - Manhattan, KS

Serves all KS, NE, and NRPP Certification requirements. For content questions call Bruce Snead at 785-532-4992.

Location: Unger Complex, 2323 Anderson Ave., Suite 300, Manhattan, KS 66502
(enter from the circle drive at the back and take the elevator to the 3rd floor)

To register online, visit:

<https://www.enrole.com/ksu/jsp/session.jsp?>

[sessionId=605097AY&courseId=RADONCOURSE&categoryId=10001](https://www.enrole.com/ksu/jsp/session.jsp?sessionId=605097AY&courseId=RADONCOURSE&categoryId=10001)

Radon Continuing Education Courses Prior to ASHI Fall Seminar

September 28, 2017 - Kansas City, MO

Serves all KS, NE, and NRPP Certification requirements. For content questions call Bruce Snead at 785-532-4992.

Location: KCI Expo Center – Missouri Ballroom, 11730 NW Ambassador Dr., Kansas City, MO 64153

To register online, visit:

<https://www.enrole.com/ksu/jsp/session.jsp?>

[sessionId=605097AZ&courseId=RADONCOURSE&categoryId=10001](https://www.enrole.com/ksu/jsp/session.jsp?sessionId=605097AZ&courseId=RADONCOURSE&categoryId=10001)

12 Hour Closed House Conditions Critical to Short-Term Radon Measurements

REMINDER

Radon and its short lived decay products accumulate in closed buildings over time. Because of the dilution effect when opened, it is important to allow radon to reach equilibrium prior to performing a short term test. When EPA wrote the protocols back in the early 1990's, they used a mathematical model developed to determine the many factors that contribute to radon accumulation in homes, such as, radon entry, exfiltration, and radioactive decay (Burkhart, J.F., Camley, R.E. 1999). This model is shown as:

$$\frac{dn(t)}{dt} = N_{in} - N_{ex} n(t) - n(t) \lambda e^{-\lambda t}$$

Using this differential equation, radon concentration can be determined as a function of time. This can be graphed (Burkhart, J.F., Camley, R.E. 1999) as follows in Figure 1:

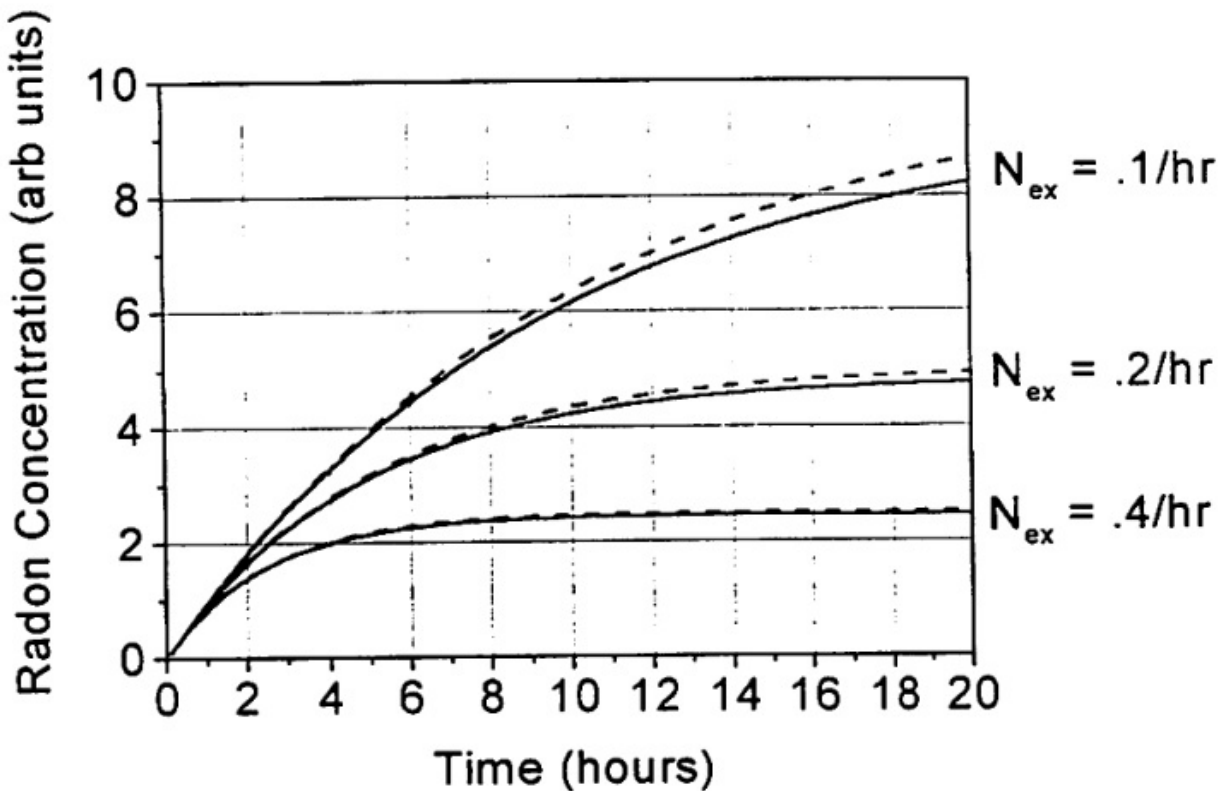


Figure 1: Radon concentration as a function of time for various exchange rates

Twelve Hour Requirement for Measurements

As seen in this graph, it can be determined that air exchange rate (N_{ex}) has a direct effect on the time it takes to reach equilibrium. The same equation can also be used to graph saturation time based on air exchange rates (Figure 2).

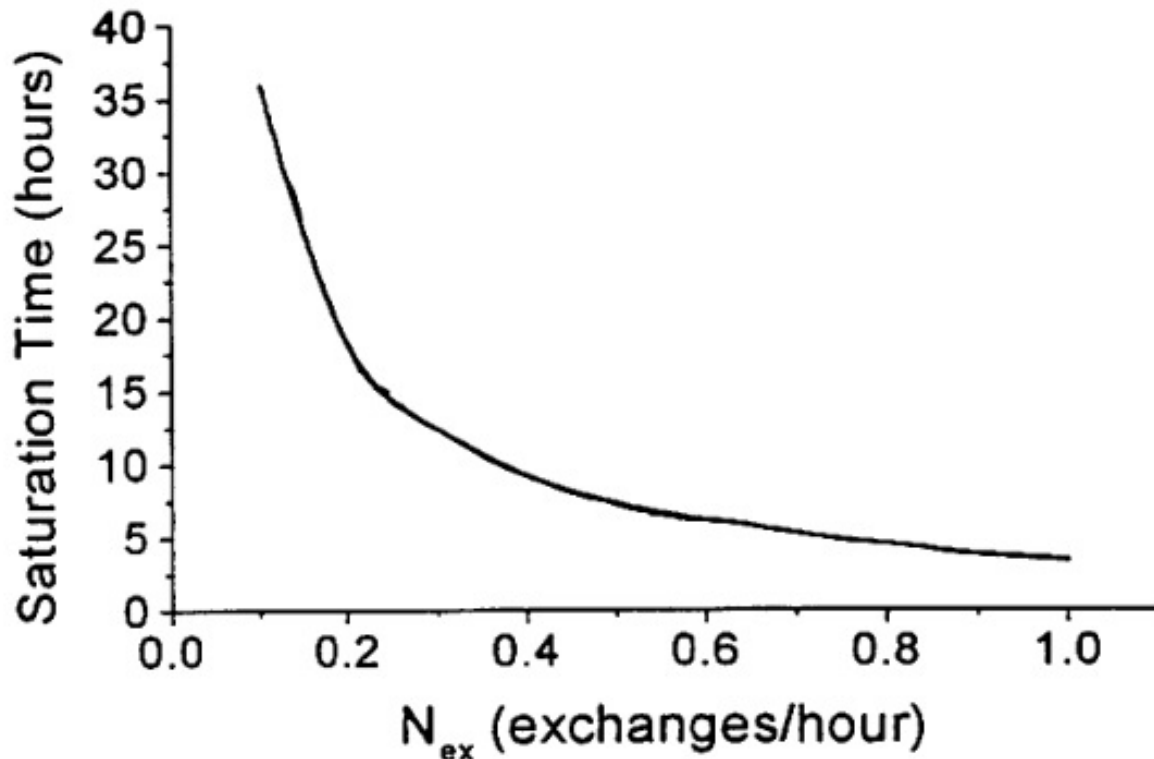


Figure 2: Time to reach 98% saturation value as a function of exchange rate

Figure 2 shows that the tighter the house, the longer it takes to reach equilibrium, with some tight houses not reaching equilibrium until well beyond 30 hours.

As energy efficiency and weatherization become more prominent and houses are built tighter, the requirement to allow 12 hours for radon to reach equilibrium becomes even more important. Ignoring this requirement would bias tests low and increase risk for the population.

KDHE maintains the position that EPA requires in the “Protocols for radon and radon decay product measurements in homes” section 2.3.2. It is required to maintain closed-building conditions for 12 hours prior to the initiation of the measurement if the test is less than 4 days, but Kansas does not dictate how the radon measurement technician ensures that the closed house conditions are accomplished. One alternative is to add 12 hours to the 48 hour test. (EPA 1993)

References:

Burkhart, J. F., & Camley, R. E. (1999). A New Look At The Twelve Hour Dynamic Equilibrium Protocol.

United States., Environmental Protection Agency. (1993). Protocols for radon and radon decay product measurements in homes.

2017 STAKEHOLDERS' MEETING UPDATE

The regional meeting provides continuing education and networking opportunities with peers, industry, and regulators.

Approximately 120 members of the radon industry, state and federal agencies, and partners gathered March 7, 2017 for the 2017 EPA Region 7 Radon Stakeholders' Meeting held at the Hilton Garden Inn in Manhattan, Kansas. The attendees included 30 from Iowa, 40 from Kansas, 12 from Missouri, 24 from Nebraska, and 14 from other states. The meeting featured current information on the regulatory and technical aspects of radon risk reduction, updates from the state radon programs from Kansas, Missouri, Nebraska, and Iowa, and the latest news from the Environmental Protection Agency on program direction from headquarters and the Region 7. The American Association of Radon Scientists and Technologists (AARST) provided an update on projects in the pipeline. Dr. Wallace Akerley, with the Huntsman Cancer Center in Utah gave an update on recent advances in lung cancer treatment. Continuing education was available for attending the meeting and was available during two (2) full-day training courses offered the day before the meeting. Mark your calendar's for next year's meeting hosted by Iowa in early March 2018.

Hope for Lung Cancer Patients:

New Options for Treatment

A Review by Dr. Wallace Akerley of the Huntsman Cancer Institute at the University of Utah

As part of the EPA Region 7 Stakeholders Meeting on March 7, 2017, Dr. Wallace Akerley of the Huntsman Cancer Institute at the University of Utah, gave a presentation on the progress in treating lung cancer. Historically, non-small cell lung cancer (NSCLC) had been considered to be a single cancer type. As such, the historical treatments for NSCLC included 1) surgery to remove part or all of a lung to remove the existing tumor (or tumors) and 2) broad-spectrum chemotherapy to reduce the likelihood of the cancer reoccurring.

Ongoing research at the Huntsman Cancer Center has shown clinically that NSCLC can derive from distinctly different cellular mutations. These different mutations often have specific weaknesses which treatment can exploit once the specific mutation is identified. This, allows for more precise treatment of each case of NSCLC. The two revolutions in treatment include 1) the use of chemotherapy targeted specifically at a patient's particular lung cancer cell mutation type and 2) the use of immunotherapy to enhance the patient's own immune system to slow or even stop the growth of NSCLC tumors.

This research has led to updated NSCLC treatment guidelines, as published to the National Comprehensive Cancer Network (NCCN) in 2015. More information can be found at the Huntsman Cancer Institute (www.huntsmancancer.org/).

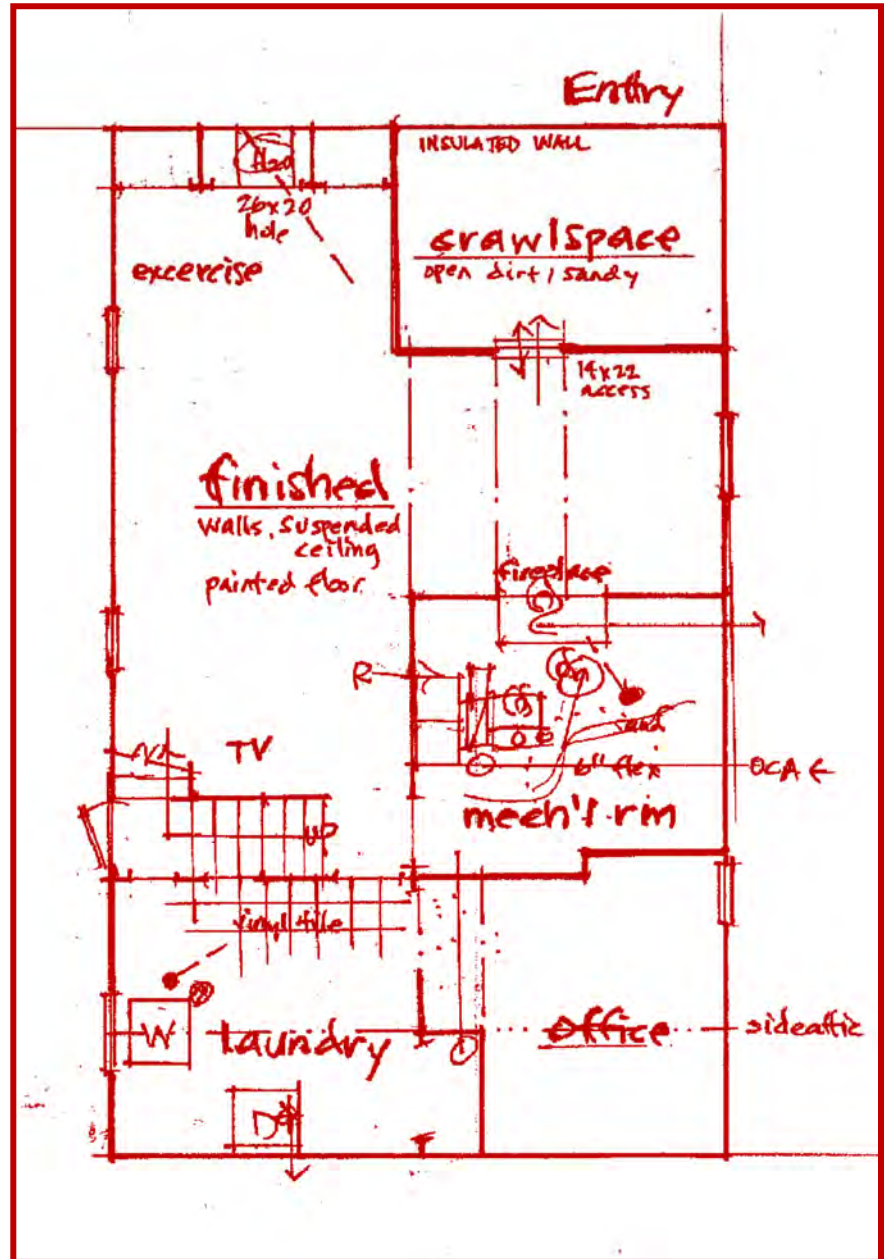
Illinois Footprint Testing Study

The EPA Region 7 Radon Stakeholders Meeting included a study done by the Illinois Radon Program looking at the differences in estimated radon results when testing all building foundation type areas simultaneously vs. just one in a building with multiple foundation types. The results will be submitted for publication this summer.

In Illinois, the Illinois Emergency Management Agency has oversight authority for the Illinois Radon Program. Title 32: Part 422.130 Regulations for Radon Service Providers states that,

"short-term or long-term measurements shall be made, at the same time, in each lowest structural area suitable for occupancy. For example, a split-level with a basement, a slab-on-grade room and a room over a crawl space shall have measurements in each of the foundation types: the basement, a slab-on-grade room, and a room over the crawlspace".

This multiple indoor radon measurement protocol (footprint) was expected to safeguard an inadvertent false sense of safety to home owners, who test only one foundation type.



In a coordinated project between the Illinois Emergency Management Agency, the University of Illinois at Springfield, and the American Lung Association in Illinois, historic data on radon levels were collected from Illinois licensed professionals and statistically analyzed to determine if there were any differences in the mean radon concentration in homes with differing foundation types. Three hundred and sixty (360) licensed radon measurement professionals reported 236,936 radon measurements between 2003 and 2011. This data came from 1402 Illinois zip codes representing 89% of all zip codes in Illinois.

The results show there is a statistically significant correlation in the data, indicating that if only the data from one foundation type was collected (and the other one/or two foundations were ignored) the home owner may believe that radon levels were below threshold(s), when it is possible that there may be other pathways for radon entry impacting the decision for the home owner to mitigate.

Calibration Must be Completed Annually for All Devices Requiring Calibration

There are some continuous radon monitors on the market today where the manufacturer states that the calibration for the instrument is valid for a period of more than one year. While this may be acceptable for the manufacturer's standards, regulations in the United States require that these instruments must be calibrated annually with no exceptions. If you purchase a CRM that comes with a calibration certificate that is more than a year old, it is recommended to contact the manufacturer to either obtain an updated certificate or send the unit in to be calibrated before it is used for radon measurements in Kansas. Applications for certification with calibration certificates over one year old will not be accepted.

When Renewing Your Certification...

When submitting renewal for radon measurement or mitigation certification, it is not always necessary to submit your entire quality assurance plan (QAP) each time. The only part(s) of your QAP required with every application for renewal are calibration certificates for any and all devices requiring calibration. If you have not made any changes to your QAP, you need only to sign the form provided with your renewal notice acknowledging that no changes have been made and submit this form with your application for renewal in place of the entire QAP. If any changes have been made, you may submit only the revised sections. If you have added any new kinds of measurement devices the QAP will need to be updated to include the operating procedures for these devices, as well as any quality control checks that are required. In addition, you still need to provide proof of CE credits required to maintain certification, CE courses must be NSRB or NRPP approved, or pre-approved by KDHE.

