

Chapter III

QUESTIONNAIRE METHODOLOGY

1. Introduction

The purpose of the extensive questionnaire was to collect data that could be analyzed for the subjective presence of adverse health effects that might be related to herbicide exposure. The study protocol required that all living exposed subjects and their primary comparisions be offered a comprehensive personal and family health questionnaire administered in the subject's home by a civilian contractor experienced in survey research. The personal nature of the information, peer review recommendations, and the study protocol called for face-to-face interviewing techniques (Herman, 1977; Fry, 1958). In addition to the study participants, the contractor was also required to interview the participant's current and former wives, as well as the first order next-of-kin of deceased individuals to obtain complete morbidity data. Whenever individuals, their spouses, or next-of-kin would not consent to participate in a face-to-face interview, attempts were made to collect the information by telephone (Colombotos, 1969). For the individual who absolutely refused to participate in this data collection process an abbreviated or noncompliant telephone interview format was designed and its use was attempted (Simon, 1974). This chapter discusses the development and the implementation of the questionnaires used in the study.

2. Questionnaire Development

The data collection instruments for the morbidity study were developed and implemented by three separate contracts. The first of these, awarded to Research Statistics, Inc of Houston, Texas in 1979, developed a statement of work (SOW) which described, in survey research terms, the questionnaire requirements to support the effort. This SOW was used as the basis for the questionnaire development contract which was later awarded to the National Opinion Research Center (NORC) of New York, New York. The questionnaire instruments were developed by NORC in cooperation with the Principal Investigators and included questions concerning a broad range of health effects. The choice of specific effects included in the instruments was based on scientific studies of humans and animals exposed to phenoxy herbicides and dioxins. Hypothetical health effects based on studies in biochemical and biological systems were also included. In addition, veterans' complaints and the public's perception of the health effects of these chemicals were also considered. Questions were designed to allow the maximum degree of data verification by physical examination and medical and personnel record reviews. At the suggestion of NORC, portions of previously field-tested questionnaires were incorporated in the study instruments to maximize the validity of the questionnaires. The sources of the field-tested questionnaires are presented in Table III-1.

Table III-1

SOURCES OF QUESTIONNAIRE ITEMS

<u>Section of USAF Health Study Questionnaire</u>	<u>Field Tested Questionnaires</u>
Marital History	The Lives of Women in American Society (Institute of Human Reproductive Studies; Columbia University School of Public Health, Denise B. Kandel)
Pregnancy outcomes	The Lives of Women in American Society
Conception difficulty	National Survey of Family Growth Cycle, (National Center for Health Statistics; Vital and Health Statistics, Series 2, #76 January 1978 William F. Pratt)
Education	General Social Survey (National Opinion Research Corporation, Roper Public Opinion Research Center, University of Connecticut 1981, James A. Davis)
Occupation	General Social Survey
Health outcomes	Procedures and Questionnaires of the National Medical Care Utilization and Expenditure Survey (National Center for Health Statistics; Series A, Methodological Report #1, 1980 Robert R. Fuchsberg)
Smoking, drugs	Drug Abuse Reporting Program (Institute of Behavioral Research, Texas Christian University, 1976 Saul B. Sells)
Drinking	Drug Abuse Reporting Program
Erosion of cognitive abilities	Drug Use Vietnam Veteran 1972; Resurvey of Vietnam Veterans 1974 (Washington University. Department of Psychiatry Lee I. Robbins; Special Action Office Monograph, Series A #1, April 1973)
Aggression	Stressful Life Events and Their Contexts (Rutgers University Press 1981; Barbara Snell and Bruce T. Dohrenwend)
Isolation	Young Adults Survey, New York State Drug Study (Columbia University School of Public Health. Longitudinal Research on Drug Use 1978, Denise B. Kandel)
Fatigue	Young Adults Survey
Social Desirability response set	Health Insurance Study 1975-1982 (Rand Corporation; Santa Monica, CA Dec 1979 John E. Ware, Jr.)

Anxiety

Health Insurance Study

Depressive episode

Diagnostic Interview schedule (Dr. Lee Robbins, Washington University, St. Louis, MO)

Panic disorder

Diagnostic Interview Schedule

An acceptability pretest of the developed questionnaires was conducted in May 1981. Twenty study subject, 18 spouse, and 2 next-of-kin interviews were completed. Following minor modifications, these instruments became the final questionnaires for the implementation contract. They were not publicly released prior to implementation.

3. Questionnaire Implementation: Contract Award and Administration

Louis Harris and Associates, Inc (LHA) was competitively awarded a 9-month implementation contract in September 1981. The purpose of this contract was to collect baseline data on the study population through the use of the developed questionnaires. The specific elements of each questionnaire are presented in Table III-2.

Table III-2

ELEMENTS OF THE QUESTIONNAIRES

<u>Type Questionnaire</u>	<u>Elements</u>
Study Subject	Demographic, educational, occupational, medical, compliance, toxic exposures, and reproductive experience
Spouse (present and former)	Comprehensive reproductive history
Next-of-kin	Modification of study subject questionnaire
Noncompliant (Telephone)	Perception of health, use of prescribed medication, medical conditions, work absenteeism, income and reasons for noncompliance

LHA first reviewed the questionnaire and reformed the instruments from a horizontal to a longitudinal format to better suit their interviewing style. The contractor's management personnel selected interviewers, scheduled training programs, and defined procedures to be used in the conduct of the contract. Ninety interviewers were selected and trained in a series of 11 training sessions held throughout the United States and Europe. All training sessions were taught by either the LHA Vice-President for Research Services, or the Project Director. All LHA interviewers (84 women and 6 men) had a minimum of 1 year prior experience in interviewing, with at least 1 experience with health data collection. Race matching of interviewers and respondents was accomplished in

the majority of cases in order to enhance rapport and accuracy of data (Hyman, 1954). Interviewer bias was additionally limited through a review of the interviewer's military experience and background. Several potential interviewers were excluded because they were spouses of USAF personnel or personally knew some of the study participants. The LHA staff was not informed of the exposure status of any individual in this study before or after the completion of the contract. LHA interviewers reported to the Project Director in the New York office on a weekly basis. The first two interviews of each interviewer were critiqued by this staff prior to allowing further interviewing. Additionally, the USAF received weekly reports from the Project Director on all aspects of the contract. An interactive relationship between the USAF and LHA staff was essential throughout this contract.

In addition to data collection, LHA also contracted to locate the study population, obtain signed medical release forms, assess the intent of the subject to participate in the physical examination phase of the morbidity study, and to attempt to convert those individuals who absolutely refused all data collection attempts.

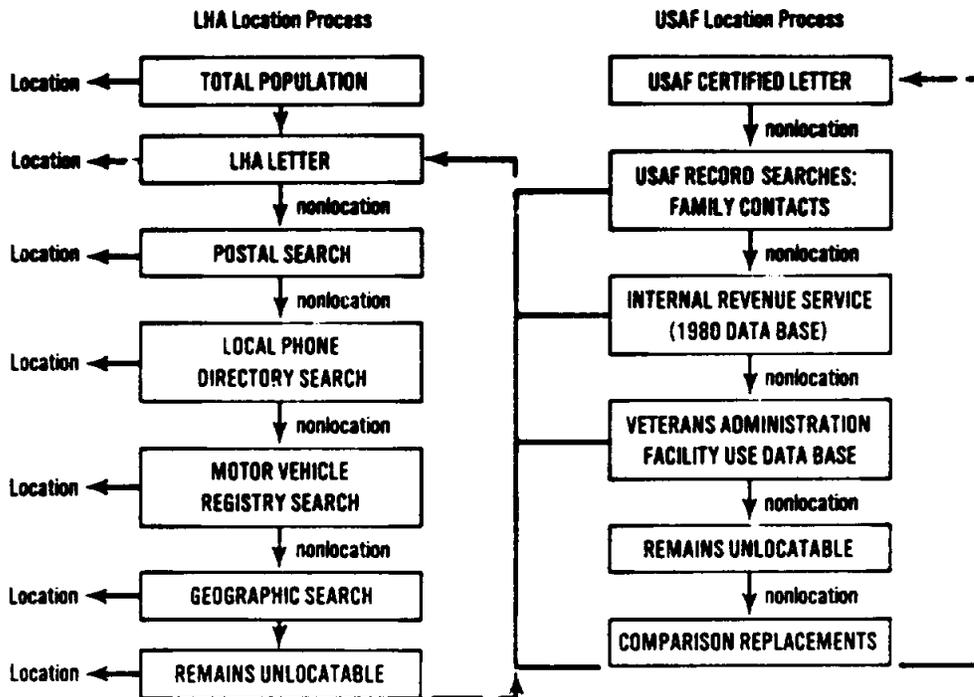
4. Questionnaire Implementation: Location

Initial contact with the Ranch Hand and the original comparison population occurred in November 1981. At this time each potential participant was sent certified introductory letters and a fact sheet. These letters were signed by the Secretary of the USAF and the USAF Surgeon General. They defined participation as voluntary and explained the limited confidentiality of positive medical findings diagnosed during the physical examination portion of the Morbidity study. Examples of these materials are presented in Appendix XI. LHA followed the USAF letters with their own introductory letters. The assigned interviewer then contacted the potential study participant by phone for scheduling the in-person questionnaire. Initial contact with the shifted population was also completed by this series of letters and telephone contact. Letter mailing and identification of this group to LHA was completed by April 1982. Initial contact with the replacement comparison group occurred by letter followed by LHA phone contact until the final questionnaire administration contract extension, i.e. November 1982. From November 1982 all initial contact with replacement comparisons was by the USAF by telephone. For this small group, questionnaire administration was scheduled by the USAF interviewers in conjunction with the physical examination. Introductory USAF letters were sent after the replacement comparison agreed to complete the physical examination. LHA letters were, of course, not sent to this population. Therefore, within the replacement subset of comparison participants there are individuals whose interview was completed by the USAF at the physical examination site and not in their home.

Table III-3 presents the algorithm developed for locating study participants during the questionnaire administration contract.

Table III-3

ALGORITHM OF THE LOCATION PROCESS OF LHA AND USAF
DURING THE QUESTIONNAIRE ADMINISTRATION CONTRACT



This algorithm demonstrates the multiple sources used to locate study participants. This process was completed for all study subjects forwarded to LHA (Ranch Hand; original, shifted, and replacement comparisons). For a small number of replacement comparisons (23) not forwarded to LHA because of contract termination, the majority of the USAF location process was completed while the LHA process was not completed. Replacements for the original and shifted non-locatable comparisons were not identified to LHA until the location algorithm was complete.

5. Questionnaire Implementation: Data Collection

Once the study participant was located, an individual LHA interviewer was assigned. The interviewer initially contacted the participants by phone or by telegram if his phone number was unlisted. The participant was informed of the length of the interview (average 1.5 hrs; range 30 minutes to 3 hours) and scheduled the in-home questionnaire at his convenience. Whenever possible, interviews of current spouse were scheduled for the same day and followed the study participants interview. These interviews were conducted privately in order to obtain independent reproductive histories. If the participant refused to participate in the interview, his name was forwarded to the central office

and conversion attempts were made by the LHA central office. Noncompliant telephone questionnaires were administered to the refusals by the central office. The telephone administration system was implemented in April 1981.

At the time of the in-person questionnaire, all participants read and signed a privacy act statement and completed a Life Events Chart. This chart acted as a recall guide to the chronology of events discussed in the questionnaire. Interviewers were required to ask questions exactly as written, were not allowed to interpret questions, or inject personal commentary, nor were they allowed to skip between sections of the questionnaire. They were also instructed to probe "don't know" answers at least once. At the conclusion of the interview, medical record release forms were signed for those physicians and medical facilities reported in the questionnaire, and the study participant was also asked whether or not he would agree to participate in a physical examination. The respondent was also asked to give the current name and address for each former spouse listed in the questionnaire, so that spouse interviews could be scheduled and conducted with these individuals. Medical permission forms for medical record data of spouses and children were inadvertently omitted at the time of interview. A system to obtain these data was initiated following the USAF receipt of questionnaires.

Due to high and favorable participation rates, patient flow and logistic difficulties in both the questionnaire and physical examination portions of the morbidity study, it was necessary to extend the LHA contract through November 1982 and the examination contract to 15 December 1982. Because the contracts did not overlap experienced USAF interviewers were required to complete questionnaire administration to participants at the physical examination site.

6. Questionnaire Implementation: Data Processing

All completed interviews were sent to the LHA central office following initial field editing by the responsible interviewer. Each completed questionnaire was repeatedly edited by the LHA Project Director's staff. To ensure that every question was answered, participants were recontacted to provide missing data. This staff also coordinated and supervised the coding, keypunching and key verification of all completed interviews as they were translated to computer tape. Classifications and coding schemes used included the International Classification of Diseases, 9th Revision, Bureau of Labor Statistics, Standard Industrial Classification, and specific USAF codes for job and aircraft designation. LHA reported that it took an average of 2 hours to fully edit and code each interview. All keypunching was 100% verified. Discrepancies were reconciled by review of the hard copy interview. A set of data cleaning programs was developed by the LHA data processing staff to locate and identify errors and inconsistencies in the data set on tape. These programs were reviewed and approved by USAF data processing personnel. In addition, the USAF developed additional programs to further cleanse the data. In neither case were programs used that would force data to meet inner consistency checks. The objective of data editing was to ensure that the final data set accurately represented the respondent's information. A total of 6 data tapes were delivered to the USAF from LHA. A copy of the data tapes was sent directly from LHA

to the Advisory Committee on Special Studies Relating to the Possible Long-term Health Effects of Phenoxy Herbicides and Contaminants. The data tapes were delivered at least 3 months later than the original contract established dates.

7. USAF Data Processing

The questionnaire data collected during contract extensions and at the physical examination site were edited but not keypunched. These data were delivered in hard copy to the USAF. The USAF coded, verified, keypunched and entered the data on computer tape. Because of late data delivery and the volume of unkeypunched data, systematic review and comparison of all (LHA and USAF) hard copy questionnaires to the data tapes was not accomplished as planned. A comparison of 25 hard-copy questionnaires to data entered on the tapes was accomplished by USAF data processing personnel. The findings of this keypunch review are presented in Chapter VI, Quality Control Procedures. Morbidity coding was reviewed; however, because of incorrect and missing morbidity codes the USAF recoded all reported medical conditions. Additionally, the LHA data tapes did not include all data collected by the interviewer in the supplemental recording book. These data were required to form the link between the parents, their children, and all medical provider data (the basis of medical verification procedures). The USAF therefore developed systems and hired personnel to support the entry of these data in preparation for analyses.

8. Summary

Questionnaire methodology includes the development and implementation of multiple questionnaire instruments through civilian contractors. The NORC developed and LHA administered the instruments. Both contractors worked closely with the USAF. These close interactions resulted in the participation shown in Table III-4.

Table III-4

SUMMARY OF QUESTIONNAIRE PARTICIPATION

<u>Type Questionnaire</u>	<u>Ranch Hand</u>	<u>Counts of Participants</u>				<u>TOTAL</u>
		<u>Original</u>	<u>Shifted</u>	<u>Replaced</u>	<u>Air Force</u>	
- Study Subject	1174	956	200	346	30	1532
- Spouse (Current & Former)	1208	962	200	333	5	1500
- Telephone Noncompliant	10	34	8	7	20	69

Medical record release forms were obtained by the contractor during data collection. These permission forms are the basis of the medical record verification program presently in process for data collected by questionnaire. Data delivery to the USAF from the contractor was delayed. Medical coding was reaccomplished and data linkage systems were developed by the USAF to make the most efficient use of the data collected.