

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 B

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1. Respondent Universe and Sampling Methods

Potential Respondent Universe

This project includes active mines of all commodities. Active mines are mining operations that reported mine operator employment during the year. In 2012, the Mine Safety and Health Administration (MSHA) reported the following number of mines, by commodity [NIOSH 2014]:

- Coal - 1,871
- Metal - 351
- Nonmetal – 641
- Stone - 4,433
- Sand & Gravel - 6,797

Total number of mines: 14,093

Subjects for this research project will be health and safety managers of these various mine commodities. Only a small amount of these employees are in some sort of a management position and eligible for participation.

Sampling Methods

Because mines are scattered across numerous states, random sampling of managers is not feasible. Therefore, this study utilizes a purposive sampling strategy [Yin 2011]. Purposive sampling allows researchers to obtain a variety of information and perspectives during the intervention, meaning that participants may offer differing views [Kuzel 1992]. Utilizing purposive sampling methods and recruiting a wide range of cases will also help avoid bias in this research project [Yin 2011]. In an effort to recruit as wide of a range as possible for this study, researchers are aiming to recruit a variety of commodities. This way, a broad sample can be analyzed and differences compared between commodities (not statistically, only qualitatively). NIOSH believes that mines from each commodity may be recruited, based on previous data collection efforts and mine contacts. In addition, within those commodities, NIOSH researchers are aiming to recruit mines owned by different companies, to obtain a diverse data set as well as diverse management systems within the organizations. A description of the mines where data is collected will be provided in any publications of the data (e.g., size, location, type of extraction method utilized, etc.). Besides purposive sampling when recruiting mine sites, we also utilize convenience sampling at the mine site because we intend to utilize cases that are easily available and accessible while we are present on site [Yin 2011].

Respondent Selection Methods and Anticipated Sample

It is expected that the participants, members of management, of the participating mines will vary across a number of variables including age, gender, and experience. Convenience sampling will occur based on the availability of health and safety managers at the point in time when researchers are present at the mine and/or a telephone call occurs with a mine. Across the participating mine sites it is expected that a total of 100 managers will participate. In general, mines have health and safety departments that consist of 2-6 employees/managers, depending on the size of the mine. Therefore, the eligible population of potential

respondents ranges from 28,186 to 84,558. Because our final sample will not exceed 100, CDC does not claim that the managers selected for this study are statistically representative of the entire population of U.S. mine managers. It should not be assumed that the findings of this exploratory study are not generalizable to other groups of miners and mine management. So, the response rate at each mine is intentional and appropriate given the purpose of this study. Below is a sample table of the anticipated range of commodities, corporations, and respondents we expect, based on previous experience with field research.

Sample Table of Respondents

Mine Site	Commodity	Manager Participants
1	Coal	~2-6
2	Metal	~2-6
3	Nonmetal	~2-6
4	Stone	~2-6
5	Sand & Gravel	~2-6
6	Coal	~2-6
7	Metal	~2-6
8	Nonmetal	~2-6
9	Stone	~2-6
10	Sand & Gravel	~2-6
11	Coal	~2-6
12	Metal	~2-6
13	Nonmetal	~2-6
14	Stone	~2-6
15	Sand & Gravel	~2-6
16	Coal	~2-6
17	Metal	~2-6
18	Nonmetal	~2-6
19	Stone	~2-6
20	Sand & Gravel	~2-6
< 100 participants		

Across the participating mine sites it is expected that a total of no more than 100 individuals who are health and safety managers will participate in either an interview or focus group. Because of the nature, scope, and complexity of the project, data collection is expected to last 36 months. Data will only be collected once with each participating miner; this is not a longitudinal study.

Individual managers will be recruited via stakeholder meetings and previous research field contacts. Attempts will be made to recruit mines that are on a varying continuum of size and region. The participating mining organizations will not be discounted based on accident history, region, union/nonunion affiliation, etc. It is expected that the managers of the participating mines will vary across a number of variables including age, gender, and experience. All managers will be given the option of declining individual participation in the study.

The data collected for this study will be qualitative in nature. Upon collection of the data, it will be used to answer what health and safety management system (HSMS) elements and practices mine managers

believe have the biggest impact on health and safety, how they know their management system has a positive effect on worker behavior, and barriers to HSMS implementation and evaluation. The data will be analyzed using qualitative methods including coding of the data [Boyatzis 1998; Patton 2002]. Only themes and topics with saturation among participants will be reported. No individual data will be reported.

2. Procedures for the Collection of Information

Sampling and Recruitment Procedures

There will be an attempt to collect data at both larger and smaller sized underground and surface mines in different regions of the country with both unionized and non-unionized mines participating. A convenience sampling approach will occur while NIOSH researchers are present at each participating mine site. The study will be introduced to the group(s) and then facilitated by key personnel on the project (NIOSH researchers trained in qualitative data collection). Consent forms will be read and provided to participants before any data collection begins. After reading the consent form, each individual has the option to choose whether they would like to participate. Any individual who decides to participate will stay in the room. Those who decline participation can simply leave the room. In addition, contact information will be provided for participants to take home for future reference in case they have any questions after the study. This is a non-intrusive field study and no variables will be manipulated or statistically tested.

Data Collection and Organization

The protocol questions are open-ended and requires respondents to openly share their experiences with the organizations' HSMS. Researchers will orally ask respondents each question, so no reading on the respondent's part is necessary. The information will be recorded via hand-written notes by the researcher. No audio-recording will take place.

Upon returning to the office, members of the research team will type notes they handwrote during the interviews into a de-identified password protected computer a word processor program. Each team member will be responsible for typing their individual notes and summarizing major points during the interviews/focus groups. Any individual data forms will then be kept in a locked file cabinet for the life the project, approximately three years. Then the data notes will be destroyed.

Statistical Analysis

This data will not be used for statistical analysis.

Qualitative Analysis

Qualitative summary notes will be summarized and coded using theories of health behavior and health and safety management systems as categorizing mechanisms. The rules of qualitative data coding [Boyatzis, 1998; Patton, 2002] will be applied during the analysis phase to ensure validity of results. Results will be organized into a final code book that consists of overarching trends, or themes, definitions

of those themes, and examples that support the patterns which emerged during the analysis. The purpose of this analysis is to simply provide suggestions about HSMS implementation and evaluation to different levels of leadership at the organization. This content will not be used to make any generalizations about HSMS practices from an industry perspective.

3. Methods to Maximize Response Rates and Deal with Nonresponse

CDC does not claim that the managers selected for this study are statistically representative of the entire population of U.S. underground and surface mines. It should not be assumed that the findings of this exploratory study are generalizable to all HSMS's within mines. Based on previous research studies completed with mine management, it is anticipated that approximately 95% of individuals recruited to participate will answer questions during an interview or focus group. The questions will be asked during company time, and solicits the practices that are often commended, which should help to ensure a higher response rate. In addition, extensive prior experiences with this methodology and population at mine organizations suggest that the response rates will achieve higher than usual levels. For example, in the HSMS pilot project referenced earlier [Willmer and Yorio in press], the response rate for their data collection efforts, including in-depth interviews and surveys, was 100%.

However, due to normal absences from work, a few managers may be unavailable on the particular days that the data collection activities are conducted. In addition, by offering the interview as a phone call in addition to a face to face option, a higher response rate may be more likely. Therefore, managers who were absent on the day(s) NIOSH was present will still have the opportunity to discuss their opinions on the phone if they are interested and choose to participate.

4. Tests of Procedures or Methods to be Undertaken

A majority of the interview and focus group questions were created based on results of former pilot projects (HSRB 13-OMSHR-04XP) and literature that details HSMS implementation and evaluation [e.g. Bowen and Ostroff 2004; Schein 2004] were consulted to aid topical sequences of the questions. In addition, a majority of these questions have been pilot tested at previous mine sites under smaller IRB project protocols, to ensure they make sense to the mining population and can inform the questions guiding this study. Data collection materials were developed based on formative/pilot research that was conducted with mine management in separately approved protocols in which nine members of management participated in one focus group (HSRB 14-OMSHR-07XP approved on 09/15/2014). These tests of procedures occurred in order to create the most resonant questions for the current study. Therefore feedback provided during the focus group and informal conversations with mine management informed the current study design and data collection materials.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The persons who will collect and/or analyze the data are listed below. Should the project require further guidance on scientific issues regarding data, other internal resources are available through teams within the project staff's branch.

1Project Staff:

These are the primary individuals who are leading study design, data collection, and analysis efforts.

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