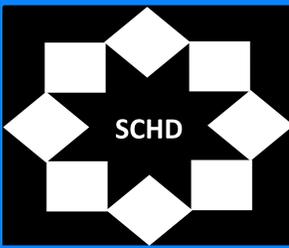


# Radon Testing Barriers in Stephenson County, Illinois: An Integrative Literature Review

Misty DeHaven, RN, BSN; Edward Specht\*, BS, RS, LEHP; Peggy Wagner, MSN, FNP-BC, CCRN

Saint Anthony College of Nursing and \*Stephenson County Health Department

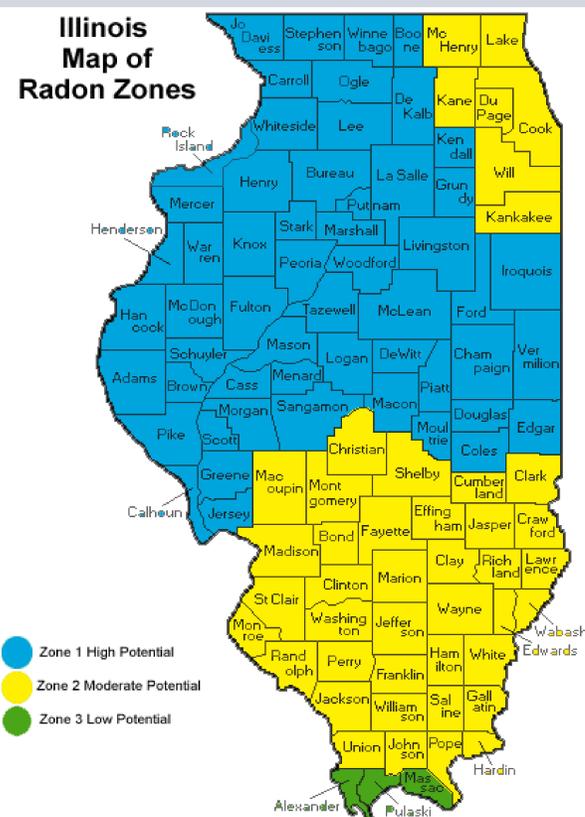


## BACKGROUND AND SIGNIFICANCE

- ❖ Lung cancer is the most common cancer worldwide (World Health Organization, 2016).
- ❖ Radon is the second leading cause of lung cancer in the U. S. (CDC, 2016).
- ❖ Northern Illinois is known for high radon levels, yet radon testing in the region is not widespread.

## METHODOLOGY

- ❖ An integrative literature review, utilizing with Ganong's (1987) methodology, was conducted.
- ❖ Ten research articles were identified that focused on radon risk awareness and radon testing behaviors.



## PURPOSE AND LITERATURE REVIEW

**The purpose of this research is to examine barriers to radon testing in Stephenson County, Illinois (IL)**

Literature Reviewed		
Author	Findings	Limitations
Butterfield et al., (2011)	Education intervention improved cognitive and behavior outcomes among families.	Limited number of health department clients.
Denman et al., (2005)	Public perception has not been significantly impacted through public health campaigns.	Limited generalizability, based in UK.
Duckworth et al., (2002)	Positive correlation between radon risk perception and planned radon testing and mitigation.	Limited generalizability, study based in DeKalb, IL.
Hahn et al., (2014)	Media education promoted radon awareness and home radon testing.	Participants were only home owners.
Hill et al., (2006)	More than 1/3 of participants underestimate radon associated health risks. Almost 90% perceive personal benefit with decreased radon exposure.	Small sample size of 31 households.
Larsson (2015)	Social marketing was an effective intervention to increase radon program participation.	Influenced by advertising or preoccupation.
Larsson et al., (2009)	Radon testing increased from 1994 to 1998 by 5.9%. Homeowners were more knowledgeable regarding radon testing/results compared to renters. Renters may be an appropriate target group for education.	Data analyzed in study was from 1994 and 1998.
Levy et al., (2015)	More than 80% of homes in northwest Iowa had radon levels greater than 4pCi/L and mitigation was advised.	Limited generalizability, small study, only Iowa.
Riesenfeld et al., (2007)	Education level, real estate value concern, and new home ownership were most closely correlated with mitigation. Health concern was the most common reason for radon testing.	Bias based on self report and unsupervised testing.
Rinker et. al., (2013)	Social influence, current smoking and radon perception influence radon testing intent.	Bias based on self-selection.



## RESULTS

- ❖ Barriers to radon testing:
  - Lack of knowledge
  - Lack of desire to know
  - False security
- ❖ Education can raise radon awareness



## IMPLICATIONS

- ❖ **Education:** Radon awareness education is critical to increase radon testing and reduce lung cancer risk.
- ❖ **Policy:** Government, public health, and nursing collaboration of radon risk is needed in Stephenson County, IL.
- ❖ **Research:** Nursing research assessing the impact of radon awareness education impact is needed.
- ❖ **Practice:** In-home radon testing should be assessed in all homes in at-risk regions.

## REFERENCES

Butterfield, P. & Hill, W. (2011). ERRNIE: An Environmental Risk Reduction Study With Rural Families. *American Journal of Public Health*, 130.

Centers for Disease Control and Prevention. (2016). Cancer Prevention and Control. Retrieved from <https://www.cdc.gov/cancer/dccp/resources/features/LungCancer/>

Denman, A., Groves-Kirkby, C., Coskeran, T., Parkinson, S., Phillips, P., & Tomber, R. (2005). Evaluating the health benefits and cost-effectiveness of the radon remediation programme in domestic properties in Northamptonshire. *Health Policy*, 73, 139-150.

Duckworth, T. L., Frank-Stromborg, M., Oleckno, W. A., Duffy, R., & Burns, K. (2002). Relationships of perception of radon as a health risk and willingness to engage in radon testing and mitigation. *Oncology Nursing Forum*, 29(7), 1099-1107.

Ganong, L. (1987). Integrative reviews of nursing research. *Research in Nursing & Health*, 10, 1-11.

Hahn, E., Rayens, M., Kerckmar, S., & Robertson, H. (2014). Results of a test and win contest to raise radon awareness in urban and rural settings. *American Journal of Health Education*, 45, 112-118.

Hill, W. G., Butterfield, P., & Larsson, L. S. (2006). Rural parent's perceptions of risks associated with their children's exposure to radon. *Health Nursing*, 23(5), 392-399.

Larsson, L. S. (2015). The Montana radon study: Social marketing via digital signage technology for reaching families in the waiting room. *American Journal of Public Health*, 105(4), 779-785.

Larsson, L. S., Hill, W. G., Odom-Maryon, T., & Yu, P. (2009). Household status and residence type as correlates of radon awareness and testing behaviors. *Public Health Nursing*, 26(5), 387-395.

Levy, B. T., Wolff, C. K., Niles, P., Morehead, H., Xu, Y., & Daly, J. M. (2015). Radon testing: community engagement by a rural family medicine office. *The Journal of the American Board of Medical Education*, 28(5), 617-623.

Radon is a cancer causing gas [Online image]. (2014). Retrieved March 11, 2017 from <http://indoorairquality.blogspot.com/2014/08/how-does-radon-change-in-environment.html>

Radon is a cancer causing radioactive gas [Online image]. (2014) Retrieved March 16, 2017 from <http://www.greenamericainspect.com/what-every-home-buyer-and-seller-needs-to-know-about-radon/>

Riesenfeld, E., Marcy, T., Reinier, K., Mongeon, C., Wemple, B., & Kaminsky, D. (2007). Radon awareness and mitigation in Vermont: a public health survey. *Health Physician*, 92(5), 425-431.

Rinker, G. H., Hahn, E. J., & Rayens, M. K. (2013). Residential radon testing intentions, perceived radon severity, and tobacco use. *Journal of Environmental Health*, 76(6), 42-47.

United States Environmental Protection Agency. (2006). Illinois Map of Radon Zones. Retrieved from <http://www.radonbyagency.com/AboutRadon.html>

World Health Organization (2016). Radon and Health. Retrieved from <http://www.who.int/mediacentre/factsheets/fs291/en/>