

Assessing Safety and Health Hazards of Workers in Oil and Gas Extraction: A Survey

Supporting Statement Section B

New

Request for Office of Management and Budget (OMB) Review and Approval for a Federally Sponsored Data Collection

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B. Collections of Information Employing Statistical Methods

B.1.

The target population for the “Assessing Safety and Health Hazards for Oil and Gas Extraction Workers” survey will be workers who work for one of three types of private companies in the land-based oil and gas extraction industry as defined by the North American Industrial Classification System (NAICS): operators (also called exploration and production [E&P] companies; NAICS 211), well-servicing companies (NAICS 213112), and drilling contractors (NAICS 213111). They must have worked for the company for at least one month and must visit a well site at least twice a week, on average. According to the Bureau of Labor Statistics (BLS), in 2014 there were 621,265 workers in these three NAICS codes combined, the highest ever recorded by BLS. Table 1 lists the number of workers by company type.

Table 1. Number of workers by company type, 2014

Company Type (NAICS code)	Number of Workers
Oil and Gas Operators (211)	196,704
Drilling Operations (213111)	98,208
Well Servicing Operations (213112)	326,353
Total	621,265

Oil and gas extraction workers are a hard-to-access worker population. Because of the large numbers of types of companies involved in oil and gas extraction and the constant shifting of workers to new well sites as they are being drilled, it is difficult to compile a sampling frame. In addition, this group of workers is largely unorganized/un-unionized. Due to these constraints, we will use a convenience sample and will not employ statistical sampling methods in the selection of sites or individuals. NIOSH program staff will collaborate with health and safety leaders from oil and gas operators, labor, academic researchers, and other NIOSH researchers to identify companies who are interested in participating in this information collection.

The primary sites we will target for information collection will be temporary lodging facilities, contractor meeting sites, training centers, trucking and equipment yards, and well sites. Temporary, modular lodging facilities (also called ‘man camps’) are often set up in geographical areas with considerable oilfield activity and a lack of hotels or other lodging. These are the most easily accessible locations to gain access to large numbers of workers. The site type of each interview will be recorded to examine any differences in the responses between man camp respondents and respondents from other types of sites.

Program staff will also collaborate with operators to determine the best method to recruit participants at sites, including posting flyers (Attachment G) or approaching workers at equipment and/or trucking yards. Where it is possible to obtain a list of all workers at a location, the program staff will invite all participants to complete the questionnaire and track response rates (Attachment H). A brief non-respondent questionnaire (Attachment D) will be offered to those who do not want to participate in the study to make comparisons between those who agreed to participate and those who did not.

Researchers will work to include workers from each of the three company types listed above, but the proportion of workers who participate from each company type will depend on the level of worker access that program staff are able to obtain.

We estimate that we will approach 313 workers each year and be able to complete questionnaires with 250 each year. This will occur over a period of two years, during which we will survey 500 total workers out of 626 potential participants. Thus, our expected response rate is 80%. Because this is the first time we have attempted data collection in this worker population, and it has not been done by other institutions, the response rate may be well above or below 80%. However, the NIOSH Oil and Gas program has conducted extensive field work and collaborated on multiple health and safety projects with this industry, so it is reasonable to expect that cooperation on this study will follow, and an 80% response rate is reasonable. Response rates between different types of sites and company types may also vary.

The program staff would also like to obtain some variation in the geographical location of interviews. Therefore, we will attempt to interview at sites in at least five states. As seen in Table 2, Texas will be an important state for this project as almost half of all drilling occurs in this state. The other four states targeted for recruitment will be Oklahoma (second largest number of rigs), North Dakota (for geographical variation and large number of man camps), Colorado (large number of interested companies and geographical variation), and a state in the Appalachian basin (eastern state for geographical variation).

Table 2. Number of U.S. Land-Based Rotary Drilling Rigs by State, Baker Hughes Rig Count, 8/12/2016

	State	Rotary Rig Count	% of Rigs
1	Texas	229	48%
2	Oklahoma	61	13%
3	New Mexico	31	9%
4	North Dakota	29	6%
5	Louisiana	26	9%
6	Colorado	21	4%
7	Pennsylvania	15	3%
8	Ohio	14	3%
	Other States (Alaska, California, Wyoming, Utah, West Virginia)	35	5%
	TOTAL	461	

B.2. Procedures for the Collection of Information

NIOSH Program Staff will collaborate with oil and gas operators to obtain permission to interview workers (operator employees and contractors) at their sites. Operators will help to identify the appropriate sites to interview workers. These sites may be temporary lodging facilities, trucking yards, equipment yards, well sites, and training centers.

We will not stratify or select a sample of workers to interview at sites; rather, we will invite all workers at the identified sites to participate. Once sites are identified, an attempt will be made to obtain a list of all workers that are on-site during the dates of information collection. Where this list is available, each worker will be approached and invited to complete the questionnaire. Where lists are not available, flyers will be posted at the site starting one day before information collection begins inviting workers to participate (Attachment G).

Advertising materials will provide information on the purpose of the questionnaire, the estimated time burden to participants, the hours when information collection will take place, and information on tokens of appreciation. The materials will also explicitly state that participation is voluntary.

The program staff will conduct information collection during times that are minimally inconvenient to the worker. All workers that are approached will be given a NIOSH logo hard hat sticker. We have found that these stickers are very popular among oil and gas workers. The screening (Attachment I) will then be completed by program staff. If determined to be eligible and interested in participating, the program staff will have the participant review and verbally consent. The NIOSH Human Subjects Review Board has approved verbal consent because written consent would be the only identifying information for participants. Once consented, the worker will be directed to complete the questionnaire (Attachment C) using a touch screen tablet in a protected area on site. As an alternative, the worker can choose to complete a hardcopy questionnaire via pen or have an interviewer administer the questionnaire to the worker. Following the self-administered tablet or hardcopy portion of the questionnaire, there will be a few final qualitative questions (Attachment J) that will be asked by a researcher and entered directly into a separate tablet or laptop computer linked to the main questionnaire responses with a unique interview identifier. The responses to the qualitative questions will be recorded to make it easier for the worker to be comprehensive in his/her answer, rather than having to type it in his/herself. This is because understanding the perceptions of workers' concerns regarding health and safety at work, in their own words, is one of the most important objectives of this survey. Once questionnaires are completed, information will be provided to the worker about how to contact the Occupational Safety and Health Administration (OSHA) (for unsafe working conditions) and an occupational health clinic (for work-related health conditions) if needed. A token of appreciation will be issued by program staff. If the worker is on-duty (being paid by the employer) at the time the survey is completed, they will be offered a \$10 token of appreciation. If the worker is off-duty, they will be offered a \$30 token of appreciation.

If the worker is found to be eligible but declines to participate, the worker will be asked to complete a non-respondent questionnaire (Attachment D) to collect basic demographic information. These data will be used to compare major differences between those who agree and those who decline to participate. Upon completion of the non-respondent survey, an additional hard hat sticker will be given.

All persons from the NIOSH research team who travel and participate in this information collection will be given training to include an overview of the oil and gas extraction industry with a focus on the specific hazards that may be encountered while on different sites. An explanation of necessary safety precautions will be given, including awareness of hazards at equipment/trucking yards. All NIOSH research team members will adhere to site safety and security requirements, including the use of appropriate personal protective equipment.

Where a list of workers is available, the list will be used to track the presence and eligibility of each worker (Attachment H). Response options will be: a) eligible and completed questionnaire, b) not eligible, c) eligible but declined non-response questionnaire, d) eligible and took non-response questionnaire, and e) cannot find or left site. The program staff will stay on site until there is a response outcome for each worker, or the maximum number of participants has been reached. This list will be kept secure at all times by research staff and destroyed at the completion of the site visit.

Questionnaire completion via touch screen will allow for more accurate data collection. The electronic questionnaire will have built in quality controls, such as multiple choice and data validation. Data entry for responses to screening questions and the questionnaires completed by hand will be entered by one program

staff and reviewed by a second staff. Data from each tablet will be downloaded to a secure NIOSH-owned laptop at the end of each day.

The goal number of participants for the study is 500 workers, 375 of whom will complete the motor vehicle module. We are collecting a convenience sample for the reasons described above; thus, this information collection request does not require a statistical power discussion. In addition, there is not a particular disease of interest; rather, this is a hypothesis-generating survey on multiple topics of importance in this population.

B.3. Describe methods to maximize response rates and to deal with issues of non-response.

Participation in this survey is voluntary. In recognizing that this workforce works long shifts, often in excess of 14–15 hours per day, participants who complete the questionnaire while off-duty will be offered a \$30 gift card as a token of appreciation and a \$10 gift card if on-duty (assuming the employer agrees). To maximize participation, NIOSH will work with oil and gas operators to explain the importance of the study and to obtain permission to collect information at sites with access to a large number of oil and gas workers. Additionally, every effort will be made to approach all workers on site to invite them to participate through letters and/or by approaching them at truck/equipment yards. Also, where possible, flyers will be placed on site the day before information collection begins. Data collection will occur using primarily electronic tablets with a touch screen, so participants will be able to easily select their answers, facilitating rapid questionnaire completion. The questionnaire will also be available in English and in Spanish (Attachments K, L, M, N, O). Where workers decline to participate, we will ask the worker if they would be willing to answer a very short (six-question; see Attachment D) non-response questionnaire that will allow researchers to compare basic demographics of participants and non-respondents to determine if there are any differences.

B.4. Describe any tests of procedures or methods to be undertaken.

Pilot testing of the data collection method and the questionnaire was completed with a group of oil and gas extraction workers. Necessary adjustments to data collection procedures and the questionnaire were made.

A large portion of the questions have been validated in other national health surveys. Two of the main surveys used were the Long Haul Trucker Survey conducted by NIOSH and the National Health Interview Survey. Questions contained in the motor vehicle module are primarily pulled from the Long Haul Trucker Survey. Questions about health, health habits and sleep are primarily pulled from the National Health Interview Survey. The questions pertaining to safety climate were previously validated independently (Neal and Griffin, 2006).

B.5. Individuals consulted on statistical aspects and individuals collecting and/or analyzing data.

NIOSH employees designed the questionnaire, performed pilot testing, and will be responsible for collection and analysis of all data. Key NIOSH contacts are listed below.

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Ms. Ramirez-Cardenas will participate in data collection.

CDC-NIOSH Western States Division employees and members of the CDC-NIOSH Oil and Gas program will assist in data collection and/or analysis. However, the exact persons have yet to be determined. Any new employees brought on board to assist will be trained as described in other portions of the OMB Packet.