

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

**Assessing the Impact of Organizational and Personal Antecedents on  
Proactive Health/Safety Decision Making**

**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 Worker Survey
- Attachment D – Mine Worker Survey Screenshots
- Attachment E – Mine Recruitment Script
- Attachment F – Mine Worker Oral Consent Script
- Attachment G – IRB Exemption 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:** Explore what personal and organizational factors are positively associated with and have the most impact on mine workers' proactive health and safety decisions. Research question to be explored: what internal/external characteristics have the biggest impact on proactive and compliant health and safety behaviors in mine workers.
- **Intended use of the resulting data:** Provide suggestions to mine safety and health practitioners, operators, and industry officials about what organizational factors they should focus on in an effort to improve workers' health and safety performance and overall safety climate.
- **Methods to be used to collect:** Psychometrically supported surveys will be distributed to as many participants as possible and take no more than 15 minutes to complete
- **The subpopulation to be studied:** Mine workers employed at various mining commodities throughout the United States (e.g., underground coal, metal/nonmetal, surface sand, stone, and gravel).
- **How data will be analyzed:** Regression analyses in the form of dominance and relative

## **A. Justification**

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

This information collection request (ICR) is a new request. This collection request 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.

Research suggests that regulatory standards and compliance practices are not enough to effectively mitigate significant risks present in the mine environment [e.g., Mine Safety Technology and Training Commission (MSTTC) 2006]. The MSTT Commission went on to indicate that, although regulatory policies and training can address many aspects of mine worker decision-making and response, research and resources are needed to enhance the quality of proactive health/safety decisions and workplace procedures. Despite the emphasis placed on influencing worker safety/health behavior, the characteristics that impact proactive behaviors are not well understood in mining [Parker et al. 2006; Weyman et al. 2003]. Understanding the degree to which different organizational characteristics influence worker decisions can inform the focus of future health and safety management interventions and foci of management within the mining industry.

Proactive work behavior has a major influence in preventing workplace injuries and accidents. Proactive behavior refers to taking initiative to improve current conditions, adapting to present conditions, being self-starting and taking charge, and overcoming barriers to being safer [Crant 2000; Frese et al. 1996; Parker et al. 2010]. Research has identified several worker perception-based ‘organizational values’ and ‘personal characteristics’ that are presumed to be important in fostering health and safety knowledge, motivation, proactive behaviors, and safety outcomes [Crant 2000]. Because these emergent, worker perception-based constructs have a theoretical and empirical history, psychometrically tested items exist for each of them. This project seeks to empirically understand the factors and conditions that contribute to mine workers’ safe decisions (or lack thereof) while completing job tasks. The following question guides this study: What are the most important (1) organizational and (2) personal antecedent characteristics needed to support worker health and safety (H&S) performance behaviors in the mining industry?

Upon collecting and understanding this information, it can be used to answer what organizational/personal characteristics have the biggest impact on proactive and compliant health and safety behaviors [Christian et al. 2009]. Findings can be used to provide accurate focal points for mines to improve organizational values, as executed through their health and safety management system for mitigating health and safety risks at their mine site. Specifically, if organizations are lacking in values that are of high importance among employees, site leadership knows where to focus new, innovative methods, techniques, and approaches to dealing with their occupational safety and health problems.

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

Since mining is a hazardous environment, it is extremely important for NIOSH to collect this information. The data collected via a short, one-time survey that will be administered to mineworkers during field visits using a paper/pencil format or online format, whichever the participant prefers. The results will be

used by NIOSH researchers to understand the most influential organizational characteristics and individual factors that affect workers' health/safety decisions. Specifically, this collection will explore organizational and personal characteristics that may serve as predictors of safety proactive and safety compliance behaviors in the sampled populations. After NIOSH collects and analyzes this information from participating mineworkers, NIOSH aims to explore the internal/external organizational/personal characteristics that may have the biggest influence on proactive and compliant health and safety behaviors in mine workers. NIOSH will provide this information to the mining industry, to help mine site leadership tailor their health and safety management system (HSMS) in a way that can leverage those organizational values that have the greatest influence on worker perceptions and subsequently, safety decisions on the job. Results from this effort will guide further research in the best practices to HSMS implementation within the mining industry for a variety of mine safety/health issues.

As mentioned earlier, the information to be collected will ultimately aid in the movement toward improving the safety and health of underground and surface mine workers by assessing how they perceive the values of their organization and how much weight these various values have on individual behavior choices. This data is not available from any other sources. It is essential to assess which organizational values best motivate proactive work practices within mining so recommendations can be made 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 various characteristics within their organization which they should aim to improve or communicate to employees. 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 stakeholders.

This project and data collection has already been fully funded by the NIOSH Office of Mine Safety and Health Research (OMSHR).

[Include a discussion here on the limitations of the collection, how the convenience sampling methods for the selection of the cooperating mines and the purposive sampling of employee will influence the generalizability of the outcomes]

Within the current study our convenience, purposive sampling strategy is useful and practical for our applied field research because we can reach a targeted sample quickly while obtaining opinions of our target population. However, we also realize this a purposive sample we are more likely to overweight subgroups in mining population that are more readily accessible [Trochim, 2006]. Therefore, overall implications of this survey study will need to be considered in context of its limitations. First, the sampling procedures and final sample, which will be a subsample from a broader set of employees who are first available and then elect to take the survey. Depending on the existing culture at each participating mine site, there may be varying levels of response rates and the findings might apply more to trusting, engaged workers [Griffin et al., 2010]. The results would only be unbiased if non-respondents were missing at random [Enders, 2006; Rubin, 1976]. However, research in statistical analysis and sampling has found that assuming missing at random participants is appropriate in many cases and results in little bias in estimates and standard errors [e.g., Collins et al., 2001]. Even so, due to the sampling strategy of convenience, ultimately, NIOSH cannot assume or discuss generalizability of the outcomes.

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

Although we are unsure of an exact breakdown, we estimate that approximately 75% of the information collected will occur with respondents filling out a paper-pencil survey and the other 25% completing the same survey online. In order to reduce burden to the respondents, the same data collection survey will be available paper-pencil and to access online via a survey link that will be provided during the consent

process. NIOSH wanted to make the survey available both paper-pencil (Attachment C) and web-based (Attachment D) to comply with the Government Paperwork Elimination Act, Public Law 105-277, title XVII, signed into law on October 21, 1998. Respondents may either complete a survey by hand, eventually uploaded as an electronic document, or respond online via the web-based survey, in which the data is saved electronically. By providing both options, respondents can choose whichever option they perceive to have the lowest burden. Because NIOSH is traveling to several mine sites, we anticipate more participants opting to take the survey while we are on-site, rather than later accessing the online link, which is why we estimated a 75% paper-pencil and 25% online response breakdown.

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

Based on an extensive review of literature conducted by a NIOSH OMSHR empowerment workgroup that met regularly and scoured databases for such content [Haas 2013], specific data related to the importance of organizational values for influencing health/safety proactivity by mine workers does not exist. However, organizational, managerial, and individual factors that are critical in improving miners' health and safety behaviors have been identified by researchers over the past 30 years, as revealed in the literature review. Recommendations for better trainings, attention to workplace job design, and improved organizational values and programs to encourage safer behaviors, have been suggested. Specifically, an extensive literature review conducted by OMSHR researchers revealed that, at an individual level, research has focused on individual decisions in regard to hearing protection, respiratory health, ergonomic health, and response to new technology [e.g., Stephenson et al. 2005; Souder 1986; Quick et al. 2008; Peters et al. 2008]. Some results specified that research should address worker empowerment through further education that involves the mine worker in prevention efforts [e.g., Bauer et al. 2012; Matetic nd]. However, most of this research lacks an organizational influence that assesses how values, leadership, and health and safety management systems within the workplace affect mine worker safety/health decisions and behaviors.

In addition, research at the organizational level has recommended improving mine worker training via frontline supervisors, which could impact individual behaviors [Souder 1986; Pfeifer et al. 1976]. Studies have also focused on safety culture, work climate, and morale within organizations [Weyman et al. 2003; Weyman et al. 1999], but have not made generalizable links about how these perceptions may influence behavior and what aspects of organizational culture are the most important to change in order to engage the mine worker in proactive safety/health behaviors.

The aforementioned research provided OMSHR considerable breadth across problems related to mine health and safety. For instance, previous research shows that individual factors (i.e., age, experience, motivation), organizational factors (i.e., job/task design, training, safety culture, morale, leadership, communication), industrial/regulatory factors (i.e., policies, physical conditions in the environment), and engineering controls are important to consider and probe when implementing methods to improve mine workers' safety. However, this research also shows that, within mining, there is a scarcity of systematic knowledge about the organizational and behavioral aspects of safety [Vaught et al. 2000]. The depth of these organizational factors and how they work independently, intersect with, and push back on each other to foster an environment in which the workforce feels empowered in making proactive safety decisions is still unknown. In order to provide specific recommendations to the industry about organizational areas of focus, this research is imperative.

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

. This data collection will not involve small businesses.

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

As the mining industry continues to evolve, experiment with new technology, hire new workers, and engage in HSMS implementation, it is critical that research be conducted to assess what type of organizational values influence individual decisions (e.g., vertical communication from supervisors, engagement efforts). Understanding the influence of certain organizational values on employee decision-making and actions can provide directions for mine operators and leaders to better leverage the integration of things like new technologies, a newer, younger workforce, and ways to manage risks within their HSMS.

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 Monday, October 20, 2014, Vol. 79, No. 202, pp. 62624-62625 (Attachment B). No responses were received.

B. There were no personal consults outside CDC. No personal consults were made because a worker empowerment workgroup was convened by an NIOSH-OSMHR division director to specifically study this issue and gaps in the research. A team of approximately 15 social scientists and engineers met regularly for several months to discuss literature outside of NIOSH-OSMHR and previous NIOSH-OSMHR studies. A modified Haddon Matrix was used by the workgroup to help organize the information [Haas 2013]. The analysis revealed that the same gaps researchers found to be prevalent in mining were the same factors reported in other occupational safety and health research. Therefore, the research team felt enough data collection and consulting occurred within the organization to accurately define the scope of the problem and the potential solution.

## **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**

The Privacy Act does not apply to this data collection, since respondents will not provide any form of identifying information.

Participants will be informed of issues regarding security of the information they submit during the recruitment and oral consent process.

First, when recruiting a specific mine site, mine operators are told:

As a member of mine management, we're asking your assistance in making this research project available to your mine workers so they have the option to voluntarily participate. The survey will take approximately 15 minutes of the employees' time and can be completed anytime during the workers' shift. Participants' names will not be recorded. The data that employees provide will be secure. . No information that they give us will be linked to you or your organization. (Mine Recruitment Script, Attachment E)

Second, during the oral consent process, respondents are told:

This study involves filling out a short survey questionnaire. Your participation is completely voluntary. If you choose to participate, it should take about 15 minutes to complete. Please do not write your name on this questionnaire as it is completely anonymous and you will not be linked to your responses. Information collected from you will be kept secure and no individual data will be reported from this study – only results reported by groups. (Mine Worker Survey Oral Consent Script, Attachment F)

Third, the survey itself states at the beginning:

To protect your identity:

- Your supervisors will not see your individual responses.
- These forms will not be made available to any management personnel.
- We will combine the data from everyone into larger groups to describe the results.

(Mine Worker Survey Attachment C and Attachment D-screen shots)

This data collection has been reviewed by the NIOSH Human Subjects Review Board (HSRB) and received notice of exemption on November 12, 2014. A copy of the exemption letter is provided in Attachment G.

## **10.1 Privacy Impact Assessment Information**

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

Mine workers that are employed at mine commodities throughout the United States will be recruited through mine management, including underground coal and surface metal/nonmetal commodities, to complete the Mine Worker Survey (Attachment E). Our research team 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 first, their willingness to participate as a mining organization and subsequently, the potential willingness of their workers to participate. It is estimated that up to 10 mines per year may be contacted to participate, although a more realistic number of actual participating mines each year is three.

If mine management agrees to participate as an organization, NIOSH OMSHR researchers will travel to the mine site and introduce mine workers to the study during an already held safety meeting. The survey will be introduced to the group(s) and then facilitated by key personnel on the project (NIOSH researchers trained in survey administration). The potential participants will be read an oral consent script (Attachment F) at the end of the meeting, before data collection begins. They will be given the option of consenting or declining individual participation. Individuals' completion of the survey serves as their consent to participate, as stated in the oral consent script. Those who decline participation can simply leave the room. The oral consent script also includes and states that information is available that contains the principal investigator's contact information, research point of contact information, and the



NIOSH IRB contact information for participants to take home for future reference in case they have any questions after the study.

Respondents who agree to participate will receive a hard copy of the survey and a scantron sheet to bubble in their responses. They also will receive a web link to the survey if they want to retrieve and complete the survey in that format. Researchers may read the survey to mine workers if they want to participate but do not want to read the survey (e.g., if they do not have their reading glasses with them). Then, the researcher will fill in the answers for the participant as requested. For those who complete the paper-pencil survey, researchers will collect all survey forms and sheets from participants when they are finished.

It is expected that the mine workers 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 be a mine worker/employee. There are no exclusion criteria. Pregnant female mine workers can be included as there is no increased risk to them or their fetus from participating in the study.

The number of individual mine workers who complete the survey will not exceed 1,800 over the three-year period. We will conduct the surveys above ground at the mine sites, on company time either before or after a worker's shift.

Upon arrival on NIOSH's site, data will be summarized and as appropriate by method, entered into computer software applications (i.e. SPSS and Excel) by NIOSH researchers and will be stored on a password-protected NIOSH computer. Hard copy data forms 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 need or will have access to the data.

#### Items of Information to be Collected

The Mine Worker Survey is the only data collection instrument included in this study. The list of information items to be collected is displayed in Attachments C and D. This survey was created from a number of previously tested surveys (see survey reference list). This information includes workers' perceptions of organizational values (i.e. perceived supervisor support; supervisor detection of safety; organizational priority of safety; safety training adequacy; upward safety communication; co-worker exchange; employee engagement) and personal constructs (i.e. change orientation; work locus of control; risk propensity; work consciousness). The mediators and dependent variables also were developed using previously validated scales to construct these measures (i.e. risk perception, safety knowledge, and safety motivation as mediators and safety proactivity and safety compliance as dependent variables).

In general, the subject matter is focused on personal perceptions of the organization and workers' own work traits and habits, and how these factors affect personal safety and health performance. In general, participants will be asked about their perceived experiences on the job and the weight they place on these experiences. Each item within the current study is studied using a 6-point (strongly agree to strongly disagree), Likert response scale format. Demographic items include but are not limited to age, mining experience, educational background, etc. However, no individually identifiable information is being collected.

### How the information will be shared and for what purpose

The information received during data collection will be analyzed by mine site and as an entire sample (e.g. nine mine sites together). Participating mine sites will receive a summary of the survey results that answers the study's question – which of the organizational values do employees consider to be most important for worker health/safety behavior and how high to employees perceive these values within the organization? 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 system of safety onsite.

### Impact of proposed collection on respondent's privacy

No individually identifiable information will be collected.

### Individuals informed that providing the information is voluntary or mandatory

Survey respondents are advised during the consent process that their participation is voluntary (see Attachment F).

### Opportunities to consent

Potential participants will be read an oral consent script (Attachment F). The consent script describes the study, the conditions of the study, and the use of information collected from the study. They will be given the option of consenting or declining individual participation, with completion of the survey (Attachment C) serving as their consent to participate. Study participants who would rather complete the survey in web-based form will read the same consent script on their computer screen and either click a button that states they agree to participate or decline to participate.

### How information will be secured

In terms of physical controls, the completed data collection instruments will be stored in a locked file cabinet at NIOSH's OMSHR Pittsburgh Office. This is a secure, gated facility with 24 hour security guard service. Only personnel with proper identification badges are allowed access to the site. All of the data will be entered and combined into data files that will be stored with technical safeguards in a secure, password protected location on the OMSHR computer network. This computer network is only accessible to NIOSH employees. All networks at NIOSH are firewall protected and utilize a virtual private network. Access to this information will be restricted to researchers directly involved with the study and who need to view the data. A training session will be conducted for all researchers about the data collection and how the data will be stored. At this training session, all researchers will be made aware of their responsibilities for protecting information being collected and maintained. At the end of the research project time period, the surveys will be destroyed.

### Whether or not a system of records is being created under the Privacy Act.

No individually identifiable information is being collected. A system of records is not being created under the Privacy Act.

## **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 rank-and-file miner employees. An estimated sample of up to 1800 mine employees will be collected from various mining operations which have agreed to participate. In order to reach a sample of 1800, researchers will try to secure participation from approximately 10-15 mine operations, although it is likely we will reach out to sites that decline participation due to external factors not within our control. So we estimated communicating with 24 mines over three years. It is estimated that it will take about 15 minutes to recruit a particular mine and 5 minutes to consent the individual workers. The amount of time to complete the survey data collection instrument is about 15 minutes.

The following table provides an estimate of the annualized burden hours over a three-year requested data collection period. 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 Safety/Health Operator	Mine Recruitment Script	8	1	15/60	2
Mine Employee	Mine Worker Oral Consent Script	600	1	5/60	50
	Mine Worker Survey	600	1	15/60	150
Total					202

B. The estimated total cost for this information collection is \$14,844.96. The following table provides an estimate of the annualized burden costs over a three-year requested data collection period.

### Estimated Annualized Burden Costs

Type of Respondent	Form Name	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Mine Safety/Health Operator	Mine Recruitment Script	2	\$30.16	\$60.32
Mine Employee	Mine Worker Oral Consent Script	50	\$24.44	\$1,222.00
	Mine Worker Survey	150	\$24.44	\$3,666.00
Total				\$4,948.32

The value assigned for the hourly wage rate is based on the average U.S. hourly wage rate for mine safety/health operators and mine employees 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

None.

### 14. Annualized Cost to the Government

Data will be collected for three years. The estimated annual cost to the Federal Government over those three years is \$35,362. This includes data collection by CDC/NIOSH employees, data analysis, report writing, and travel to physically go to the mine and collect data. The travel cost column displays the funds used to travel to mine sites and collect the data. Four NIOSH staff employees will be working on this project. The hours designated for government staff to complete the work were calculated as shown in the table below. The total cost for a three year period is \$106,086.

	Hours	Hourly Rate	Travel Costs	Total
Personnel 1 GS-9-1	300	\$23.41	\$2,500	\$9,523
Personnel 2 GS-12-3	300	\$36.21	\$2,500	\$13,363
Personnel 3 GS-12-1	150	\$33.94	\$2,500	\$7,591
Total Cost				\$30,477

### 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. We are estimating at minimum nine mines to participate throughout the three-year period, although there could be up to 20 that participate. This is our best estimate at this time for an estimation of 9 mines.

#### Project Time Schedule

Activity	Time Schedule
Mine Recruitment	1-3 months after OMB approval and ongoing
Survey Data Collection Mine 1	1-3 months after OMB approval
Analysis and Validation	3-6 months after OMB approval
Mine 1 Analysis Results Report	3-6 months after OMB approval
Survey Data Collection Mine 2	6 months after OMB approval
Analysis	7 months after OMB approval
Mine 2 Analysis Results Report	8 months after OMB approval
Survey Data Collection Mine 3	9 months after OMB approval
Analysis	10 months after OMB approval
Mine 3 Analysis Results Report	11 months after OMB approval
Survey Data Collection Mine 4	12 months after OMB approval
Analysis	13 months after OMB approval
Mine 4 Analysis Results Report	14 months after OMB approval

Survey Data Collection Mine 5	15 months after OMB approval
Analysis	16 months after OMB approval
Mine 5 Analysis Results Report	17 months after OMB approval
Survey Data Collection Mine 6	18 months after OMB approval
Analysis	19 months after OMB approval
Mine 6 Analysis Results Report	20 months after OMB approval
Survey Data Collection Mine 7	21 months after OMB approval
Analysis	22 months after OMB approval
Mine 7 Analysis Results Report	23 months after OMB approval
Survey Data Collection Mine 8	24 months after OMB approval
Analysis	25 months after OMB approval
Mine 8 Analysis Results Report	26 months after OMB approval
Survey Data Collection Mine 9	27 months after OMB approval
Analysis	28 months after OMB approval
Mine 9 Analysis Results Report	29 months after OMB approval
Cumulative Analysis	30-32 months after OMB approval
Mine 10 Analysis Results Report	30 months after OMB approval
Cumulative Analysis	31-33 months after OMB approval
Publication	32-36 months after OMB approval

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

Not applicable. The OMB expiration date will be displayed.

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

There are no exceptions to the certification.

### Works Cited

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