

Request for Office of Management and Budget Review and Approval  
for Federally Sponsored Data Collection

**Application of a Web-based Health Survey in Schools**

**Section A**

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## SUPPORTING STATEMENT

This is a new data collection, and we are seeking Office of Management and Budget (OMB) approval for one year. Contact with participants is expected to be during FY 2015 and is a one-time collection of data. The funding for this project is provided by the National Institute for Occupational Safety and Health (NIOSH) Public Health Practice (PHP) program.

### A. JUSTIFICATION

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

For this project, NIOSH will be conducting a study to understand associations between health outcomes and dampness/mold scores measured using a standardized dampness and mold assessment tool. Working with the American Federation of Teachers and the school district, we will administer an internet-based questionnaire to school employees and assess environmental dampness and mold at 50 elementary schools in a large urban school district in the northeastern United States. In order to achieve our goal, we need to collect information as described in this OMB supporting statement. The Occupational Safety and Health Act, Public Law 91-596 (section 20[a][1]) authorizes NIOSH to conduct research to advance the health and safety of workers (see Appendix A: Occupational Safety and Health Act of 1970 Public Law 91-256).

The educational services industry is the second largest U.S. industry with around 12.9 million workers; approximately 7 million of these workers are employed as school teachers (BLS 2012; U.S. Census 2006). A 2010 analysis of data on U.S. working adults indicated that as an occupational group, school teachers had one of the highest prevalences of current asthma at 13.1% (McHugh et al. 2010). Asthma and upper and lower respiratory symptoms have been consistently associated with damp indoor environments. The World Health Organization (WHO) concluded that “the most important means for avoiding adverse health effects is the prevention (or minimization) of persistent dampness and microbial growth on interior surfaces and in building structure”. Sufficient epidemiological evidence is available that shows occupants of damp or moldy buildings are at increased risk of respiratory symptoms, respiratory infections, and exacerbation of asthma. Some evidence also suggests increased risks of allergic rhinitis and asthma. Although few intervention studies were available, their results show that remediation of dampness can reduce adverse health outcomes. There is also clinical evidence that exposure to mold and other dampness-related microbial agents increases the risks of rare conditions, such as hypersensitivity pneumonitis, chronic rhinosinusitis, and allergic fungal sinusitis (WHO 2009). Although recent data is lacking, the U.S. General Accounting Office reported in 1995 that one-third of schools nationwide need extensive repair or replacement to plumbing, roofs, exterior walls, finishes, windows, or doors, and that more than 40% of schools have unsatisfactory indoor environmental conditions (GAO 1995). Thus, better understanding of school building conditions related to water damage and associated health effects in school staff is relevant to the reduction of work-related respiratory health effects in school buildings.

We developed an observational dampness and mold assessment method from previous work that was part of the Health Hazard Evaluation program (OMB No. 0920-0260, expiration date 11/30/2014). This method was utilized in studies of a community college and a health care facility with 15 total buildings, which showed that dampness and mold scores were associated with respiratory health outcomes in building occupants

(Park et al. 2004; Cox-Ganser et al. 2009). In a subsequent National Occupational Research Agenda project (OMB No. 0920-0793, expiration date 10/31/2011), we developed a tool that could be utilized by school maintenance personnel to evaluate dampness and mold in schools. We then received funding from PHP (FY 2010-FY2012) to develop software of the tool for electronic data collection which did not require OMB approval. The current tool includes data entry, editing, reporting, and data exporting software, which provides a computerized method for utilizing data collected on signs of dampness, water damage, mold growth, and musty odors in rooms or areas in a school. This software has been recently used by a large urban school district to assess over 120 schools. The district used the data to help guide remediation of dampness and mold in the schools.

### 1.1 Privacy Impact Assessment

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

Participants will be asked to complete an on-line health questionnaire (Appendix D: Elementary School Staff Questionnaire). The employees will receive an invitation email from NIOSH which contains study and consent information, questionnaire instructions, and a link and unique study identification number to securely access the questionnaire on the CDC website (Appendix G: Invitation Email and Consent). All data collected for this project will be stored on a secure CDC server and maintained according to the CDC record schedule.

#### *Items of Information to be Collected*

Data will be collected from participants in 50 elementary schools in a school district through an on-line health questionnaire which will be completed only once. Potentially identifiable information will be collected from participants, including date of birth, race, gender, ethnicity, and employment information.

Questionnaire data includes:

- Demographic information
- Work history
- Health symptoms
- Medical conditions
- Home environment related to water damage and mold
- Smoking history

If participation is less than 80%, a short questionnaire will be sent to 400 (10% of the total invited population) employees that did not participate in the main health questionnaire. To ascertain non-response bias, we will collect information on age, race, ethnicity, gender, and current job along with a limited number of health questions. We will also inquire about why they chose not to participate in the initial questionnaire.

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

This project has been funded by NIOSH for the 2015 fiscal year. Data collection will be done online and will only be performed one time. Our aim for the information collection is to understand associations between health outcomes and dampness/mold scores measured using a standardized dampness and mold assessment tool. NIOSH staff will carry out the dampness and mold assessments of the schools during the period of the questionnaire survey. Since environmental data collection will be done only by NIOSH staff and not involve any study participants, this portion of the study is not subject to OMB approval. Results of the study will add to our knowledge of the usefulness of the

dampness and mold assessment tool scores in relation to health outcomes. Outputs of our data analysis will include a report and one or more publications.

The potential impact of this project would be improvement in interpretation of the dampness and mold scores in relation to health and the future addition of a health module to the dampness and mold assessment tool. If the study is not conducted, we will not have valuable information from schools with which to evaluate the dampness and mold assessment tool scores in relation to health outcomes.

### 2.1 Privacy Impact Assessment

Some potentially identifiable personal information (i.e., date of birth) will be collected during this study. In addition, we will collect data such as information on current and past employment, work locations, and health state. This information could have an effect on the respondent's privacy if there were a breach of security. To protect the security of human subject data, the online survey will be hosted on the CDC website and collected data will be stored on the CDC Mid-Tier Data Center. In addition, in all data analyses, we will only use the uniquely assigned number for each study subject. Privacy is also enhanced through controlled access to the NIOSH facility and data files, which is in accordance with Field Studies Branch procedures for protecting human subject data. Only NIOSH researchers specifically working on this project will be allowed to view the data.

The specific information derived from the participants in this study will be kept secure and will not be disclosed to others without written consent except as required by law. This information will be used for statistical and research purposes in such manner that no individual can be identified.

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

All information (100%) for the main health questionnaire will be collected electronically. This is necessary to ensure the accurate and timely collection of information.

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

Several studies have been conducted that have examined associations between student and employee health and dampness in school buildings (e.g., Borràs-Santos et al. 2013, Simoni et al. 2011, Sahakian et al. 2008). The EPA developed the *Indoor Air Quality Tools for Schools* program that provides guidance on how to reduce exposures from indoor environmental contaminants such as mold in schools. However, we have not found any studies that focus on using both computerized observational assessment for dampness and mold, and a web-based health questionnaire to characterize possible associations between dampness and mold with employee health in schools.

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

No small businesses will be involved in this data collection.

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

The activities involve a one-time collection of data. There are no legal obstacles to reduce the burden.

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

This request fully complies with the regulation 5 CFR 1320.5.

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

A. Attached is a copy of the Federal Register Notice (see Appendix B: Federal Register Notice) which contains the request for comments on the proposed collection of information. CDC published the notice on October 23, 2013 (Volume 78, Number 205 (pages 63207-63208)). There were no public comments.

B. We have consulted on this collection of information with:

- 1) The Director of the U.S. Department of Education Green Ribbon Schools Program,
- 2) A staff member from the Occupational Safety and Health Administration, Office of Physical Hazards, Directorate of Standards and Guidance,
- 3) Staff from Indoor Environments Division, Office of Radiation and Indoor Air, U.S. Environmental Protection Agency.

This project was also subject to review during an external branch review in June 2012. A summary of this review is provided (see Appendix C: External Review Comments).

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

There will be no payments or gifts to the respondents in this study.

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

### Privacy Impact Assessment Information

This submission has been reviewed by CDC, who has determined that the Privacy Act does apply. The applicable System of Records Notice is 09-20-0147, Occupational Health Epidemiological Studies and EEOICPA Program Records. The collection of this information is covered under the CDC Privacy Act.

NIOSH will receive a list of all employees in the 50 elementary schools with their email addresses from the union and school district. NIOSH will randomly assign an ID number to each employee. The database which contains the link between the unique ID and name will be stored on a secure password-protected CDC server but will not be merged with the health questionnaire or shared with either the union or school district. We will maintain this database until the end of the study, after which it will be purged from the server.

In the health questionnaire, potentially identifiable information, such as date of birth and work location, will be collected. To ensure the security of the study data, access will be limited to the NIOSH research team and will be stored in a password-protected database on the CDC computer network. Furthermore, because the survey will be hosted on the CDC website, all necessary security protocols required by CDC will be implemented. Any paper records generated during the course of this study will be stored in a locked file cabinet at the NIOSH Morgantown facility and only accessible by members who are directly involved in the study. All study data and records will be securely maintained until publication of results, after which they will be archived according to federal regulations.

This study has been approved by the NIOSH Institutional Review Board; a copy of the approval letter is attached (see Appendix F: IRB Approval Letter). An informed

consent is included in the informational email (see Appendix G: Invitation Email and Consent). Participation in any part of the NIOSH study is completely voluntary, and participants may withdraw their consent at any time. There are no consequences if a participant refuses to complete the survey. Results will be shared with the union and/or the school district in summarized form only, and no individual level data will be shared.

**11. Justification for Sensitive Questions**

No questions that are considered sensitive will be used in this study. We do plan on collecting information on race, ethnicity, gender, date of birth, and smoking status for the study population. We need demographic and smoking information to account for potential confounding in regression models on dampness and mold and health outcomes. We will also inquire about the work locations that participants spend the majority of their time in and we arbitrarily chose four hours a week, so we will be able to link participant health data and environmental data by the school and room location. However, no further identifying information will be collected.

**12. Estimates of Annualized Burden Hours and Costs**

A. The study population is comprised of all employees in 50 elementary schools in a large urban school district in the northeastern United States. This is a convenience sample of elementary schools that have approximately 70-90 staff each, with a total of approximately 4,000 staff. Participation in a previous health questionnaire of a school district ranged between 72-75% (OMB No. 0920-07BD, expired 10/31/11). In the present study, since we are working closely with the union and the district we are assuming a participation rate of 80%, which will result in 3,200 participants. The internet-based questionnaire will be about 20 minutes or less, resulting in an annual burden of 1,067 hours for school workers. If participation is less than 80%, a short questionnaire will be sent to 400 (10% of the total invited population) randomly selected non-respondents after the main survey is closed to assess potential non-response bias.

Estimated Annualized Burden Hours

Type of Respondents	Form Name	No. of Respondents	No. of Responses per Respondent	Average burden per response (in hours)	Total burden hours
School workers	Questionnaire	3,200	1	20/60	1,067
School workers	Non-responder questionnaire	400	1	5/60	33
Total		3,600	1		1,100

B. To estimate annual burden costs, we considered the proportion of each occupational group within a school, including the average percentage of teachers (54%), instructional aides (12%), administration (3%), guidance counselors (2%), librarians (1%), and other school staff (28%) (National Center for Education Statistics, 2007).



We used the Bureau of Labor Statistics median annual salaries from 2013 to calculate hourly wages (BLS, 2013) for these occupations based on an eight-hour work day for 185 days, with the exception of administrators, which were based on a normal 12 month work schedule. Based on these numbers, we estimate the total respondent cost to be \$35,111 for the health questionnaire and \$1,158 for the non-respondent questionnaire.

Estimated Annualized Burden Costs

Type of Respondent	Form name	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Teachers	Questionnaire	576	\$35.87	\$20,662
	Non-Respondent	18		\$646
Instructional aides	Questionnaire	128	\$15.97	\$2,045
	Non-Respondent	4		\$64
Administration	Questionnaire	32	\$42.19	\$1,351
	Non-Respondent	1		\$43
Guidance counselors	Questionnaire	22	\$36.22	\$797
	Non-Respondent	1		\$37
Librarians	Questionnaire	11	\$37.41	\$412
	Non-Respondent	1		\$38
Education, training, and library occupation, general	Questionnaire	299	\$32.92	\$9,844
	Non-Respondent	10		\$330
<b>Total</b>				<b>\$36,269</b>

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

There is no annual cost burden to Respondents or Record Keepers.

**14. Annualized Cost to the Government**

The annualized cost to the government is \$120,000 for the 2015 fiscal year. Equipment and supply costs include the necessary items to conduct the environmental assessment, as well as general office supplies. Contractual costs in FY 2015 will include contracts with the school district and the union to assist with school staff enrollment and training for the online survey, as well as to the school district for access to school buildings during after-school hours, and the funding of a NIOSH fellow to process environmental assessment data. In FY 2015, travel will include conducting environmental assessments at the 50 schools, stakeholder meetings, and attending conferences to present research results.

Item	FY 2015
Equipment and supplies	\$30,000
Contractual	\$60,000

Travel	\$30,000
Annualized estimate of federal costs	\$120,000

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

This is a new data collection.

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

In the spring of 2015, after we receive approval from OMB, the school district and union will collaborate with NIOSH to increase study awareness and understanding of the goals of the study, as well as to promote participation in the survey. This will be done through member/staff emailing, informational flyer distribution (Appendix H: Fact Sheet), and contact with staff at monthly staff meetings held by union stewards or principals at each school. NIOSH will obtain employee lists and email addresses from the union and school district. In March 2015, we will send out email invitations and instructions for participation in the web-based questionnaire survey to all employees in the 50 elementary schools chosen as described in section 12A. The invitation email (Appendix G: Invitation Email and Consent) will include the goals and a description of the study, a unique identification number for secure access to the questionnaire on the CDC website, a link to the questionnaire, and instructions and explanation on consent to participate. The questionnaire will be open for participation during April and May of 2015.

<b>Activity</b>	<b>Time Schedule</b>
Notification of study to respondents	March 2015
Web-based questionnaire survey	April – May 2015
Dampness and mold assessments of the schools by NIOSH staff	May 2015
Preparation of health and dampness and mold data for analysis	1 month after data collection ends
Data analysis and interpretation	4 months after data collection ends
Preparation of report for school district and union	10 months after data collection ends
Preparation of manuscript/s	12-15 months after data collection ends

All data management and analysis will be carried out using statistical software from the SAS Institute, Inc, Cary, NC. The following types of statistical analyses will be carried out.

1. Regression models will be performed to examine associations between health outcomes and dampness/mold scores measured using a standardized dampness and mold assessment tool.

Using PASS<sup>13</sup> software (Hintze, J. 2014. PASS 13. NCSS, LLC. Kaysville, Utah, USA. www.ncss.com.), power calculations were run for multiple logistic regression models for current asthma, wheeze in the last 12 months, acute bronchitis in the last 12 months, and pneumonia in the last 12 months, as the outcome variables versus the

dampness and mold score as a continuous explanatory variable for a sample size of 2,000 (50% participation) as well as 3,200 (80% participation). We assumed an alpha of 0.05, and that an  $R^2$  of 0.1 would be achieved if the dampness and mold score was regressed on the other independent variables in the logistic regression, since there is little reason to expect that the dampness and mold score will be highly correlated with any smoking and demographic variables. We assumed baseline prevalences for the outcomes as follows: current asthma 10% (BRFSS); wheeze in the last 12 months 16% (Arif et al. 2003); acute bronchitis in the last 12 months 5% (Wenzel and Fowler 2006); and pneumonia in the last 12 months 2.1% (Niederman et al. 1998). Results of the power analyses are shown in the table below as the odds ratios that can be detected when the dampness and mold score increases one standard deviation above the mean at a sample size of either 2000 or 3200 and a power of 90%.

Health Outcome	Power	N	Odds Ratio
Current asthma	90%	2000	1.29
	90%	3200	1.22
Wheeze in the last 12 months	90%	2000	1.23
	90%	3200	1.18
Acute bronchitis in the last 12 months	90%	2000	1.42
	90%	3200	1.32
Pneumonia in the last 12 months	90%	2000	1.70
	90%	3200	1.52

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

The display of the OMB expiration date is not inappropriate.

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

There are no exceptions to the certification.