

**Supporting Statement Part A:**

**Justification**

**Measuring the Effects of State and Local Radon Policies**

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## **Abstract**

The Centers for Disease Control and Prevention (CDC) requests OMB approval to collect information for the project entitled Measuring the Effects of State and Local Radon Policies. This is a new Information Collection Request that will allow CDC to obtain and disseminate information regarding how radon policies influence the radon-related knowledge, attitudes, and practices of real estate agents and recent homebuyers of single-family standalone homes in the United States. Information will be collected at four study sites through a survey of homebuyers and focus groups with real estate agents. Participant responses from states with radon-specific policies will be compared to states without radon-specific policies. To allow researchers to put the results of this study into context, investigators will assess the knowledge, attitudes, and practices of lead in relation to the federal lead notification law, which is present in every state. Information will be collected over a 24-month period. OMB approval is requested for two years to allow for adequate time for data collection for both the mailed survey and focus groups.

## **A. JUSTIFICATION**

### **A.1. Circumstances Making the Collection of Information Necessary**

#### ***Background***

This is a new Information Collection Request. The National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), Centers for Disease Control and Prevention (CDC), requests approval from the Office of Management and Budget (OMB) to collect information to address an important gap in the evidence base for administrative, policy, and funding decisions regarding the effectiveness of state and county policies related to notification of radon hazards in homes and radon professional certification throughout the United States. CDC's authority to conduct the study is established by Section 301 of the Public Health Service Act (see **Appendix 1**). HHS's overall goal for the investment in research related to radon is to better understand how to reduce exposure to radon, the leading cause of lung cancer among non-smokers and second leading cause of lung cancer among smokers.

Lung cancer is the leading cause of cancer-related death among the U.S. population with an overall 16% 5-year relative survival.<sup>1,2</sup> Radon is a radioactive gas that concentrates in homes; it is the leading cause of lung cancer in non-smokers and the second leading cause of lung cancer

in smokers.<sup>3-5</sup> The Environmental Protection Agency (EPA) recommends that every home be tested for radon and new homes in high-risk areas be built using radon-resistant construction techniques. Despite these recommendations, it is estimated that fewer than 25% of existing homes have radon tests, only 18% of homes with radon levels exceeding EPA intervention levels sold between 1990 and 2006 have been mitigated, and only 5–10% of newly-constructed homes have some form of radon prevention in place.<sup>6,7</sup>

There are significant gaps in understanding the impact of radon control efforts currently under way, especially those in the area of policy. Many state and local governments already have enacted radon policies related to professional licensure as well as testing and mitigation that may impact public awareness of radon as an issue and its testing and mitigation. As of Feb. 2014, twenty-one states had radon professional licensure policies (See **Appendix 15**). In addition, a number of states have radon testing and mitigation policies in relation to home sales that can be broadly classified into three groups: notification of radon risks and test results as a separate document during home sale (12 states), general disclosure of known environmental hazards during home sale (22 states), and no radon policy (11 states).<sup>8</sup> In addition, one state (Maine) has a mandatory testing requirement for rental property.

The purpose of the *Measuring the Effects of State and Local Radon Policies* study is to understand the uptake of state and local radon notification policies, the uptake of the recommendations or requirements contained in these policies, and how the policies affect radon testing and mitigation practices. The primary focus is on how single-family standalone homebuyers and real estate agents understand and are affected by policies involving single-family standalone home sales, in order to reduce exposure to this carcinogen. Notification of lead-based paint issues is required for transactions involving homes built prior to 1978 in all states. It is anticipated that the severe penalties associated with failure to disclose or notify buyers or lead-based paint issues and the almost universal presence of a separate section of each real estate transaction that asks about lead-based paint will result in most individuals involved in single-family standalone home sales, irrespective of the year the home was built, being aware of this requirement. Investigators will assess participant understanding of lead-based paint issues to help provide a context for general understanding of environmental contaminants among selected states. This comparison will allow stakeholders to better understand the impact of various policies intended to prevent exposure to radon, a known carcinogen.

The study approach will involve complementary qualitative and quantitative methods (i.e. mixed-methods) whose result will guide future research, recommendations, and educational efforts. The survey of homeowners and focus groups with real estate agents will involve CDC staff interaction with human subjects. Key evaluation questions are presented in Exhibit 1.

### **Exhibit 1. Key Study Questions**

1. What are the knowledge, attitudes, and practices of homebuyers and real estate agents in regard to radon health effects (including lung cancer), radon professional certification, and radon testing/control policies that affect single-family standalone home sales?
2. Does awareness about Federal lead-based paint notification appear to influence awareness about radon?
3. Overall, to what extent does the comparative analysis of various radon policies suggest that implementation of similar notification policies in other locations likely to have elevated radon could be of value (i.e., change awareness levels, increase radon testing rates in real estate transactions) if implemented at the state level?

The study flowchart in **Appendix 4** provides an overview of the study design.

Development of the survey instrument involved administration of the survey to eight recent single-family standalone homebuyers, which allowed investigators to refine it. Yet, as this study evaluates the impact of state policies, and results will help inform decision-makers about the potential impact of future policies, it was determined that formal cognitive testing of the survey by participants in two study sites is needed. Cognitive testing is a well-established practice undertaken by CDC, other federal agencies, and academic researchers to ensure survey questions accurately capture the desired information.<sup>9,10</sup> Of most importance, cognitive testing will improve study efficiency to ensure questions are presented in a manner readily understood by respondents. Testing will also provide greater assurance that responses are of the highest quality so that accurate interpretations of responses can be made. Cognitive testing of the survey will be done by telephone with 12 – 16 recent homebuyers at two sites (one Notification and one No-notification) for a total of 24 – 32 people.

**Appendix 5** contains the cognitive testing approach to be used and **Appendices 6a, 6b, and 6c** contain the data dictionary and survey for homebuyers. We expect cognitive testing to result in non-substantive changes only. The mailed survey will then be sent to 3,000 recent (i.e., within the last 12-months) randomly selected homebuyers at the four sites. A conservative estimate for a response is a 30% completion rate, indicating that approximately 900 participants will respond to the mailed survey.

Finally, investigators will conduct three focus group interviews of 6–8 real estate agents at each of the four sites (totaling 96 participants) exploring the KAP of real estate agents in regard to radon and lead. The interview guide, located in **Appendix 7**, for these groups that has gone through a review by staff from the National Association of Realtors.

**Appendices 5, 6b, 6c, 10, 12, and 14** contain informed consent forms and data collection instruments to be used. Note that the CDC Institutional Review Board (IRB) has approved a waiver of documentation of informed consent for the homebuyer survey cognitive testing and main survey as the information collected poses no more than minimal risk of harm to subjects.

## **A.2 Purpose and Use of the Information Collection**

Collectively, these interventions support the public health goals of the Department of Health and Human Services, the Environmental Protection Agency, and Department of Housing and Urban Development. The interventions directly address three Healthy People 2020 Focus Areas related to lung cancer and radon, multiple agency-specific priorities, Federal Radon Workgroup priorities, and the National Comprehensive Cancer Control Program’s goal of emphasizing the primary prevention of cancer.<sup>7,11,12</sup>

The overall purpose of the information collection is to compare and contrast the effect of radon and lead policies related to home sales and professional licensing on single-family standalone homebuyers and real estate agents in a total of four states, two with and two without such policies. This review will inform federal, state, city, and local decision makers how these policies affect homebuyer and real estate agent KAP in relation to these harmful substances. The primary outcome of interest is the difference in KAP between participants in states with and without these policies.

Investigators will disseminate results through a variety of strategies, including (1) conference presentations, (2) final evaluation reports, (3) peer-reviewed journal articles, and (4) meetings with key stakeholder groups.

Respondents to the homebuyer survey will be individuals who purchased a home in the 12-month period prior to contact. Investigators will identify the homeowner and address through review of publicly-available tax record information. A survey will be sent using this information and it will also be used to distribute honoraria. Respondents in notification and no-notification states will receive the same homebuyer survey. Participants who participated in cognitive testing will not be eligible to participate in the main homebuyer survey to avoid introducing information bias due to education received about the topic during the cognitive testing process.

Participants in the real estate agent focus groups will be members of the National Association of Realtors or its equivalent state or local level organization. They must be working full-time as an agent involved in interacting with clients interested in buying or selling a single-family standalone home in one of the study catchment areas.

### **A.3 Use of Improved Information Technology and Burden Reduction**

All data for the survey and focus groups will be compiled from completed surveys or focus group sessions. Investigators will offer a secure website where homebuyer survey respondents can respond to the survey instead of mailing in their responses. The website will allow participants to complete the survey at their convenience with 24-hour accessibility and minimize the complexity of survey instructions due to electronically-programmed skip patterns. Thus, Web-based data collection offers flexibility and minimizes respondent burden. A copy of the data collection instruments and informed consent forms are provided in **Appendices 5, 6b, 6c, 10, 12, and 14**.

### **A.4 Efforts to Identify Duplication and Use of Similar Information**

In designing the proposed data collection activities investigators have taken several steps to ensure that this effort does not duplicate ongoing efforts. Investigators have reduced the amount of new or original data collection by working collaboratively with the Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), and other Federal Radon Workgroup partners noted in Exhibit 2 to design the data collection

instruments in a manner that collects only the necessary information that is not captured in other surveys or focus groups. Investigators have also been in contact with the CDC National Center for Health Statistics Questionnaire Design Research Laboratory. While it is cost-prohibitive to have this laboratory undertake cognitive testing of the homebuyer survey, they have assisted in reviewing the study design and have agreed to continue to consult on the project as needed.

#### **A.5 Impact on Small Businesses or Other Small Entities**

Real estate agents will be asked to participate in focus group sessions that will last approximately one hour. Participation in the one-time information collection is voluntary. No continuing commitments are imposed on real estate agents as a group or on the individuals who participate in the focus groups.

#### **A.6 Consequences of Collecting the Information Less Frequently**

This study only includes one data collection time point for the homebuyer survey cognitive testing, homebuyer survey, or focus groups. It is important that data collection occur across all four states during approximately the same time period to maintain comparability among states.

#### **A.7 Special Circumstances Relating to the Guidelines of 5 CFR 1320.5**

There are no other special circumstances that require the data collection to be conducted in a manner inconsistent with 5 CFR 1320.5(d)(2). This data collection request fully complies with the regulation.

#### **A.8 Comments in Response to the *Federal Register* Notice and Efforts to Consult Outside the Agency**

##### ***Federal Register Announcement***

A Notice was published in the *Federal Register* on February 26, 2014 (Volume 79, Number 38, pages 10808–10810) (see **Appendix 2a**). Two public comments were received and acknowledged (see **Appendix 2b**).

##### ***Consultations***

A list of key evaluation consultants for this project is provided in **Exhibit 2**. Investigators consulted with public health scientists considered to be subject matter experts on the study

design and evaluation instruments. Consultants from multiple federal and non-governmental agencies provided input into the design of the survey and focus group questions.

## Exhibit 2. Evaluation Consultants

Bill Long Director Indoor Environments Division Center for Radon & Air Toxics Environmental Protection Agency Environmental Protection Agency 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 202-343-9733 <a href="mailto:Long.Bill@epa.gov">Long.Bill@epa.gov</a>	Jani Palmer Scientist Indoor Environments Division Center for Radon & Air Toxics Environmental Protection Agency Environmental Protection Agency 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 202-343-9921 <a href="mailto:palmer.janise@epa.gov">palmer.janise@epa.gov</a>
Larainne Koehler Radon & Indoor Air Coordinator Radiation and Indoor Air Branch - 25th Floor Environmental Protection Agency - Region 2 290 Broadway, 25 <sup>th</sup> Floor New York, NY 10007-1866 212-637-3745 <a href="mailto:Koehler.larainne@Epa.gov">Koehler.larainne@Epa.gov</a>	Peter Ashley, PhD Program Director Office of Healthy Homes and Lead Hazard Control Department of Housing and Urban Development 451 7th Street S.W., Washington, DC 20410 202-402-7595 <a href="mailto:Peter.J.Ashley@hud.gov">Peter.J.Ashley@hud.gov</a>
Eugene Pinzer, MS, CIH Environmental Scientist Office of Healthy Homes and Lead Hazard Control Department of Housing and Urban Development 451 7th Street S.W., Washington, DC 20410 202-402-7685 <a href="mailto:Eugene.A.Pinzer@hud.gov">Eugene.A.Pinzer@hud.gov</a>	Kristen Miller, PhD Behavioral Scientist Questionnaire Design Laboratory Office of Public Health Scientific Services National Center for Health Statistics Bldg IV, Rm 3216, MS P08 Hyattville, MD 20782 301-458-4625 <a href="mailto:KSMiller@cdc.gov">KSMiller@cdc.gov</a>

### A.9 Explanation of Any Payment or Gift to Respondents

Participants in the homebuyer survey cognitive testing will be offered an honorarium of \$15. Real estate agents participating in the focus groups will be offered an honorarium of \$30, in the form of a pre-paid credit card. The honoraria are intended to recognize the time burden placed on the participants, encourage their cooperation, and convey appreciation for contributing to this important study. The amount of the honoraria was budgeted for and determined through discussions with staff with expertise in conducting adult surveys. The amounts are less than typical government-wide agreed upon rates for focus groups and cognitive interviews because no travel time or expenses will be incurred in completing this survey.

## **A.10 Assurance of Confidentiality Provided to Respondents**

### ***A.10.1 Privacy Impact Assessment Information***

#### **Overview of the Data Collection System**

CDC and a data collection contract organization, SciMetrika LLC, will help facilitate focus group interviews and collect information from recent homebuyers of single-family standalone homes and real estate agents associated with these sales. To allow comparisons, information collection will be conducted at four study sites: one study site each in Illinois and Minnesota that have radon policies related to home sales (Notification sites) and one study site each in Ohio and North Carolina that do not have such policies (No-notification sites). Participants at all study sites will receive the same homebuyer survey. To ensure that questions are interpreted by respondents in the manner intended investigators will conduct cognitive testing of a homebuyer survey by telephone with 24–32 randomly selected homebuyers who purchased a single-family standalone home within the last 12 months.

#### **Description of the Information to be Collected**

Investigators will compile data related to respondents' KAP regarding radon and lead-based paint for both single-family standalone homebuyers and full-time real estate agents that focus on single-family standalone home sales through cognitive testing, surveys, and focus groups. In order to contact participants, investigators will search pre-existing publicly-available tax records to identify the owners of properties. Homebuyer's addresses and names will be collected by the contractor for the purposes of mailing the survey and honoraria but will not be retained in the final dataset sent to CDC. Information collected during the cognitive testing, survey, and focus groups is considered to be minimally sensitive as it poses no more than minimal risk of harm to subjects given the benign nature of information being collected. No sensitive data with privacy concerns will be compiled in the final dataset.

Investigators will ask homebuyers questions regarding information about the house (e.g. zip code, year built, purchase month/year). In addition, participants will be asked about the following topics in relation to radon or lead: understanding about health effects, whether homebuyer received information or recommendations from the real estate agent or others during

the home buying process, understanding of availability of professionals to test or address identified issues, and factors associated with choosing a professional to test for or fix issues identified.

During the real estate agent focus groups the investigators will ask participants to discuss their and their clients' understanding about health effects and laws in relation to radon and lead as well as how this understanding affected the home buying process. The same interview guide will be used in all real estate focus groups, regardless of site.

### **How Information Will be Shared and for What Purpose**

The purpose of this study is to examine the collective differences in knowledge, attitudes, and practices in relation to lead and radon, comparing states with and without various radon/lead policies. For this study, we expect the summary findings to be disseminated to a number of audiences. Planned summary findings are detailed in A.16. Evaluation reports will be written in a way that emphasizes scientific rigor for more technical audiences but are also intuitive, easily understood, and relevant to less technical audiences. The reporting and dissemination mechanism will consist of four primary components: (1) final reports, (2) peer-reviewed journal articles, (3) meetings with key stakeholder groups, and (4) conference presentations (e.g., the International Radon Symposium). All abstracts, poster presentations, and manuscripts will undergo CDC clearance review prior to submission to conferences or journals.

The results of our study also will be used to develop at least one peer-reviewed journal article (e.g., Preventing Chronic Disease, American Journal of Public Health, Journal of Environmental Health, Health Physics, or Cancer Prevention Research) that summarizes findings.

### **Impact of the Proposed Collection on Respondent Privacy**

The two modalities presented in this study measure minimally sensitive information. Respondents will be assured via the interviewer scripts (available in **Appendices 5 and 7**), recruitment material (available in **Appendices 9, 11, and 13**), and informed consent forms (available in **Appendices 10, 12, and 14**) that their individual responses will not be shared with anyone outside the research team and that their names will not be reported with responses provided. Respondents will be told that the information obtained from all of the surveys will be

combined into a summary report so that details of individual questionnaires cannot be linked to a specific participant.

### **Nature of Participant Participation**

Participation in this study is voluntary. Participants will be made aware of the voluntary nature of participation through recruiting material as well as prior to undertaking data collection.

### **Consent**

A waiver of signed consent has been granted for these data collection instruments by the CDC IRB due to the minimal sensitivity of the data being collected. In addition, all respondents will be assured that the information will be used only for the purpose of this research and will be kept private to the extent allowable by law, as detailed in the surveys (available in **Appendices 9, 11, and 13**), and informed consent forms (available in **Appendices 10, 12, and 14**). A copy of the IRB documentation is provided in **Appendix 3**.

### **Data Security**

To maintain privacy, each respondent will have a unique identifier to access the Web-based response portal for the mailed homebuyer survey if they choose to respond in that manner. The study website will not have content directed to children younger than 13. Investigators maintain restricted access to all data preparation areas (e.g., receipt and coding). All data files on multi-user systems will be under the control of a database manager, with access limited to project staff on a “need-to-know” basis only. Investigators take multiple security measures to ensure separation between respondents’ identities and their survey data.

### **Privacy Act Determination**

Identifiable respondent intake and follow-up information will be collected for the initial intake into the homebuyer survey cognitive testing and mailed homebuyer survey components of the proposed study but will be deleted once honoraria distribution has ended. As no identifiable data will be retained, the Privacy Act does not apply to these data collections.

#### **A.11 Justification for Sensitive Questions**

A portion of respondents could consider questions about race, ethnicity, or other demographic characteristics to be sensitive, although such questions are unlikely to be highly sensitive, and OMB considers questions regarding race and ethnicity to be sensitive. These items on the

surveys follow all of the standards set forth by OMB Directive No. 15 on Race and Ethnic Standards for Federal Statistics and Administrative Reporting (available from: <http://wonder.cdc.gov/wonder/help/populations/bridged-race/Directive15.html>). Previous studies of radon awareness and practices have indicated significant differences in awareness by race and ethnicity so such questions will help investigators analyze or account for differences in responses by race or ethnicity in their analysis. In addition, questions about race and ethnicity will be useful for the purposes of exploring how well the data collected reflected the demographic profile of the sample population, region, and state. This will allow investigators to understand and account for differences in response rates by race/ethnicity. It will also help stakeholders compare the study participant demographic makeup to their own region. To minimize psychological distress, the survey interviewers and focus group moderators will inform participants that they do not have to respond to any questions they do not want to answer and they may stop participating at any time.

#### **A.12 Estimates of Burden Hours and Costs**

For the homebuyer survey cognitive testing component of this study, the burden for participants is estimated at thirty minutes per respondent (**Appendix 5**). Internal cognitive testing of the homebuyer survey by investigators has indicated that the average response time is 8 minutes per respondent (**Appendices 6b and 6c**). Staff with subject matter expertise in qualitative research and focus groups estimate that focus groups with real estate agents will last approximately one hour (**Appendix 7**).

All information for this study will be collected by CDC's data collection contractor, SciMetrika LLC, over 24 months. All estimates are annualized over two years and use the maximum expected return rate on the homebuyer survey of 30% (900 respondents total or 450 per year over a 2-year period). OMB approval is requested for two years to allow for adequate time for cognitive testing of the mailed survey and data collection. The final version as approved by OMB will be made publicly available at [www.Reginfo.gov](http://www.Reginfo.gov). The total estimated annualized burden to respondents is 116 hours.

**A.12-1 Estimated Annualized Burden Hours**

Type of Respondent	Form Name	No. of Respondents	No. of Responses per Respondent	Avg. Burden per Response (in hr)	Total Burden (in hr)
Homebuyers	Cognitive Testing Interview Guide	16	1	30/60	8
	Homebuyer Survey	450	1	8/60	60
Real Estate Agents	Focus Group Interview Guide	48	1	1	48
Total					116

To estimate the cost to respondents, we used \$23.00/hour as the average hourly wage for real estate agents, and \$7.37/hour (the current Federal minimum wage) as the average hourly wage for homebuyers. The total estimated annualized cost to respondents is \$1,605.

**A.12-2 Estimated Annualized Cost to Respondents**

Type of Respondent	Form Name	Number of Respondents	Total Burden (in hr)	Average Hourly Wage	Total Cost
Homebuyers	Cognitive Testing Interview Guide	16	8	\$7.37	\$59
	Homebuyer Survey	450	60	\$7.37	\$442
Real Estate Agents	Real Estate Agent Focus Group Interview Guide	48	48	\$23.00	\$1,104
Total					\$1,605

**A.13 Estimates of Other Total Annual Cost Burden to Respondents and Record Keepers**

Respondents are subject to no direct costs other than their time to participate; there are no start-up or maintenance costs. Investigators will be financially responsible for data collection that must occur to meet study goals and sample size requirements.

**A.14 Annualized Cost to the Federal Government**

The contractual costs to SciMetrika LLC include costs for scientific staff who have responsibilities for project management, data collection, and data analysis; the personnel costs

associated with recruiting and collaborating with study sites; distributing and tracking of invitations, surveys, and honoraria; managing data; and reporting results. Other contractual costs include costs for survey production and distribution, the cost of computing equipment, study honoraria, and other administrative costs. The total estimated cost of the contract with SciMetrika LLC for data collection pertinent to OMB purposes is \$113,101. The estimated annualized cost to the government of \$56,550 represents project costs for data collection annualized over two years. The contractor's costs are based on estimates provided by the contractor who will carry out the data collection activities. The CDC oversight costs include personnel costs of Federal employees involved in oversight and are estimated at \$50,171 annually. This estimate includes one project director and one technical monitor at the GS-13 level (30% FTE each), and one consulting medical epidemiologist at the GS-13 level (10% FTE). The 2013 Department of Labor GS-13 base pay of \$71,674 was used in calculating these amounts.

***A.14-1 Annualized Government Costs***

<b>Type of Cost</b>	<b>Total Cost</b>	<b>Annualized Cost</b>
<b>SciMetrika LLC. Contract Costs</b>		
Labor	\$62,222	\$ 31,111
Materials and services	\$29,101	\$14,550
Indirect costs	\$21,778	\$10,889
<b>Subtotal, Contract Costs</b>	\$ 113,101	\$ 56,550
<b>CDC Oversight Costs</b>		
2 GS-13, \$71,674/year @ 30%		\$43,004
1 GS-13, \$71,674/year @ 10%		\$7,167
<b>Subtotal, CDC Oversight Costs</b>		\$ 50,171
<b>Total Cost to Federal Government</b>		\$142,454

### **A.15 Explanation for Program Changes or Adjustments**

This is a new information request.

### **A.16 Plans for Tabulation and Publication and Project Time Schedule**

#### ***Tabulation Plans***

Data will be tabulated to meet the objectives and research questions described in Section A.2. A rough timeline of data collection and analysis is given below in table A16-1. The planned analyses are briefly described below. Preliminary results from these analyses will be shared with experts at EPA and HUD in order to gain their analytic and interpretive suggestions on the results, mindful of the limitations in generalizability discussed below. Conclusions drawn from these analyses will be disseminated through previously described mechanisms including: a final report, peer-reviewed journal articles, conference presentations, and meetings with key stakeholder groups.

1. To address our first key study question, “What are the knowledge, attitudes, and practices of homebuyers and real estate agents in regard to radon health effects (including lung cancer), radon professional certification, and radon testing/control policies that affect single-family standalone home sales?” results of the homebuyer surveys and real estate focus groups will be analyzed by type of radon policy in the state (notification vs. no-notification). Homebuyer survey data will be used to perform quantitative analyses, such as absolute numbers, proportions, cross tabulations, and chi-square analyses. Qualitative analysis of real estate agent focus groups will be used to identify common themes among participants. These quantitative and qualitative data may be combined or reported separately in dissemination materials depending on the data obtained.
2. The second key study question, “Does awareness about Federal lead-based paint notification appear to influence awareness about radon?” will be assessed through quantitative analysis of homebuyer surveys, such as regression analyses. Qualitative analysis of real estate agent focus groups will be used to identify common themes among participants in relation to this question. These quantitative and qualitative data may be combined or reported separately in dissemination materials depending on the data obtained.
3. To address the third key study question, “Overall, to what extent does the comparative analysis of various radon policies suggest that implementation of similar notification policies in other locations likely to have elevated radon could be of value (i.e., change

awareness levels or increase radon testing rates in real estate transactions) if implemented at the state level?” results from the preceding two analyses will be used. The previously described quantitative and qualitative results will be assessed to interpret whether implementation of similar notification policies in other locations with elevated radon could be of value.

4. An additional aim of the study is to address whether radon professional certification policies in a state affect radon KAP in homebuyers and real estate agents. To address this, both quantitative and qualitative methods will be used to compare states with and without radon professional certification within notification and no-notification states. Answers to questions on the homebuyer survey (e.g., sample characteristics in terms of demographics and KAP in relation to radon and lead) will also be used to develop regression analyses, and real estate focus group data will be used to inform qualitative analyses to identify common themes among participants in relation to this question. These quantitative and qualitative data may be combined or reported separately in dissemination materials depending on the data obtained.

### ***Study Limitations***

This analysis study is subject to limitations regarding the generalizability of the results because: a) only four states will be included in the study, b) only one county in each state, and c) as is typical of most surveys currently a low response rate is anticipated (perhaps less than 30%). As there is no precedent to definitively determine the power of the study to identify general differences between “notification” and “non-notification” states it is possible that larger samples may yield different results, but this does not seem likely given experiences with prior surveys related to environmental issues. Furthermore, both our homebuyer survey and our real estate agent focus group results may be limited by recall bias of the participants. Finally, a low response rate could impair our ability to determine differences between notification and no-notification states. We will do everything possible to minimize these limitations during data collection and to increase our response rate while minimizing the burden on the participant.

### ***Publication Plans***

For this study, we expect the findings to be disseminated to a number of audiences. Evaluation reports will be written in a way that emphasizes scientific rigor for more technical audiences but are also intuitive, easily understood, and relevant to less technical audiences. The reporting and dissemination mechanism will consist of four primary components: (1) final

evaluation reports, (2) peer-reviewed journal articles, (3) meetings with key stakeholder groups, and (4) conference presentations (e.g., the American Public Health Association’s Cancer Forum).

The results of our study also will be used to develop at least one peer-reviewed journal article (e.g., Preventing Chronic Disease, American Journal of Public Health, American Journal of Health Promotion, American Journal of Preventive Medicine, Biomarkers and Prevention, Cancer Prevention Research) that summarizes findings. All abstracts, poster presentations, and manuscripts will undergo CDC clearance review prior to submission to conferences or journals.

***Project Time Schedule***

Once approved by OMB the project aims to complete the real estate focus groups and cognitive testing of the homebuyer survey. It is anticipated to take approximately 6 to 12 months to undertake cognitive testing and, if necessary, make minor, non-substantive revisions to the homebuyer survey. The survey will be implemented in 4 states (Illinois, Minnesota, North Carolina, and Ohio) and data collection is anticipated to take one year from the time of implementation. Focus groups will take approximately 6 months to complete once approved by OMB.

The key events and reports to be prepared are listed in ***Table A.16-1***.

***A.16-1 Project Time Schedule***

<b>Project Activity</b>	<b>Time Schedule</b>
Real estate agent focus groups	Complete within 6 months of OMB approval
Cognitive testing of homebuyer survey	Complete within 6 months of OMB approval
Mailed homebuyer survey	Start within 12 months of OMB approval complete within 24 months of OMB approval
Data cleaning and analysis	6 months after completing data collection
Submit final report	Within 6 months after completing data collection
Submit at least one manuscript	Within 1 year after completing data collection

**A.17 Reason(s) Display of OMB Expiration Date is Inappropriate**

We do not seek approval to eliminate the expiration date.

**A.18 Exceptions to Certification for Paperwork Reduction Act Submissions**

There are no exceptions to the certification statement.