

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

**Investigating the Implementation and Evaluation of Top-ranked HSMS  
Elements**

**Section A**

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## List of Attachments

- Attachment A – Federal Mine Safety & Health Act of 1977
- Attachment B – 60 Day Federal Register Notice
- Attachment C – Mine Recruitment Script
- Attachment D – Informed Consent Form
- Attachment E – Interview/Focus Group Protocol
- Attachment F – HSRB Approval Letter

The Centers for Disease Control and Prevention (CDC) requests OMB approval of a new research project for the National Institute for Occupational Safety and Health (NIOSH) Mining Program for a three-year period.

- **Goal of the study:** Determine and assess the optimal use of health and safety management system (HSMS) elements and practices to understand how to best manage and execute a safety system within mining.
- **Intended use of the resulting data:** Provide suggestions to mine safety and health practitioners, operators, and industry officials about ways to best implement, evaluate, and sustain their HSMS in an effort to reduce workplace risks, injuries, and illnesses.
- **Methods to be used to collect:** Interviews and focus groups will occur and take no more than 60 minutes each. Data will be collected via note taking and later typed for analysis.
- **The subpopulation to be studied:** Mine health and safety managers of various mining commodities throughout the United States (e.g., underground coal, metal/nonmetal, surface sand, stone, and gravel).
- **How data will be analyzed:** This data will not be used for statistical analysis. Notes will be summarized and coded using health and safety management system elements and practices as categorizing mechanisms. The rules of qualitative data coding will be applied during the analysis phase to ensure validity of results.

## **A. Justification**

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

This information collection request (ICR) is a new request. This ICR describes data collection tasks under the project entitled “Analysis of Health and Safety Management System (HSMS) Practices through Multilevel Interventions.” This study is being conducted by the National Institute for Occupational Safety and Health (NIOSH). NIOSH, under P.L. 91-173 as amended by PL 95 -164 (Federal Mine Safety and Health Act of 1977, See Attachment A) has the responsibility to conduct research relating to innovative methods, techniques, and approaches dealing with occupational safety and health problems. Approval is being sought for three years.

As defined by available system standards (e.g. ANSI/AIHA Z-10; OHSAS 18001; Responsible Care; ILO-OSH-2001), health and safety management systems (HSMS) are considered to be a set of institutionalized, interrelated, and interacting strategic health and safety (H&S) management practices designed to establish and achieve occupational safety and health goals and objectives. In 2006 the U.S. National Mining Association (NMA) formed an independent commission to examine HSMS issues within the mining industry. The findings of the commission called for the mining industry to adopt a risk-based management paradigm. In the presentation of its findings, the commission stated that “...every mine should employ a sound risk-analysis process, should conduct a risk analysis, and should develop a management plan to address significant hazards identified by the analysis” (Grayson et al., 2006). Grounded in the well-known plan-do-check-act cycle, the recommended risk management system allows for mines to ground strategic management choices in their mine-specific hazards and risk profiles. Since these recommendations, an HSMS approach has become a self-regulatory priority for mining organizations.

The commission also recognized, however, that the development, implementation, and maintenance of a robust risk management system requires considerable knowledge, skills, abilities, and competencies from all individuals within an organization as well as focused and purposeful coordination between them [Grayson et al. 2006; Komljenovic et al. 2008]. To that end, the commission called on the National Institute for Occupational Safety and Health (NIOSH) to design studies to help facilitate a risk management approach [Komljenovic et al. 2008]. The current study is addressing this request. Specifically, the goals of the study are to determine the practical purpose, implementation, and evaluation of an HSMS by assessing managements’ optimal use of HSMS elements and practices. This research will help to understand how to best manage a safety system within mining and what challenges should be considered when executing such an approach. Therefore, upon collecting the data the intended use of the information is to provide suggestions to mine safety and health practitioners, operators, and industry officials about ways to best implement, evaluate, and sustain their HSMS in an effort to reduce workplace risks, injuries, and illnesses.

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

Because the mining industry is required to have some type of health and safety management system (HSMS) [Federal Register, Vol 75. No. 174, 2010] but no formula for developing or maintaining such a system exists, it is extremely important for NIOSH to collect this information. The data collected by NIOSH/OMSHR social scientist researchers, via interviews or focus groups with members of mine health and safety management, will be used by NIOSH researchers to understand the best practices for developing, evaluating, and maintaining an HSMS. Data will be collected from three mines once per year over the three-year period of the project.

The collected data will have several positive impacts for mining stakeholders and provide practical utility to the government research portfolio. The information to be collected will aid in improving the HSMS of underground and surface mines by assessing how mine health and safety leaders perceive their organizations' HSMS, how much weight they believe certain HSMS elements have on worker safety decisions, and how they implement specific practices to encourage safer behavior. NIOSH will provide this information to the mining industry in an effort to help mine site leadership tailor their HSMS in a way that can involve and support mine workers to make safer decisions on the job and prevent risk-based incidents. Results from this effort will also guide further research in HSMS best practices within the mining industry.

This data is not available from any other sources. It is essential to assess the optimal use of HSMS elements and practices to provide recommendations to mine safety and health practitioners, operators, and industry officials. If we do not collect this information, the industry will have no way of knowing the most feasible, universal practices that may be applied within their organization to better manage workplace risks. Besides disseminating tailored results and considerations to the participating mine sites, NIOSH will distribute results via trade journal outlets, peer-review outlets, and conference presentations to further reach our stakeholders.

Additionally, understanding the necessary practices and measurements of an HSMS is considered of utmost importance within NIOSH funding. This project and data collection has already been fully funded by the NIOSH Office of Mine Safety and Health Research (OMSHR). This project has funding approval through 2019 to collect and analyze the requested information. Besides using this information for the mining industry it is likely that results can be practically inferred for other occupational sectors to inform future prevention and response efforts.

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

Although we are unsure of an exact breakdown, we estimate that 75% of participants will choose a face-to-face interview and 25% will choose a phone interview. All of the data collected will occur during a scheduled interview or focus group with participants. It is anticipated that most of these data collection efforts will occur face to face. However, to comply with the Government Paperwork Elimination Act, Public Law 105-277, title XVII, signed into law on October 21, 1998, participants will have the option of participating in the data collection effort over the telephone. The questions asked both face to face and on the telephone will be the same but by providing both options respondents can choose whichever one they perceive to have the lowest burden. We anticipate more participants opting to participate face-to-face rather than talking on the phone, based on previous data collection efforts with mine management, which is why we estimated a 75/25 ratio.

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

Based on the results of a health and safety management system pilot project that ended in 2014, specific data related to broad, applicable practices for an HSMS within mining does not exist within mining. However, important elements and factors that are critical to involve in an existing HSMS have been identified by researchers over the last decade. Specifically, an extensive literature review conducted by NIOSH OMSHR researchers revealed that the sheer number of options to develop and facilitate an HSMS may be a barrier in and of itself to organizations using a formal HSMS [Yorio and Willmer in press]. More guidance about what works, what does not work, and what is most applicable for mines, regardless of commodity and size, is necessary to begin building a sound risk-management system within mining.

Previous research at the organizational level has focused on safety culture, work climate, and morale within organizations [Weyman et al. 2003; Weyman and Clark 1999], but have not made links about how these perceptions may influence behavior and ultimately push back on the health and safety management system within the organization. In order to provide specific recommendations to the mining industry about HSMS best practices, this research is imperative. Research in academia and applied settings [e.g., Robson et al. 2007] suggests that following organizations over time to study their HSMS implementation, as this study is designed, may help to better understand HSMS evolution.

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

No small business will be involved in this data collection.

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

NIOSH's social science researchers are the only individuals in the United States specifically dedicated to providing tailored HSMS recommendations to the mining industry. If NIOSH does not conduct the subject research, it is doubtful the mining industry, academia or enforcement agencies will conduct such an extensive study to assess the most feasible, applicable methods that can be used to manage and sustain a risk-based system of health and safety. As the mining industry continues to evolve and try to understand their own formula for maintaining a feasible HSMS, it is critical that research be conducted to assess what types of practices best support these implementation and sustainability efforts. If this research is not conducted, assessments and subsequent recommendations about how to implement and evaluate a risk-based HSMS will not be disseminated to industry personnel.

This request is for one time data collection. To our knowledge there are no legal obstacles to the collection as planned.

## **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. A 60-day Federal Register notice was published in the Federal Register on December 15, 2014, Vol. 79, No. 240, pp. 74098-74099 (Attachment B). No public comments were received in response to this 60-day FRN.

B. An extensive literature review was conducted. There were no personal consults outside NIOSH. No personal consults were made because this project is a continuation of an HSMS pilot project that recently ended at the end of FY14. Consults were addressed during the pilot project and therefore, not necessary for the current research task. In addition, a team of approximately 15 social scientists and engineers met regularly for several months to discuss literature outside of NIOSH-OMSHR and previous NIOSH-OMSHR studies to ensure no information was missing that contributed to identifying and understanding the gaps in HSMS literature.

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

Respondents will not receive any form of payment or gifts.

## 10. Assurance of Confidentiality Provided to Respondents

This submission has been reviewed by the CIO who determined that the Privacy Act does not apply to this data collection, since no information in identifiable form (IIF) is being collected.

During the informed consent process, participants will not provide any form of identifying information (e.g., name or SSN); therefore no IIF will be included in the data records. Participants are not promised total and absolute confidentiality. However, they are told that CDC will treat information/data in a secure manner and will not disclose, unless otherwise compelled by law.

During the informed consent process, participants are assigned a number which will not be linked with a name or other identifying information. This number is only used for data organization purposes for the researchers when writing and subsequently typing interview notes. All information provided by respondents will be maintained by CDC/NIOSH/OMSHR researchers in a secure manner unless compelled otherwise by law. The data files will be analyzed in the aggregate and no individual respondents will be identified.

### Overview of the Data Collection System

OMSHR researchers developed a data collection instrument – that can be used to facilitate either an interview or focus group. The interview/focus group protocol focuses on the most critical, fundamentally important HSMS elements, as determined by previous NIOSH research. This research revealed seven fundamentally important HSMS elements that are presumed to be important in fostering HSMS knowledge, motivation, behaviors, and outcomes (i.e. *Accountability, Knowledge, Skills, and Abilities Development, Leadership Development, Risk Management Studies, System Coordination, Culture Enhancement, Behavior Optimization*) [Willmer and Yorio in press]. These elements and their respective practices have not been studied empirically and therefore, are probed during the interview/focus group (Attachment E). The interview/focus group protocol is the only data collection instrument included in this study. This information includes managers' implementation of their respective HSMS in addition to demographic items including but not limited to age, mining experience, educational background, etc. However, no individually identifiable information is being collected.

Our research team of CDC/NIOSH/OMSHR employees has extensive contacts with a variety of mine organizations and commodities in the United States. We will utilize our contacts to inquire with mine management about their willingness to participate. It is estimated that approximately 24 mine sites will be contacted for recruitment over the three-year period. An exact breakdown of commodities is unknown as this point, but efforts to recruit a similar number of different commodities will occur. These mine health and safety managers that work in a variety of mine operations throughout the U.S., including underground coal and surface metal/nonmetal commodities, will be recruited to participate via e-mail or phone, using a mine-level recruitment script (Attachment C). If mine management agrees to participate as an organization, NIOSH OMSHR researchers will travel to the mine site and introduce those health and safety individuals made available by the member of mine management who agreed access to the site, who are those charged with managing the site's HSMS, to the study. Any individual who has some responsibility for the health and safety management at their mine is eligible to participate. The introduction will include the potential participants being read a consent script (Attachment D). The

consent form describes the study, the conditions of the study, and the use of information collected from the study. Depending on the number of interested and available managers at the time of the visit, an interview and/or focus group may occur, utilizing the Interview/Focus Group Protocol (Attachment E). All potential participants will be given the option of consenting or declining individual participation. Participation in the interview/focus group also serves as consent to participate. The informed consent document includes and states that information is available that contains the principal investigator's contact information, research point of contact information, and the NIOSH HSRB/IRB contact information.

The data collection consists of researchers asking questions and recording their answers via note taking. Conversations will not be audio-recorded. It is expected that the health and safety managers of the participating mines will vary along a number of variables including age, gender, job role, and experience. The number of employees selected for participation at each mine will vary, depending on the size of the mine, time allotted for the mine trip, and workers' willingness to participate. An inclusion criterion for participants is that they must manage some aspect of health and safety and their mine. There are no exclusion criteria. It is estimated that anywhere from one to eight mines per year may be contacted to inquire about leadership participation, for a final sample of no more than 100 individual's participating over a three-year period. We will conduct the research above ground at the mine, on company time during managers' shifts.

Upon arrival on NIOSH's site, interview/focus group notes will be typed into Microsoft Word by the NIOSH researcher who conducted the interview and/or focus group at each respective site. These word documents will be stored on a password-protected NIOSH computer. Hard copy notes will be kept in a locked cabinet in the PI's locked office at the secure NIOSH Pittsburgh site until all data has been summarized, analyzed and verified (approximately three years from initial data collection). Prior to the finalization of the report all individual subject data will be destroyed. It is estimated the data will be on file for the life of the project and then destroyed. No personal identifiers will be collected that can link an individual. The data can be analyzed by NIOSH researchers so no outside personnel will have access to the data. Participating mine sites will receive a summary of the results that answers the study's inquiries of focus. This information will be shared to upper level management at participating mine sites in an effort to offer focused efforts and direction when implementing a safety system onsite.

#### IRB Approval

This data collection has been reviewed by the NIOSH Human Subjects Review Board (HSRB) and received exempt approval on November 26, 2014. A copy of the approval letter is provided in Attachment F.

#### **10.1 Privacy Impact Assessment Information**

No individually identifiable information will be collected.

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

Respondents will not be asked any questions of a sensitive nature.

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

A. The respondents targeted for this study include mine health and safety managers. Participants will be recruited through members of mine management using a mine recruitment script. An estimated sample of



up to 100 (approximately 33-34 per year) from various mining operations will participate. The amount of time to participate in an interview/focus group, including recruitment/consent, will be no more than 60 minutes. The total estimated annualized burden hours are 32.

The following table provides an estimate of the annualized burden hours. The estimates are based on the researcher's previous experience conducting similar methods of data collection.

Estimated Annualized Burden Hours

Type of Respondent	Form Name	No. of Respondents	No. Responses per Respondent	Average Burden per Response (in hours)	Total Burden Hours
Mine & Health Safety Representative	Mine Recruitment Script	8	1	5/60	1
Individual Mine Health and Safety Manager	Interview/Focus Group Protocol	34	1	55/60	31
Total					32

B. The estimated total cost for this information collection is \$965.12.

Estimated Annualized Burden Costs

Type of Respondent	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Mine & Health Safety Representative	1	\$30.16	\$30.16
Individual Mine Health and Safety Manager	31	\$30.16	\$934.96
			\$965.12

The value assigned for the hourly wage rate is based on the average U.S. hourly wage rate for miners available in the following information: Bureau of Labor Statistics, U.S. Department of Labor, *May 2013 National Industry-Specific Occupational Employment and Wage Estimates NAICS 212000 - Mining (except Oil and Gas)*, on the Internet at [http://www.bls.gov/oes/current/naics3\\_212000.htm#00-0000](http://www.bls.gov/oes/current/naics3_212000.htm#00-0000) (visited October 4, 2014).

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

Participation is voluntary and there are no costs to respondents other than their time.

### 14. Annualized Cost to the Government

Data will be collected for three years. The estimated annual cost to the Federal Government is \$14,438.54. This includes data collection by CDC/NIOSH employees, data analysis, and report writing. The hours designated for government staff were calculated as shown in the table below. The total cost average for a three year period is \$43,315.62.

	Hours	Hourly Rate	Cost at Hourly Rate	Other Costs (data collection, etc.)	Total

Personnel 1 GS-12-3	100	\$36.21	\$3,621.00	\$1,500	\$5,121.00
Personnel 2 GS-12-1	33	\$33.94	\$1,120.02	\$1,000	\$2,120.02
Personnel 3 GS-14-1	75	\$47.70	\$3,577.50	\$1,500	\$5,077.50
Personnel 4 GS-12-1	33	\$33.94	\$1,120.02	\$1,000	\$2,120.02
Total					\$14,438.54

## 15. Explanation for Program Changes or Adjustments

This is a new data collection.

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

Data analyses will be conducted over the life of the project. The project schedule below provides an estimate of data collection activities, analysis, and dissemination.

### Project Time Schedule

<b>Activity</b>	<b>Time Schedule</b>
Data collection (Interviews/Focus Groups)	1-30 months after OMB approval
Analysis	30-35 months after OMB approval
Publication	36 months after OMB approval

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

The OMB expiration date will be displayed.

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

There are no exceptions to the certification.

### **References**

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