

Information Collection Request for
“Ingress/egress and work boot outsole wear investigation at surface mines”

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January 23, 2021

Part B: Supporting Statement for Statistical Methods

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Part B: Supporting Statement for Statistical Methods

1. Respondents Universe and Sampling Methods

According to the National Survey of the Mining Population Part I: Employees (NIOSH, 2012), there are approximately 4,639 Stone Mining Operations and 7,199 Sand and Gravel Mining Operations in the United States. CDC/NIOSH researchers will depend on mines to volunteer to participate and will not be able to select a mine which would be representative of all stone, sand and gravel operations in the US. It can be assumed that similar processes and working areas within the mine sites will allow the findings of this study to be generalized to other stone, sand and gravel operations.

The respondent universe for the ingress/egress systems study will be all stone, sand and gravel surface mining facilities within the United States. For the interviews and focus groups, researchers will utilize stakeholder contacts to target up to 5 mines which utilize both haul trucks and front end loaders. Ideally, each mine would have a minimum of 4 operators per shift for both types of equipment. If we are unable to obtain a willing mine site who meets these criteria, a mine with fewer operators will be used and interviews will be used in place of the focus groups for the equipment operator portion of the study. A total of 35 respondents are anticipated for the equipment operator interview/focus group and 15 respondents are anticipated for the mine management interviews. Mines will be recruited from all domestic stone, sand and gravel mining facilities and may be asked to participate in both the ingress/egress systems study and the boot outsole wear study. Researchers will only need to make contact with these mine workers once, so there are no financial constraints which would restrict the location of these respondents beyond the requirement of being located within the United States.

The respondent universe for the boot outsole wear study will be all stone, sand and gravel surface mining facilities within the United States. For the longitudinal tracking portion of this study, researchers will utilize stakeholder contacts to target one mine site with at least 50 active, full-time employees throughout the year to serve as a case study location. If we are unable to select an ideal case study mine, more than one (but not more than three) mine sites will be enrolled in order to reach the goal of 50 participants. A total of 50 respondents are anticipated for the longitudinal tracking of work boot outsole wear characteristics. Due to financial constraints associated with the need to maintain contact and collect data at several time points, CDC/NIOSH researchers have chosen to restrict this respondent pool to be miners who are employed by stone, sand and gravel mines located within 200 miles of the CDC/NIOSH research facility in Pittsburgh, PA. An additional 100 respondents will be sought out to participate in a cross sectional, one-time boot scan and survey portion of this study. These respondents will be from the case-study mine site as well as other domestic stone, sand and gravel mining facilities. Researchers will only need to make contact with these mine workers once, so there are no financial constraints which would restrict the location of these respondents beyond the requirement of being located within the United States. A total of 150 active, mine workers will be the respondents for this research.

2. Procedures for collection of information

Data collection for the ingress/egress systems study will include researchers administering a one-time interview or focus group with stone sand and gravel miners and mine management who have volunteered to participate in this study using the developed guide (Appendix C – Mobile equipment operator focus group guide; Appendix D – Mobile equipment operator interview guide; and Appendix E – Mine management interview guide. This survey will be administered by CDC/NIOSH researchers in

person at the mine site in a safe location, away from any mobile equipment. The participants will be provided assistance as needed during the interview/focus group to complete the questions. This research requires CDC/NIOSH researchers to visit the mine site at a time convenient for mine management and all participants. As such, mine management will give all mine personnel advance notice of CDC/NIOSH researchers' visit and will coordinate specific times for interviews/focus groups. All interviews/focus groups will be completed in person. Upon arrival at the mine, the researchers will identify a suitable location to conduct the focus group(s) or interview(s) and meet and greet with the participants. There are no exclusions based on gender, race, or ethnicity for any part of this project. Participants in this study must be a current operator of either a haul truck or front end loader or a member of mine management.

All mine management participants will be interviewed one at a time. If a focus group is to be conducted with equipment operators, it will be conducted with 4-6 participants. If possible, separate focus groups for haul truck operators and front end loader operators will be conducted due to the differences in ingress/egress systems. If too few participants (less than 4) are identified to conduct separate focus groups the researchers may decide to conduct individual interviews or mix haul truck and front end loader operators in one focus group.

For the equipment operators, the interview/focus group coordinator will collect basic demographic information including years of mining experience, years of experience with haul trucks/front end loaders and models of haul trucks/front end loaders operated most often in the past year. Once this data is recorded, audio recording of the focus group/interview will begin. A focus group will last no longer than 90 minutes (1.5 hours) and an interview will last no longer than 60 minutes (1 hour). The interview/focus group coordinator will then lead the focus group/interview following the appropriate guides.

Data collection for the boot outsole wear study includes researchers administering a one-time Preliminary survey for boot wear evaluation (Appendix G) to 150 (50 who will be tracked longitudinally and 100 who will participate in a cross-sectional study) stone, sand and gravel miners who have volunteered to participate in this study. The Preliminary survey for boot wear evaluation (Appendix G) will be administered by CDC/NIOSH researchers in person at the mine site in a safe location. The participants can choose to read and complete the survey on their own, or a researcher can assist them with reading and completing the survey. This requires CDC/NIOSH researchers to visit the mine site at a time convenient for mine management and all participants. As such, mine management will give all mine personnel advance notice of CDC/NIOSH researchers' visit and will coordinate specific times for surveys. The 50 participants who will be tracked longitudinally will also be asked to complete the Recurring Survey for Boot Wear Evaluation (Appendix H) bi-weekly for a period of up to two years. These surveys may be completed in person, over the phone, on paper and mailed to CDC/NIOSH researchers or using a web-based survey method. All survey modalities will be made available to the participants and they will be allowed to choose a method which is convenient for them to maximize response rates. These 50 participants will also complete a Final Survey for Boot Wear Evaluation (Appendix I) which will occur in person or over the phone at the end of the study. Ideally, all Final Survey for Boot Wear Evaluation (Appendix I) will occur in person at which time CDC/NIOSH researchers will retrieve all supplied boots. If a survey cannot be arranged within 1 month of the participant deciding to no longer continue wearing the boots, the survey will be completed over the phone at a time convenient for the participant.

3. Methods to Maximize Response Rates and Deal with No Response

The success of the ingress/egress systems study is dependent on participants volunteering to be a part of the focus group/interviews and the participants' willingness to honestly and openly answer the questions

posed and explain the answers provided. To ensure that the correct number and type of equipment operators are recruited, researchers will reach out to both mine management and mine unions, if applicable, to explain the purpose of the visit and to provide recruitment announcements which can be posted at prominent locations at each of the mine's facilities. To increase the likelihood of honest and open answers being provided during the focus group/interview, probing questions have been written to prompt the researcher to encourage the participant to provide additional information about the topics being examined during the focus group/interview. It is anticipated that some participants may initially show interest in the study prior to arrival at the mine site and then no longer be willing to participate the day of the focus group/interview. It is also possible for some participants to, during the course of the focus group/interview, decide to withdraw from the study. No estimate can be provided as to the number of employees who may decide to withdraw during the course of the study. To limit the number of participants who withdraw from the study, all participants will be made fully aware of the process which will be undertaken and the length of time required to complete the research, either 60 or 90 minutes. Researchers at CDC/NIOSH have recently undertaken similar research and had mainly positive reactions with mine workers willing to participate.

The success of the boot outsole wear study is contingent upon maintaining contact with a group of employees for a prolonged period. To increase the probability of maintaining this contact, a case study approach was deemed most appropriate. Ideally, one mine site with at least 50 active, full-time employees throughout the year will be sought out as the case study location. It is anticipated that there will be some participants who either leave mine employment or decide to no longer participate in this study and an approximate 15% opt-out rate is expected. Realistically, it is expected that participants will not complete all bi-weekly surveys for the duration of the study. If a participant fails to complete the bi-weekly survey for a period of greater than two months, they will be asked if they no longer wish to participate in this study. In the interest of collecting boot wear for as long as possible, participants will continue to be enrolled in this study without completing the bi-weekly surveys with the expectation that they will complete the bi-weekly survey when their boots are scanned (scans will be conducted in person by CDC/NIOSH researchers every 2-3 months) and will complete the final survey at the end of the study period (at which time they will return their worn boots to CDC/NIOSH researchers). If a participant chooses to no longer participate in this study before the end of the study period, they will be asked to return their boots to CDC/NIOSH researchers. All data collected until they end their participation is still valid and will be used in further analysis of the boots. It is possible, and very likely, that over time participants will stop completing the bi-weekly survey and only complete the survey when CDC/NIOSH researchers are present for boot scans. While this less frequent surveying has the potential to be affected by recall bias, it will not make the data invalid. No data collections of this nature have been conducted by this research team in the past but previous research has found response rates to increase with in-person contact.

4. Tests of Procedures or Methods to be Undertaken

All surveys and questions used in this study have been developed based on similar research in other areas. The individual surveys and questions have been pilot tested by eight employees of the US federal government to ensure questions, as posed, elicit the intended responses. No additional pilot testing will be necessary.

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.

Project Staff:

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References

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