

**Personal Flotation Devices (PFDs) and Commercial Fishermen:
Preconceptions and Evaluations in Actual Use
New
Information Collection Request**

Part B

**Project Officer:
Jennifer M Lincoln, PhD
National Institute for Occupational Safety and Health (NIOSH)**

**Alaska Field Station
4230 University Drive Suite 310
Anchorage, Alaska 99508**

**Phone: (907) 271-2383
Fax: (907) 271-2390
E-mail: jlincoln@cdc.gov**

March 14, 2008

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Respondent Universe and Sampling Methods

Three quarters of fatal falls overboard in Alaska occur in the Southwest region. For that reason, this study will involve only fishermen operating in that area. The Southwest region includes the Alaska Peninsula, Bristol Bay, and the Bering Sea.

The respondent universe includes all fishermen who work in Southwest Alaska aboard vessels fishing with pot-gear, gillnets, longlines, and trawls. The number of fishermen operating with those gear types was estimated using data provided by Natural Resource Consultants (Table V), who calculate workforce estimates for all commercial fisheries in Alaska.

Regarding vulnerable populations, we will allow pregnant women to participate in the study if they are encountered during the sample selection process. They can judge for themselves whether their pregnancy is a hindrance to wearing a PFD, and can give or withhold informed consent. Other vulnerable populations such as prisoners and children under 18 are not expected to be found in the sampling universe (at-work commercial fishermen in Southwest Alaska), but in the event that a member of one those vulnerable populations is discovered during the sampling process (perhaps a child under 18 on a family run fishing vessel), he/she will not be asked to participate. Their inclusion would introduce complications regarding the ability to give informed consent free of coercion, and/or the need for parental consent. Dealing with these issues would strain or exceed our logistical resources; therefore we will exclude such persons from the study.

Phase 1 of the study involves the administration of a short questionnaire about fishermen's risk perceptions, safety attitudes, and beliefs about PFDs. We calculated the sample size necessary to obtain an estimate of the proportion of fishermen answering 'yes' to a question with 95% probability of being within 5% of the population proportion. This calculation was performed using EpiInfo StatCalc version 6 and conservatively estimated the population proportion as 0.5 (maximum possible population variance). The minimum required sample size for phase 1 is 370 fishermen, but to compensate for potential loss of some questionnaires and non-response, we will administer 400 questionnaires.

The four gear types included in the respondent universe (pot-gear, gillnets, longlines, trawls) will be treated as sampling strata, since they represent subpopulations of fishermen that are different from each other in many important ways. Table V shows the number of fishermen working in each of these gear types. Comparing the results between gear types will be an important component of the analysis; therefore, the sampling method has been chosen to maximize the number of respondents in each gear type to allow for such comparisons. This will be achieved by allocating the sample equally across strata: 100 respondents in each gear type. However, for analyses of the overall, pooled sample (pooling all strata together), the strata will be weighted differentially to reflect the proportional distribution of the fishermen population across gear types.

Out of the 400 respondents who complete the phase 1 survey, 200 will be selected to participate in phase 2. The phase 2 sample will be allocated to strata in the same way as the phase 1 sample

(equal allocation), in order to have adequate numbers of fishermen in each gear type to evaluate all five of the PFD styles. Each of the four strata will have 50 participants. As in phase 1, when combining the strata for composite analysis, each stratum will be weighted to adjust for the differential sampling.

Selection of participants will occur in three towns in Southwest Alaska: Dutch Harbor, Dillingham, and Naknek. These towns are small but are major commercial fishing ports in the region. Researchers will travel to these towns shortly before the start of each fishery being included in the study. Fishermen will be approached at their vessels and asked to participate in the phase 1 survey and also the phase 2 evaluations. Efforts to recruit fishermen will continue until the predetermined quota of participants for each phase in each fishery has been reached. Since there will be fewer participants in phase 2 than in phase 1, when the required sample (200) for phase 2 has been reached, other fishermen participating in the phase 1 survey will not be asked to evaluate a PFD.

The relatively small sample size of phase 2 (PFD evaluations) has been dictated by considerations of logistical and financial feasibility. Its purpose is primarily to inform potential purchasers of PFDs (fishermen) of other fishermen’s evaluations of different styles based on their experience with their use. We will include 95% confidence intervals, with an explanation, in all communications of the results.

Table V. Stratification of Sample

	Strata (Gear Types)				
	Crab Pot	Trawlers	Longliners	Gill-netters	Total
Fishermen	564	3,240	1,530	4,679	10,013
Phase 1 Sample	100	100	100	100	400
Phase 2 Sample	50	50	50	50	200

2. Procedures for the Collection of Information

Data collection will take place in three locations in Southwest Alaska: Dutch Harbor, Dillingham, and Naknek. Trained research assistants located in each town will assist in administering the phase 1 surveys and phase 2 evaluations.

The method for selecting the sample and administering the study will be as follows:

1. In each of the three communities in Southwest Alaska (Dutch Harbor, Dillingham and Naknek) researchers will complete phase 1 and initiate phase 2 one week prior the start of each fishery. The three towns are communities where commercial fishing is a major industry, so it is expected that shortly before the start of a fishery there will be many fishermen out preparing their vessels and gear.
2. Researchers will walk down each of the piers at the harbors and contact every fisherman on the pier and administer the questionnaire until the required quota for that fishery is that town is reached. Refusals to participate will be recorded in order to calculate the response rate.

3. When a fisherman is contacted that is willing to participate, the researcher will explain the study and the questionnaire and then administer the questionnaire to the fisherman, asking the questions and recording the responses.
4. When a questionnaire is completed, the researcher will describe the phase 2 portion of the study to the fisherman and ask for participation in testing a PFD. If the fisherman agrees to continue in the study by evaluating a PFD, the researcher will assign and deliver a PFD to the fisherman and further explain the procedures for doing the test.
5. The researcher will then proceed along the pier repeating the process for all fishermen present.
6. As data collection proceeds, numbers of fishermen in each fishery participating in each phase will be monitored. Once the required sample size for phase 2 (the PFD evaluations) has been reached, researchers will no longer ask fishermen completing the phase 1 survey to participate in the phase 2 evaluations. Once the sample size for phase 1 has been reached, data collection activities will cease.
7. For those fishermen participating in phase 2, two PFD evaluation forms will be administered by the local research assistants. The first form will be given to the fishermen with the PFD and we will ask that it be filled out after one or two days of wearing the PFD. On the vessel's first return trip to port to offload fish, the research assistants will collect the completed forms or have the form completed at that time if it was not filled out at sea. Using this method all of the first evaluations should be done within the first week. The date that the form was filled out will be recorded on the form. A unique ID will be affixed to the forms to keep the forms linked in the dataset.
8. After one month of wearing the PFD, the research assistants will make contact and have the second and final evaluation form filled out.

The research assistants will have extra PFDs available to replace any that become lost or damaged. They will also have all the spare parts available to recharge any PFDs that were inflated.

At the conclusion of the phase 2 data collection, all data from phases 1 and 2 will be independently coded and entered into two datasets by two researchers. The datasets will be matched and errors corrected for quality assurance.

3. Methods to Maximize Response Rate and Deal with Nonresponse

We expect to achieve a high (over 80%) response rate with both phases of the study. Efforts to maximize response rates include administering the survey in person and hiring research assistants who live in the communities and have local knowledge and experience to aid in the data collection. Refusals to participate will be recorded in order to calculate the response rate. We expect to have a high response rate as a result of our efforts to maximize it, and also because fishermen are historically responsive to safety surveys when they are approached in-person in a non-threatening manner.

4. Tests of Procedures or Methods to be Undertaken

Drafts of the data collection instruments for phase 1 and 2 were reviewed by eight commercial fishermen in a Southwestern Alaska fishing town. Revisions were made based on their feedback. In addition, this study underwent an external peer review with feedback being incorporated into the methods.

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

Individuals consulted on statistical aspects:

- Philip Somervell, PhD (907) 271-1567 psomervell@cdc.gov

Individuals collecting and/or analyzing data:

- Jennifer Lincoln, PhD (907) 271-2383 jlincoln@cdc.gov
- Philip Somervell, PhD (907) 271-1567 psomervell@cdc.gov
- Devin Lucas, MS (907) 271-2388 dlucas@cdc.gov
- Hillary Strayer, MPH (907) 271-1570 hstayer@cdc.gov
- Local research assistants in each of the three communities

REFERENCES

Abeysekera J, Shahnava H. 1990. Adaptation to discomfort in personal protective devices: an example with safety helmets. *Ergonomics* 33(2):137-145.

Akbar-Khanzadeh F. 1998. Factors contributing to discomfort or dissatisfaction as a result of wearing personal protective equipment. *J Human Ergol* 27(1,2):70-75.

Akbar-Khanzadeh F, Bisesi M. 1995. Comfort of personal protective equipment. *Applied Ergonomics* 26(3):195-198.

BLS. 2006. National census of fatal occupational injuries in 2006. Washington (DC): United States Department of Labor, Bureau of Labor Statistics. Available from <http://www.bls.gov/iif/oshcfoi1.htm>

BoatUS. 1998. Inflatable life jackets make the grade. Foundation Findings Report # 30, May 1998. Available from <http://www.boatus.com/foundation/findings/inflatablepfd.htm>

BoatUS. 2000. What to know before they blow. Foundation Findings Report # 30C, July 2000. Available from <http://www.boatus.com/foundation/findings/floatingonair.htm>

BoatUS. 2004. How much is that belt pack in the window? Foundation Findings Report # 37 & 38, January 2004. Available from <http://www.boatus.com/foundation/findings/findings38/default.htm>

Consumer Reports. 1999. Keep your head above water: How to find a life jacket that's comfortable on board, safe in use. May 1999 issue pp. 30-34.

Forst L, Noth I, Lacey S, Bauer S, Skinner S, Tetrea R, Zanoni J. 2006. Barriers and benefits of protective eyewear use by latino farm workers. Journal of Agromedicine 11(2): 11-17.

Lucas DL, Lincoln JM. 2007. Fatal falls overboard on commercial fishing vessels in Alaska. Am J Ind Med 50: 962-968.

NIOSH. 1994. Preventing drownings of commercial fishermen. Cincinnati (OH): National Institute for Occupational Safety and Health. Pub. No. 94-107. 9p.

NIOSH. 1997. Commercial fishing fatalities in Alaska – Risk factors and prevention strategies. Cincinnati (OH): National Institute for Occupational Safety and Health. Pub. No. 97-163. 24 p.

Salazar M, Connon C, Takaro T, Beaudet N, Barnhart S. 2001. An evaluation of factors affecting hazardous waste workers' use of respiratory protective equipment. AIHAJ 62:236-245.

LIST OF ATTACHMENTS

Section 20(a)(1) Occupational Safety and Health Act of 1970.....	Attachment 1
Federal Register Notice	Attachment 2
Statement of Jennifer Lincoln, PhD	Attachment 3
Public Comments and Responses to FRN.....	Attachment 4
Instructions to Respondents	Attachment 5
Informed Consent Form.....	Attachment 6
Phase 1 Questionnaire.....	Attachment 7
Phase 2 Form.....	Attachment 8
Additional Information for HSRB review.....	Attachment 9
HSRB Form 1250.....	Attachment 10
HSRB Form 1379.....	Attachment 11
Peer Reviewers' Comments with Responses.....	Attachment 12
PFD Models.....	Attachment 13