

SURVEY OF HEALTHCARE WORKERS' HEALTH AND SAFETY PRACTICES

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

Section B

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B. Collection of Information Employing Statistical Methods

To improve its hazard surveillance capability related to occupational health and safety risks of healthcare workers, the National Institute for Occupational Safety and Health (NIOSH) is planning to conduct a survey of healthcare workers. The proposed hazard surveillance survey will provide important information on work practices associated with the use of important classes of hazardous chemical agents including antineoplastic agents, anesthetic gases, aerosolized medications, chemical sterilants, high level disinfectants and surgical smoke. The major objectives of the survey will be to characterize health and safety practices including the use of exposure controls (and barriers to use) by healthcare workers who are likely to use or come in contact with these hazardous chemical agents in their job. The results are appropriate for flagging the types of work practices, exposures, and/or behaviors that might benefit from additional training or other types of interventions.

B1. Respondent Universe and Sampling Methods

Definition of Target Population

The target population for this survey is members of professional organizations (Table B1) which have voluntarily agreed to collaborate to make the survey available to members. These organizations are among a larger number of healthcare organizations who were initially contacted to determine level of interest and support for the survey, and whether their members work with the targeted chemical agents. The target population will be members who use or come in contact with one or more of the chemical agents within the past 7 calendar days in their primary job (except for the aerosolized medication pentamidine, which would include those who have administered this medication within the past 30 calendar days).

Because there is no single sampling frame for healthcare workers, initially we identified about 200 candidate professional and labor organizations. Subsequently, many of these candidate organizations were not considered because they: 1) did not maintain email addresses for their members; 2) indicated that members did not use/were not likely to use any of the targeted chemicals; 3) did not respond, and/or 4) responded but decided not to participate. This hazard surveillance survey is not designed to represent all healthcare workers in the population who use or come in contact with the targeted hazardous chemical agents. The participating organizations are the ones most likely to represent healthcare workers with potential exposure to the targeted chemical agents, in many cases (Table B1).

Definition and Construction of Sampling Frame

The sampling frame for a survey is the list used to enumerate target population members for sample selection purposes. Individual sampling frames will be developed by each participating professional organization. Because survey recruitment will be by email (to be sent by each organization to its members), the sampling frame will only include organizations' members with email addresses. The organizations with the capability to filter out known unexposed member groups (retirees, educators, administrators/directors/managers, international members, etc) will further refine the sampling frame and produce a targeted sampling frame, from which members

will be sampled or surveyed depending on the size of the organization (Table B2 and B3). The sampling frame is basically a given set of healthcare occupations in a given set of professional organizations.

Specification of Sample Selection Procedures

All 22 professional organizations have been provided with step-by-step sampling procedures to ensure consistency across all organizations with respect to sample selection.

The professional organizations with greater than 3,000 members with email addresses were provided with a step-by-step procedure on how to select a random sample of members who will be sent a survey invitation email. Each of these organizations stated that they would be able to follow the procedure; most stated that it is relatively straightforward and mirrors what they already do when surveying their members. Many of these organizations have IT staff who are experienced at conducting member surveys.

The professional organizations with 3,000 or fewer members will survey all of their members with email addresses. These members will be sent an email inviting them to participate in the survey.

Following sample selection, each of the 22 partnering organizations will provide NIOSH with a description of exactly how they created the list of members who would be sent the survey invitation email, including quality assurance (i.e., ensuring that the list accurately comprises targeted members). Three months prior to launching the survey, the sampling procedures will be re-issued to each partnering organization. At that time, they will be asked to participate in a teleconference call with NIOSH to address any questions they may have regarding the sampling effort and to ensure that everyone is clear on what is expected of them.

The sampling procedures applicable to each of the two size categories are provided in Appendix H.

This approach will enable targeted sampling and recruitment efforts, and the ability to calculate response rates for each organization.

Table B1. Targeted Hazard Modules and Primary Occupation by Participating Professional Organization

Partnering Professional Organization	Primary Occupation	Targeted Hazard Module(s)						
		A	B	C	D	E	F	G
American Association for Respiratory Care (AARC)	Respiratory therapist	X						
American Association of Pharmacy Technicians (AAPT)	Pharmacy technician		X					
National Pharmacy Technician Association (NPTA)	Pharmacy technician		X					
American Society of Health-System Pharmacists (ASHP)	Pharmacist		X					
Association of Pediatric Hematology/Oncology Nurses (APHON)	Nurse		x	X				
Infusion Nurses Society (INS)	Nurse		x	X				
Oncology Nurses Society (ONS)	Nurse		x	X				
International Association of Healthcare Central Service Materiel Managers (IAHCMM)	Central supply technician				X	x		
American Dental Hygienists Association (ADHA)	Dental hygienist				X			
American Dental Assistants Association (ADAA)	Dental assistant					X	x	x
American Society of Radiologic Technologists ASRT)	Radiologic technologist					X		
Association of Surgical Technologists (AST)	Surgical technologist				x	X	x	
Society for Gastroenterology Nurses and Associates (SGNA)	Nurse					X		
Association of periOperative Registered Nurses (AORN)	Nurse			x	x	x	X	x
National Surgical Assistant Association (NSAA)	Surgical assistant					x	X	
American Association of Nurse Anesthetists (AANA)	Nurse anesthetist						x	X
American Academy of Anesthesiologist Assistants (AAAA)	Anesthesiologist assistant						x	X
American Dental Association (ADA)	Dentists and Oral/Maxillofacial surgeons					x	x	X
American Society of Anesthesiologists (ASA)	Anesthesiologist						x	X
American Society of PeriAnesthesia Nurses (ASpan)	Nurse						x	X
American Nurses Association (ANA)	Nurse			x	x	x	x	x
American Academy of Physician Assistants (AAPA)	Physician assistant				x	x	x	x

‘X’ indicates primary targeted hazard module and ‘x’ indicates secondary targeted hazard modules if both are relevant for a particular professional organization. For some professional organizations, there are no secondary hazards and in two cases (ANA, AAPA) there is no primary hazard.

Hazard Modules: A=Aerosolized Medications; B=Antineoplastic Agents (Compound); C=Antineoplastic Agents (Administer); D=Chemical Sterilants; E=High Level Disinfectants; F=Surgical Smoke; and G=Anesthetic Gases

Based on the number of members with email addresses in each organization, the procedure to be used to recruit members will be in accordance with the approach presented in Table B2. Table B3 presents the estimated number of members and the sampling approach for each partnering professional organization.

Table B2. Suggested Sampling Approach by Size of Professional Organization

No. of Members with E-mail Addresses in Professional Organization^a	How Members will be Selected	Steps Needed to Prepare a Targeted Sampling Frame
> 3,000	Simple Random Sample	From complete membership list: 1) produce list of members with email addresses; 2) filter/target ^b members from 1 (optional); 3) draw random sample
≤ 3,000	Membership will be surveyed	From complete membership list: 1) produce list of members with email addresses; 2) filter/target ^b members from 1 (optional); 3) survey members

^a 3,000 members was selected as the ‘sample’ versus ‘census’ cut-off because it appeared to be the best point based on the total membership distribution for all participating organizations.

^b Filtering and/or targeting of members. Filtering would exclude members from the sample such as retirees, students, administrators/directors/managers, non-U.S. members, and others who do not use or come in contact with the chemical agents covered in the hazard modules. Targeting would retain specific groups (to be defined by each organization) where use of/contact with any of the chemical agents covered in the hazard modules is likely.

B2. Procedures for the Collection of Information

Following OMB approval, the OMB approval number and expiration date will be displayed on the survey instrument and the survey web site (home page). Survey instruments will consist of a screening module (Attachment I1), seven hazard modules (Attachment I2 to I8) and a core module (Attachment I9). All of the survey modules reflect comments from the cognitive interviews and subject matter experts.

Each participating professional organization will announce the upcoming survey to their members 4-6 weeks prior to launching the survey using the pre-survey notification. Subsequently, they will send a series of emails to their members (with content developed by

NIOSH) including an invitation email (one week prior to survey launch) and three reminder emails at biweekly intervals during the 6 week data collection period (Attachment J). The survey

Table B3. Estimated Number of Members and Sampling Approach by Participating Professional Organization

Partnering Professional Organization	Primary Occupation(s)	Estimated Number of Members	Estimated Number of Persons in Occupation in U.S. (source)	Sampling Approach
American Association for Respiratory Care (AARC)	Respiratory therapist	46,800	122,000 (BLS '06)	Simple random sample
American Association of Pharmacy Technicians (AAPT)	Pharmacy technician	600	285,000 (BLS '06)	Survey all members
National Pharmacy Technician Association (NPTA)	Pharmacy technician	30,000		Simple random sample
American Society of Health-System Pharmacists (ASHP)	Pharmacist (in health systems)	35,000	55,000 (ASHP '09)	Simple random sample
Association of Pediatric Hematology/Oncology Nurses (APHON)	Nurse	3,100	5,000 (APHON '09)	Simple random sample
Infusion Nurses Society (INS)	Nurse	6,500	Not available	Simple random sample
Oncology Nurses Society (ONS)	Nurse	37,000	68,000 (HRSA '04)	Simple random sample
International Association of Healthcare Central Service Materiel Managers (IAHCSMM)	Central supply technician	13,640	Not available	Simple random sample
American Dental Hygienists Association (ADHA)	Dental hygienist	35,000	167,000 (BLS '06)	Simple random sample
American Dental Assistants Association (ADAA)	Dental assistant	15,000	280,000 (BLS '06)	Simple random sample

American Society of Radiologic Technologists (ASRT)	Radiologic technologist	131,600	196, 000 (BLS '06)	Simple random sample
Association of Surgical Technologists (AST)	Surgical technologist	26,900	86,000 (BLS '06)	Simple random sample
Society for Gastroenterology Nurses and Associates (SGNA)	Nurse	8,000	25,000 (SGNA '09)	Simple random sample
Association of periOperative Registered Nurses (AORN)	Nurse	41,600	160,000 (AORN '09)	Simple random sample
National Surgical Assistant Association (NSAA)	Surgical assistant	1,400	4,900 (NSAA '10)	Survey all members
American Association of Nurse Anesthetists (AANA)	Nurse anesthetist	40,500	Not available	Simple random sample
American Academy of Anesthesiologist Assistants (AAAA)	Anesthesiologist assistant	620	2,000 (AAAA '09)	Survey all members
American Dental Association (ADA)	Dentists and Oral/Maxillofacial surgeons	153,000	161,000 (BLS '06)	Simple random sample
American Society of Anesthesiologists (ASA)	Anesthesiologist	43,000	57,000 (ASA '09)	Simple random sample
American Society of PeriAnesthesia Nurses (ASPA)	Nurse	13,100	55,000 (ASPA '09)	Simple random sample
American Nurses Association (ANA)	Nurse	185,000	2,500,000 (BLS '06)	Simple random sample
American Academy of Physician Assistants (AAPA)	Physician assistant	39,000	70,000 (AAPA '09)	Simple random sample

invitation email and reminder emails will contain a link to the survey web site where they will be directed to the survey.

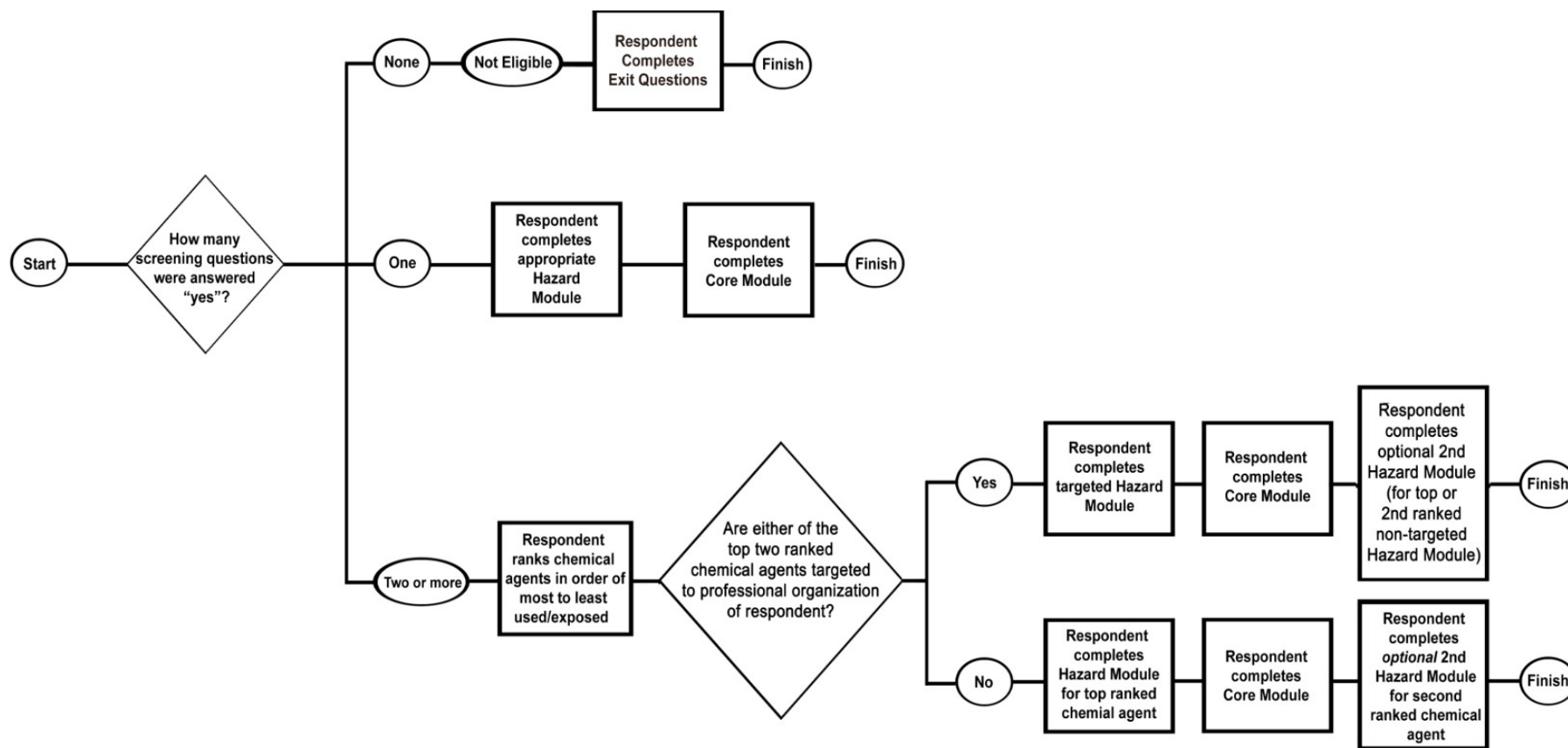
When the individual clicks on the link they will be connected to a secure web site maintained by our survey contractor, Westat. The home page will display the OMB approval number and expiration date, provide respondents information about the survey, expected completion time and other general information. The home page will contain the six tabs where respondents can click to obtain additional information about who is conducting the study('About NIOSH' tab), frequently asked questions ('FAQs' tab), the privacy of persons completing the survey and security of the collected information ('Privacy and Security' tab), a disclaimer regarding products mentioned in the survey('disclaimer' tab), how to contact Westat or NIOSH staff in case of technical or other survey related questions ('Contact Us' tab), and a means to return to the home page ('Home' tab'). The text included in each of the tabs is included in Appendix H,

A unique organization code will be created for each of the 22 participating organizations. This code will be included in the invitation email which respondents will enter on the web site to enter the survey. This code will permit us to identify the organizations from which individuals were recruited. (This will allow us to analyze and report on data from all respondents within each organization which was of interest to each organization). Each eligible respondent will be provided with a randomly-generated Resume Survey Code before they start the survey which will allow them to re-enter the survey at the point where they left off, in case they are unable to complete the survey in one sitting. Neither Westat or NIOSH will have a record of a respondent's Resume Survey Code. If the respondent does not have the code when returning to the survey, they must begin the survey again. The respondent will be able to print the Resume Survey Code or have it emailed to them to minimize the likelihood of losing it. Respondents will be able to access the survey 24/7 during the data collection period.

Once a person begins the survey, s/he will initially complete a brief screening module to determine whether they are eligible to participate in the survey. Eligible participants include those who, in their primary job, use or come in contact with one or more of the targeted chemical agents within the past 7 calendar days (or in the past 30 calendar days for the aerosolized medication pentamidine). The flow diagram in Figure B1 shows assignment of hazard modules based on responses to the screening questions. If respondent marks 'yes' to more than one of the screening questions, they are asked to rank the hazardous chemical agents, in order of most used to least used. If one of the top two ranked chemical agents is targeted to their organization (see Table B1), they will be presented with that hazard module first, then the core module, and then the optional hazard module for the top or second ranked chemical hazard. If one of the top two ranked chemical agents is not targeted to their organization, the top ranked chemical hazard is presented first, followed by the core module, then the optional hazard module for the second ranked chemical hazard.

All eligible respondents are expected to complete the screening module, one hazard module and the core module, all of which is estimated to take approximately 30 minutes to complete. An estimated 10% of respondents are expected to complete a second hazard module after the core module. Completion of a second hazard module is expected to add 10 minutes to the survey, for a total completion time of 40 minutes.

Figure B1. Flow Diagram Showing Assignment of Hazard Modules Based on Responses to Screening Questions



B3. Methods to Maximize Response Rates and Deal with Nonresponse

Healthcare workers are well educated and familiar with computer technology and the Internet. Many of the participating professional organizations periodically gather information from their members using web surveys, and the survey population is expected to be very comfortable with this mode of data collection. In a pilot study where different survey methods and modes were evaluated in a large medical center, healthcare workers preferred taking a web survey over a pen and paper survey 9 out of 10 times when given a choice [Catalano et al 2006]. In the same pilot study, an overall response rate of 54% was achieved without reimbursement for survey participants. Comments received during recruitment and screening stages of the cognitive interviews revealed that healthcare workers seemed intrigued by the study and eager to participate when the survey is launched. A response rate of 50% is expected for this survey.

A pre-survey announcement and the proposed series of emails to sampled members by each participating professional organization will encourage sampled members to complete the survey. The pre-survey email will be co-signed by a top executive within each organization and NIOSH. The announcements will underscore the importance of the survey, that it is the first of its kind by the Federal government, and is aimed at collecting data on hazards, exposures and exposure controls from healthcare workers.

B4. Tests of Procedures or Methods to be Undertaken

The content of the core module and the seven hazard modules was developed over a series of iterations following a thorough review of the literature, discussions with stakeholders, subject matter experts, the NIOSH survey contractor, and healthcare workers. Individuals who reviewed the survey questionnaire modules are listed in Part A.

A total of five cognitive interviews with active healthcare workers were conducted for each of the eight survey modules. The healthcare workers who participated in the cognitive interviews were recruited from the participating professional organizations (see Table B-1) and represent occupations which use or come in contact with the targeted hazardous chemical agents. The interviews gathered detailed information about the thought processes respondents use to understand and answer individual survey questions, with the goal of identifying and removing potential sources of response error. Comments from these interviews resulted in: 1) rewording of several individual questions, 2) inclusion of definitions of terms used, 3) inclusion of photos of respirators, engineering controls and equipment in some of the questions, and 4) reorganization of some questions to make better use of skip patterns. Respondents had a difficult time with the meaning of 'In the past 7 calendar days', so a calendar will be included in the web version which will highlight the previous 7 calendar days based on when the respondent accessed the survey.

A pre-test of the web survey will be conducted in mid August 2010. The primary purpose of the pre-test will be to evaluate the usability of the web-based survey, ensure that the programmed functions (i.e., presentation of appropriate modules based on responses to the screening questions, skip patterns, etc) are accurate and complete. We do not anticipate any changes to the content of any of the questions as a result of the pre-test.

B5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

NIOSH has contracted with Westat, Inc., and with the University of Michigan, Institute for Social Research, for technical assistance with this study. Our contractors have worked on the development of the questionnaire modules, survey protocol, web survey design and programming, and conduct of the web-based survey.

Individuals from Westat, Inc., (1650 Research Boulevard, Rockville, MD 2080-3195):

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